

was given in decreasing doses of 6 g., 5 g., 4 g. and 3 g. respectively for four days, making a total of 19 g. Results were very unsatisfactory, and figures corresponded to those of Lieut-Col Campbell, approximately 25 g. responded, and a number of these relapsed. The cases which did not respond were very resistant to treatment.

A number of cases were treated with higher concentrations of the drug and 25 g. were given. Again many cases were resistant to treatment, and gonococci were still seen after the course. I regret that no comparison was kept using the T.A.B. pyrexial therapy.

It would appear that the tablet treatment for gonorrhoea is not all that has been expected of it. Institutional pyrexial therapy proved very successful in East Africa. A point worthy of consideration is that different strains of gonococci may occur in Ceylon which are more virulent to the urethra of a large male population suddenly transplanted some thousands of miles from their own environment—I am, etc.,

S. D. N. SHAW  
Capt. R.A.M.C.

### Sulphonamide-resistant Gonococci

SIR—I have read with interest Lieut Col D. I. Campbell's article on gonorrhoea in North Africa and the Central Mediterranean (July 8, p. 44). I met with similar conditions when I was in charge of the Merchant Seamen's Venereal Disease Clinic in Freetown throughout 1942 and during the first nine months of 1943. The majority of the infections had been obtained in ports on the east coast of South America and the west coast of Africa. Before their arrival in Freetown many of the patients had been treated with varying doses of, usually, sulphapyridine by the ships' officers of ships carrying no surgeon. The majority of the courses of treatment were inadequate in dosage and extended over too long a period. However, there was no doubt that the gonococci were resistant to sulphapyridine and sulphathiazole. Arthritic complications were uncommon irritis I never saw, and epididymitis was not uncommon. A profuse urethritis and a prostatitis were present in almost every patient. My opinion, which was shared by others, was that a sulphonamide-resistant strain of gonococcus was being rapidly spread by war conditions. The reasons for the strain being resistant to the sulphonamides were not clear, but possibly it was partly due to the abuse of this class of drug—I am, etc.,

ATHOL J. JOHNSON  
Medical Officer, Sierra Leone Colonial Medical Service

### Aetiology of Mandibular Osteomyelitis

SIR—Mr Rainsford Mowlem in his excellent article (April 15, p. 517) discusses the role of vascular supply to the aetiology of osteomyelitis of the mandible. Mr Mowlem is referred to two articles on the subject: (1) Milner and Wolfe, J. J., *Surgery, Gynaecology and Obstetrics* Aug., 1935, (2) Wolfe, J. J., *Chinese Medical Journal* July, 1936. These articles were based on a large series of cases seen at the Peking Union Medical College and upon experimental work done at the same institution.

The disease arose from infection about an impacted third molar unusually common among these people. It arose spontaneously—that is, none had had extraction of the tooth at the time of admission to hospital. The signs on admission were besides swelling of the tissue and fever, (1) loosening of the teeth as far as and including the first premolars, (2) hypoaesthesia of the lip. This latter sign was found long before bony changes were demonstrable by x-rays, and could have been caused only by pressure in the mandibular canal.

At operation involvement of bone was seen to extend as far as the mental foramen, the site at which anastomosis with the mandibular artery occurs. Usually the external plate only was involved, but when pus had burrowed under the periosteum of the internal plate this latter also was involved. Operation consisted in removal of the entire outer cortex, removal of the involved teeth, suturing of the gum margins, and packing the wound wide open. Interdental splinting of the jaws was done as a precautionary measure.

Experiments on dogs were divided into two series. In one the external periosteum was stripped from the bone and a cotton saturated culture of mixed staphylococcus, *Streptococcus haemolyticus* and *indans* was packed between the periosteum and the bone. None of these animals developed osteomyelitis. In the second group the pulp chamber of the last molar tooth was opened widely. Through the root canal, which in dogs communicates freely with the mandibular canal, a pledget of cotton saturated with a similar culture of organisms as above noted was packed well down into the mandibular canal. Most of these animals developed osteomyelitis with bone involvement similar in every way to the disease in man. Thrombosis of the mandibular vessels was always present in these animals.

It was concluded that invasion of the mandibular canal and thrombosis of the mandibular vessels were the essential factor in the pathogenesis of mandibular osteomyelitis. The use of penicillin post-operatively as described by Mr Mowlem is a valuable addition to the method of treatment—I am, etc.,

JOHN J. WOLFE  
Major Medical Corps U.S. Army

### Timing of Schafer's Method

SIR—A visit to a military hospital, where the registrar kindly provided me with copies of *Amendments to R.A.M.C. Training* 1935 cleared up the question of the timing of Schafer's method therein given. Before Aug. 1940, the timing given was exactly as quoted in my letter of July 8 (p. 57). Brought out in Aug. 1940 *Amendments No. 6* altered the timing, making it identical with that given in *First Aid to the Injured* and the Royal Life-Saving Society's booklet. Dr Samuel Hales (Aug. 12, p. 224) is therefore correct, for uniformity does now exist and my letter of July 8 loses its point. Anyone ordering a copy of *R.A.M.C. Training* 1935, would be wise at the same time to order copies of all the *Amendments*, since these apparently are not otherwise provided.

By some confusion of thought Dr Samuel Hales describes my accurate quotation as 'misleading'. What really is misleading is the existence of different copies of the same manual some giving one timing and some the other. The reason for this is now clear. There must be hundreds of copies printed before Aug. 1940 in use for Home Guard training etc., and many others besides myself must have been misled. This correspondence should certainly help to clear up 'the erroneous impression which has been created'—I am, etc.

Crowthorne, Berks.

E. F. CHAPMAN

### Ascorbic Acid in Gingivitis

SIR—In the article by Stamm, Macrae, and Yudkio on the value of ascorbic acid in the treatment of gingivitis (Aug. 19, p. 239) they describe how the patients chew the tablets. Of course in spite of the N.C.O.s they get little or no ascorbic acid. The tablets are ground to a fine state the acid comes into intimate contact with the  $O_2$  of the air, and, being a strong reducing agent, is immediately oxidized. It is not sufficient to administer a therapeutic agent, it must be shown to be absorbed, and there are other factors, even if the tablets are swallowed whole, which interfere with its absorption—e.g., the pH of the gut and the presence of tannic acid from tea or coffee. Therefore, until its absorption is proved there are no grounds for claiming that it is useless (McMillan and Inglis, *ibid.*, p. 233 and annotation on dehydration)—I am, etc.,

E. P. EVANS

### Lay Psychotherapy

SIR—Your correspondent the Rev Horace Dowling has called attention (Aug. 12, p. 225) to the apprehension naturally felt by many members of the general public as to the dangers of psychotherapy when administered by untrained personnel. But he appears to fall into the error commonly assumed by all those outside the medical profession that the magic letters after a doctor's name confer magic powers, and that all that a doctor says or does is good. But doctors themselves would be among the first to agree that in the training of the ordinary medical student who later graduates into the ordinary family

ment in favour of the rejection or early elimination of the vulnerable. There is no doubt whatever that those who do succumb show a high concentration of certain ominous points, such as a poor work record, compared with those who do not. According to certain investigations that have been made in the Navy, the proportion showing these ominous points amounted (with the technique used) to roughly 60% of psychiatric in-patients and 50% of psychiatric out-patients, as compared with only 15% among "normal" sailor controls. Yet naval psychiatrists keep 9 out of 10 of the men referred to them as out-patients at duty and send back to duty 2 out of 3 of their in-patients. Moreover, the relapse rate as judged by readmission to hospital does not seem unduly high. Thus, according to an investigation made last year, psychiatric cases were being returned to duty from hospital at about 5 times the rate that relapsed cases were being readmitted, and about half of these relapsed cases had remained outside hospital for more than 6 months. Finally, of those that are invalided for psychiatric disorders, two-thirds have survived in the Navy for over a year.

The significant thing about these findings seems to be that although a high proportion of those who break down not only give a past history which suggests their predictability as bad psychiatric bets, but also show that they were bad bets by having broken down, yet it is still possible to send the majority of them back to duty and to retain a relapse rate that seems reasonably small. This is, of course, not to doubt the desirability of selection procedures. The standard adopted for rejection or early elimination must naturally depend upon the available man-power; but a number do remain who should be rejected, no matter what the man-power position may be. It seems doubtful, however, whether in the Navy the proportion that should certainly have been rejected or eliminated amounted at most to more than 1 to 2%. This may seem a small number, yet the trouble these men cause is out of all proportion to their actual numbers, when considered in terms of hospital treatment, inefficiency, letting down others, and impairing morale. A great stand-by in the Navy has undoubtedly been the self-selection consequent upon men expressing a naval preference at the time of their call-up, for reluctant dragons do not make the best fighting material.

It seems reasonable to conclude that many "bad psychiatric bets" give very fair service before they break down and are also capable of giving further fair service after they have done so. These facts should counteract any undue pessimism that may exist as to the capacity of the neurotic to stand up to the stress of war. There can be little doubt that an additional factor inducing unwarranted pessimism is the abnormal or at least different situation that occurs in shore establishments, and particularly in hospital, compared with life afloat. The picture seen in hospital is especially misleading, and makes a correct assessment extremely difficult.

#### Treatment

Apart from the real, though limited, place that exists for pre-selection, probably the most that would be desirable prophylactically would be a warning to survivors and others going on leave from sea that anxiety would be experienced temporarily and should not be misinterpreted as illness. The vast majority of men, however, deal with their experiences quite adequately without outside help, and certainly any prophylactic "pep talks" of the above kind should be given by executive officers and not by medical men.

Once a pathological tension state has become established it must be dealt with either by reducing the tension or by raising the tempo. The latter can be accomplished by an early draft to sea before habituation, including doubts about future capacity, has occurred. Failure may result if the ship lies in harbour for too long a period.

Reduction of tension can be produced by sedation, and the barbiturates are eminently suitable for this purpose. Tremulous agitated patients should be put to bed, and 48 hours' sedation will make discharge to hospital unnecessary in the overwhelming majority. The average case seen as an out-patient in a naval depot shows a steady decrement of tension at a rate which is extraordinarily consistent. The administration of phenobarbitone in three doses of half a grain daily for one week,

followed by the same dose twice daily for two weeks, usually brings about clinical recovery. With the other factors in treatment and management this paper is not primarily concerned. It may be worth noting that what medical men now effect with barbiturates humanity has accomplished for hundreds of years with the aid of alcohol. It is a sobering reflection that humanity was abstracting its pent-up emotions in parties with the aid of alcohol long before narco-analysis and group therapy were introduced for the same purpose.

"All theories are crutches, not sceptres or wizards' wands," and it is not suggested that the concept of post-operational strain that has been outlined is the whole story, but merely that it is perhaps a somewhat neglected part of it. Numerous other factors obviously help to make stress more tolerable and hence affect the incidence of neurosis, such as discipline, leave, mail, and the rapid solution of what are felt to be inequalities of treatment—to mention only a few. The Navy is, moreover, singularly fortunate in having a tangible object which is also a home around which group loyalty can centre—namely, the ship. An airman or member of the Tank Corps cannot feel about their contraptions in quite the same vividly personal way. Yet the life of a closed community, as in a ship, has its special dangers. Interesting browned-off (what the sailors call "chocker") paranoid reactions, rather similar to those seen among prisoners, may occur when the commission is too long or the ship is not a happy one. Dr. Johnson's dictum may be recalled: "No man will be a sailor who has contrivance enough to get himself into a jail; for being in a ship is being in a jail with the chance of being drowned." The rest of the quotation—"a man in jail has more room, better food and, commonly, better company"—is perhaps less acceptable.

There can also be little doubt that the group spirit and loyalty that exist on board ships are most potent factors in sustaining morale and that, conversely, the lack of this same group spirit and loyalty when a man leaves his ship and goes to a drafting depot is a most important factor in precipitating the breakdowns that occur there with so much greater frequency.

#### Summary

An endeavour has been made to show that psychiatric casualties attributable to operational stress occur most commonly after rather than during the stress.

Thus it has been pointed out that the psychiatric sickness rate is very much greater ashore than afloat.

The thesis is submitted that this is often due to a persistence of the physiological increase in tension developed at sea and rendered obtrusively uncomfortable by the suddenly reduced tempo on coming ashore; the reaction being analogous, in slow motion, to the normal experience of feeling worse after danger than during it.

While unworthy motives play an important part in perpetuating their role in producing the state can easily be over-estimated.

While pre-selection has a definite value, the practical importance of selection procedures is much modified by the fact that a substantial majority of psychiatric casualties can be returned to full duty.

Symptomatic relief often follows reduction of tension by sedation and increasing the "tempo" by early draft to sea before habituation has occurred.

## SCHICK REACTIONS IN RECENTLY CONFINED WOMEN AND THEIR INFANTS

BY

G. PAYLING WRIGHT, D.M., F.R.C.P.

AND

W. M. CLARK

(From the Department of Pathology, Guy's Hospital Medical School)

It is now generally recognized that the resistance of newborn infants to diphtheria depends chiefly upon the presence of maternal antitoxin through the placenta during the last part of gestation. So readily can this antibody enter the fetal circulation that at birth its concentrations in the serum of mother and infant are almost equal. From early childhood onwards any insufficiency in the concentration of circulating antitoxin to ensure immunity to clinical diphtheria may be readily demonstrated by a positive reaction in the Schick



doctor, there is little time for psychotherapy, and that therefore the untrained doctor is just as much a danger to the community as an untrained layman. Your correspondent draws a distinction between those who are skilled in psychotherapy and those who are unskilled, but fixes the dividing line between the sheep and the goats at the qualifying examination for medical degrees. Surely the only criterion in this matter is whether a psychotherapist has been trained in psychotherapy. The case for restricting the practice of psychotherapy to the medical profession alone is rapidly losing support, and the view is gaining ground that psychotherapy, like dentistry and massage, demands a special training on its own account, and that this training might quite properly be given independently of medical qualifications.

There are many highly skilled psychoanalysts whose results both clinically and in research are as satisfying as those of any medical psychologist. Among them are Mrs. Melanie Klein and Dr. Susan Isaacs, neither of whom holds medical qualifications, the supreme value of whose pioneer work, particularly in the psycho-analysis of children, is fully recognized by all medical men who are acquainted with it. All lay analysts who are recognized by the Institute of Psycho-Analysis are under covenant not to accept patients for treatment except from a medical man. In this respect they are exactly on a par with chartered physiotherapists and other registered medical auxiliaries. The sweeping condemnation of all lay psychotherapy should therefore be modified to exclude those responsible practitioners who, although unqualified in the medical sense, have devoted their life-work to the specialized knowledge necessary for this branch of healing.—I am, etc.,

Hayle, Cornwall.

D. STANLEY-JONES.

### The Surgeon and the Anaesthetic.

SIR,—I have read with interest the letters of Drs. Ayre and Westell (Aug. 19, p. 254). One point seems to have been overlooked: if a patient dies on the operating table the only person held responsible by the coroner at an inquest is the anaesthetist. It is therefore the duty of all anaesthetists to place themselves in such a position that they can answer two questions: (1) Was the anaesthetic the right one for the patient and type of operation? (2) Was the anaesthetic administered with due skill? Thus all anaesthetists must judge each case on its merits, and not be provoked by the surgeon into giving an anaesthetic which makes the surgeon's task easier at the expense of the patient.

Skill can only come from experience, and too much should not be expected of a newly qualified man. I always answer a surgeon who asks me to push the patient deeper by asking if I can change places with him.—I am, etc.,

Birkenhead Municipal Hospital, Cheshire JOHN HERBERT HANNAN.

### The D.P.M. Examination

SIR—The letter from my anonymous colleague "Major, R A M C, Senior Psychiatrist" (July 15, p. 102), raises a matter of much interest and importance.

The D.P.M. examination has certainly acquired an excessively neurological bias. The origin of this is a matter for speculation. Is it the reaction of the older school against the concept of the "disembodied mind" held by some analytical psychiatrists, or is it a guilt reaction on the part of those who have sought to cure cerebral tumours by psychotherapy? Possibly the explanation lies in the fact that there is no diploma in neurology.

The present form of the neurological examination appears to be designed to test the candidate's ability as a specialist in neurology. An understanding of the relationship between organic and psychogenic factors in such conditions as epilepsy and migraine, and an appreciation of the psychological manifestations of certain neurological disorders, are certainly of importance to the psychiatrist, but is neurology otherwise any more important than other branches of general medicine, of which a psychiatrist needs a full knowledge but which are entirely ignored by the D.P.M.?

Your correspondent's remarks on "psychiatry, psychology, or mental deficiency" and again "psychological medicine or mental deficiency" call for comment. Surely the study of mental

deficiency is an integral part of psychological medicine or psychiatry, and not a subject apart; Army psychiatry alone suffices to illustrate this point. "Mental deficiency" has too long been envisaged as a matter of clinical oddities such as epiloia and naevoid amentia by those with little experience in the subject, whereas its immense sociological importance lies rather in the recognition of behaviour disorders and social inadequacy due to constitutional causes or to disease or injury in childhood.

The ideal pattern for the final part of the D.P.M. examination would appear to be an extension of that proposed by the Royal Medico-Psychological Association immediately before the war. There should be a paper and viva covering all branches of psychiatry and those aspects of neurology, endocrinology, etc., which have a direct bearing on the subject: then there should be a further paper and viva designed to test the candidate's more intimate knowledge of the particular branch in which he has had special experience. The examiner in the special part of the examination should be a psychiatrist experienced in that particular branch. Subjects such as psychosis, psychoneurosis, mental deficiency, delinquency, and child guidance could each be dealt with in this manner.—I am, etc.,

Aberystwyth.

C. GUY MILLMAN,  
Major, R A M C.

### Ministry of Health's Social Survey

SIR,—In an answer by the Minister of Health to a question put simultaneously by General Clifton Brown and by myself (*Hansard*, Aug. 3, col. 1643) and reproduced in your issue of Aug. 19 (p. 257), the Minister justifies the procedure criticized by us on the ground that "the survey is providing information which is essential to a proper understanding of health statistics, and which cannot be attained in any other way."

The procedure is described in greater detail in the monthly bulletins of the Ministry of Health for April, May, and June, 1944. It would seem that under this procedure lay visitors descend upon selected members of the public and submit a questionnaire designed to ascertain the incidence of illness and injuries. The questionnaire includes inquiries as to the character of the past illnesses—usually self-diagnosed—of the persons visited, and further inquiries as to the number of visits made, either at their homes or to doctors' houses, by the family practitioner in charge of the patient. No reference would seem to have been made to the doctors concerned in checking either the diagnoses or number of visits alleged to have been made.

In certain well-attested instances the visitor, zealous to acquire merit with the Ministry, has insinuated that the patient would receive much better attention under the proposals for the future medical service outlined in the White Paper. The value to "a proper understanding of health statistics" of data so compiled would seem questionable. The report of the survey is contributed by the medical statistician to the Ministry of Health, a salaried Civil Servant whose experience of medical practice would seem to have been negligible, but no other check of the returns thus made would appear to have been carried out.

This method of survey seems to have been initiated by the Ministry of Information when Mr. Duff Cooper was the Minister, and the description of the persons thus employed as "Cooper's snoopers" contributed materially to the demerit of that effort under the storm of ridicule which followed in Parliament and in the Press.—I am, etc.,

House of Commons.

E. GRAHAM-LITTLE.

### The G.P. and Service Medicine

SIR,—In spite of the lapse of time I feel that a few words on the above subject by a former G.P. would not be amiss. It is a peculiar fact that so far all the letters, with the exception of one from a civilian colleague, have been from specialists. Now specialists in the medical services, though not given such a great degree of variety, do have the opportunity to practise their specialty to a greater or less degree. But in what branch can the G.P. take his place? The usual answer is as an R.M.O. Granted, the "joy and spirit of comradeship," as Major Kean says, will be there, unless the M.O. is an obvie-

## The Services

### CASUALTIES IN THE MEDICAL SERVICES

Squad. Ldr. ROBERT GORDON SHARP GRANT, who was killed on June 6 on the Normandy beaches, aged 32, studied medicine at Edinburgh University and graduated M.B., Ch.B. in 1938. After holding house appointments at the Royal Infirmary, Edinburgh, and Seafield Maternity Hospital, he was appointed to a commission in the medical branch of the Royal Air Force Volunteer Reserve on June 25, 1940.

*Died of wounds.*—Major R. R. Maitland, R.A.M.C., Lieut. W. H. Black, R.A.M.C.

*Wounded.*—Temp. Lieut.-Col. W. J. Young, I.M.S.; War Subs. Capt. M. S. Howe, W. R. C. Lang, and R. J. Waugh, and Temp. Major E. R. Smith, R.A.M.C.

*Missing.*—Capt. R. A. B. Kinloch, R.A.M.C.

### DEATHS IN THE SERVICES

Surg. Rear-Adml. GUY LESLIE BUCKERIDGE, C.B., O.B.E., who died in London on July 14, was born in 1877 and qualified M.R.C.S., L.R.C.P. from Guy's Hospital in 1903, and then joined the Navy as a surgeon. He served at Osborne and at sea in the last war, afterwards became Deputy Director-General of the Medical Department at the Admiralty, and was later in charge of the Royal Naval Hospital, Haslar, retiring in 1937. During the later years of his service he was Honorary Surgeon to the King. Admiral Buckeridge had joined the B.M.A. in 1920, and while at Haslar was elected an associate member of the Portsmouth Division. Dr. G. de Swiet sends the following tribute: The passing of Surgeon Rear-Adml. G. L. Buckeridge has robbed the Willesden No. 1 National Service Medical Board of its beloved chairman. It was a privilege to be ruled by such genuine kindness and amiability during these five weary years of stress and sorrow. The great responsibility of one's task was often lightened by "the Admiral's" perfect tact, unfailing good humour (in spite of indifferent health), and his broad-mindedness. He was an exceptionally well-read man, and for a medical man he possessed an unparalleled knowledge of European literature of the classical type, especially Russian and French. He was equally well versed in philosophy and history, and a brief chat with him on any of these and any other subject—between the "cases"—went a long way towards relieving the inevitable pressure and monotony of work. When occasion occurred he was ready to wield a subtle and satirical pen, raised against harshness or incompetence. He was incapable of arousing enmity, for he was disarmingly quick in admitting an error and making amends. His frail physique and gentle yet worldly manner gave one infinitely more the impression of a courtier than of a sailor. Both doctors and clerks have the sense of a deep and irreplaceable loss.

## Medical Notes in Parliament

### Cancer: Service Pensions

In the House of Commons on July 25 Mr. LIPSON drew attention to the refusal of the Minister of Pensions to grant pensions to two men who had been discharged from the Services suffering from cancer. Sir WALTER WOMERSLEY, replying, said he must take the consensus of medical opinion in arriving at a decision whether a certain disease was due to or had been aggravated by service. It was inevitable that cancer might, from time to time, show itself during service, and his Department had to consider whether or not service had played any part in its onset or development. Although the actual cause of cancer was not known, there had for a long time been a general medical agreement on certain conditions which might possibly be related to its onset and also on other conditions which were certainly not so related. The Medical Research Council, at the request of his Department, convened a conference of experts, which gave comprehensive advice on the conditions affecting different forms of cancer and the sites in which they occurred, and this advice could be taken as constituting a consensus of medical opinion. It was, in general, to the effect that it was only in exceptional cases that the development of cancer might possibly be attributed to, or influenced by, a previous injury or disease arising out of war service, and certain criteria were laid down as affording a basis for decision. Each case of cancer was considered by his Department in the light of this advice, and, although it had not been possible to accept the vast majority of cases, yet, in an appreciable number, where a reasonable doubt could be said to exist, entitlement had been conceded. So it was not true to say that the Ministry had not granted pensions even for cancer if circumstances warranted it.

Colonel CLARKE asked if failure on the part of a medical officer to diagnose cancer, with the result that the man was treated wrongly and lost his life, was not considered an aggravating cause. He said he had heard of cases where men had been wrongly diagnosed, had been treated for something else, and had died. Sir WALTER WOMERSLEY: If it were a case of wrong diagnosis and that was shown to me clearly as the reason for a man's life being shortened, it would be a case for pension.

### Finance of the White Paper

Replying in the House of Lords on July 20 to a debate on the cost of social reform, Lord WOOLTON said that to maintain a higher standard of health the country would have to find for the early years of the National Health Service, £148,000,000 a year from rates, taxes, and contributions from the Insurance Fund. Before the war the cost to public funds was £61,000,000. Of the increase, some £40,000,000 must be reckoned as transferred from one type of payment to another. Some of the remaining difference must be attributed to the rise in price. At current rates of absence from work through sickness the loss might amount to £280,000,000 per annum. Present rates of absenteeism were high as a result of long hours, the number of married women in industry, and the withdrawal of younger men to the Forces. The loss which might be expected in a year after the war was £180,000,000 unless the standard of health could be improved. The expenditure proposed in the White Paper on the Health Services would, he believed, prove a profitable expense.

*Inquiry into Veterinary Practice.*—Mr. Robert Hudson Mr. Tom Johnston have appointed a committee to inquire into extent and effect of veterinary practice in Great Britain by persons who are not registered veterinary surgeons and to make recommendations as to any measures which may be desirable to limit or regulate such practice. Its members are: Sir John Chancellor (chairman), Mr. A. C. Brown, Sir Daniel Cabot, Mr. J. W. Salter-Chalker, Mr. Charles Dukes, Prof. James Gray, Mr. C. M. Holmes, Mr. W. F. Holmes, Mr. Robert Hobbs, Mr. W. D. Jackson, Sir Louis Kershaw, and Lieut.-Col. P. J. Simpson.

*Penicillin: Large-scale Manufacture.*—On July 25 Mr. SALT asked the Minister of Supply whether, in view of the desirability of removing all obstacles to the rapid development of the large-scale manufacture of penicillin, he would now agree to permit full publicity with regard to the methods of manufacture and withdraw those objections hitherto raised on security grounds. Mr. CHARLES PEAT, who replied, said he was not aware that large-scale production of penicillin was being impeded through lack of information. The general method of manufacture had been published in the technical press.

*Blind Persons in Industry.*—On July 25 Mr. THORNE asked the Minister of Health the number of blind persons in the United Kingdom, how many were fully employed, and what reports he received on the degree of satisfaction given by them at the places of employment. Miss HORSBROUGH said that on March 31, 1943, the latest date for which figures were available, the number of registered blind persons in the United Kingdom was about 90,000. About 10,000 were employed or working on their own account, but some of these (perhaps 1,000) were part-time workers only. She was informed by the Minister of Labour that the reports on blind persons engaged in ordinary industry were very satisfactory.

*Intelligence Tests for Army.*—On July 25 Sir JOHN GRAHAM KERR asked the Secretary of State for War whether, in view of the increased recognition of the importance of a high standard of powers of observation and of general mental alertness, he would institute adequate examination tests in these for all candidates for commissions in the Army. Sir JAMES GRIGG said that all recruits on entries in the Army and all candidates for commissions were given intelligence tests which measured their mental alertness. Candidates for commissions who passed through War Office Selection Boards—this covered all but a small number who were commissioned directly into technical arms—were given practical tests which measured their powers of observation and their mental alertness. The importance of these qualities was fully appreciated.

*Output and Working Hours.*—Mr. ROSTRON DUCKWORTH on July 27 asked Mr. Attlee whether, as the report of the Industrial Health Research Board could not state whether reduced working hours increased or decreased output, he would arrange for the Medical Research Council to continue its investigations along the same lines. Mr. ATTLEE said the Industrial Health Research Board of the Medical Research Council proposed to investigate this subject further as opportunity permitted. It had been firmly established that, except for brief periods of special emergency, working hours in manual operations should not exceed 60 to 65 for men and 55 to 60 for women. The point not yet decided conclusively was whether reduction of working hours below those limits had a further beneficial effect measurable in terms of output. The report indicated the practical difficulties in reaching a clear decision on this question by investigations carried out under the unstable conditions of wartime.

### Notes in Brief

The committee appointed by the Medical Research Council to investigate jaundice has collected much information, but the causes of the disease are still not fully known. Research is being continued.

misfit, but as soon as the relief from overwork in wartime general practice is over, and indulgence in extra alcohol and short hours have served their turn, the G.P. wants to get back to the work for which he has been trained. Regimental work does not give him this; the excitement of action is probably less than 5% of his service, the remaining 95% is boredom—the usual percentage of any war. An R.M.O.'s duties, besides inoculations, inspections, and advising the C.O. on a few aspects, consists of "knowing his men" and seeing them on sick parade, when any sick must immediately be sent to hospital as the equipment provided lacks the essentials for diagnosis—auriscope, microscope, sphygmomanometer, etc. To get to know his men well is difficult because he holds a commission, and to increase further the mistrust is his "friendliness" with the C.O. In addition, the wife, family, and home surroundings are unknown except through censorship.

In the absence of enemy action G.P.s suffer from intense boredom after about a year unless their interest in medicine has lapsed. Being a C.D.O. in a base hospital is often little better than being a third-year dresser in the medical or surgical wards and little responsibility is given him, the M.O., unless a "specialist," being incapable of making a diagnosis or prescribing treatment without supervision. It is better, I believe, to be in an advanced hospital centre. Another alternative is to become a soldier in a collecting unit, and see even less medicine in a job which could often be carried out satisfactorily by an infantry officer with first-aid training. A further alternative is to become an administrative officer—second in command of a hospital, etc.—and see no medicine at all, unless the specialists are interfered with. Finally, the only way a G.P. can hope to do any medicine is to become a graded specialist, often in a subject in which he is not keenly interested but which is the least of the "evils."

These few remarks, in my opinion, more truly represent the G.P.'s view than those previously published. The inevitable result of either an Army or a State service is the abolition of the "family doctor," and in his place a sergeant of the R.A.M.C. referring the majority of cases to dozens of specialists of lower qualifications than is the case at present.—I am, etc.,

D. S. PIPER,  
Capt., I.M.S., I.A.M.C.

Bombay.

### Seeing is Believing: Medical Films

SIR.—The annotation on seeing is believing (Aug. 26, p. 281) invites a reply. The Medical Standing Committee of the Scientific Film Association is ready to answer the query: "Who is to sponsor such films, and with what immediate and remote objects?" This standing committee is ready for the following immediate duties: (1) to "sponsor" medical films of approved quality, both medical and photographic; (2) to "appraise" medical films, and especially those for instructional use; (3) to provide, in fact is in the process of forming, a "nuclear" library of medical films; (4) to receive answered questionnaires with details of such films, so that all selected can be catalogued in a central medical film library as soon as possible after the cessation of hostilities; (5) to help with suggestions as to the making of medical films; (6) to arrange for the exhibition of such films.

We greatly hope that every medical practitioner who has made a medical film will write at once to Dr. Seymour Reynolds, 14, Hopton Road, Streatham, S.W.16, for a copy of the medical film questionnaire. The matter is really urgent, and we ask for prompt co-operation.—We are, etc.,

W. MCADAM ECCLES,  
Chairman.

S. J. REYNOLDS,  
Hon. Secretary.

Medical Standing Committee of the Scientific Film Association.

P. G. Boman (*Ann. intern. Med.*, 1944, 20, 779), who records seven cases of primary carcinoma of the jejunum and ileum, states that this condition is relatively rare and difficult to diagnose. Adenocarcinoma of the annular constricting type is the commonest variety. Few cases are diagnosed before obstruction symptoms have appeared and metastases are present. Careful evaluation of early symptoms, a thorough x-ray examination of the small intestine and exploratory operation are needed to improve on present results.

## Obituary

G. W. FITZ-GERALD, M.D., F.R.C.O.G.

Dr. Gordon William Fitz-Gerald, O.B.E., T.D., who died on Aug. 18 at West Didsbury, Manchester, aged 72, studied medicine in Edinburgh, Paris, and Dublin, graduating M.B., C.N.Ed. in 1898, taking the L.M. of the Rotunda Hospital in 1899, and proceeding M.D. in 1901. After holding the post of senior assistant master at the Rotunda he began gynaecological practice in Manchester, and was elected to the honorary surgical staff of the Clinical Hospital for Women and Children—now the Northern Hospital; later he was appointed to the specialist staff of the Manchester Municipal Hospital, and lecturer to the nurses there.

Dr. Fitz-Gerald became well known as a consultant and writer on his special subject, taking part in the local scientific meetings, and was for a time president of the North of England Obstetrical and Gynaecological Society. He also acted as examiner for the medical degrees of Durham University and for the School of Medicine in Cairo. He was one of the first to be elected F.R.C.O.G. in 1929, in which year he held office as vice-president of the Section of Obstetrics and Gynaecology at the Annual Meeting of the B.M.A. in Manchester. For many years he was a prominent member of the Northern Counties Lawn Tennis Club and of the Didsbury Golf Club, becoming president of each. He was also one of the best-known croquet players in the district, and will be remembered by many onlookers for his skill in this most deliberate of all outdoor games. In 1917-19 he was in command of the Fusehill Hospital, Carlisle, with the rank of lieutenant-colonel, R.A.M.C.(T.), and during the present war he was for a time in charge of the Didsbury Military Hospital. His chief contributions to medical literature were on post-partum haemorrhage and malignant disease of the vagina and cervix.

H. ALEXANDER FRANCIS, M.B.

Dr. Alexander Francis of Wimpole Street, who for many years practised as an asthma specialist in London, died at West Hoorly on Aug. 13. He was born at Brisbane on Aug. 11, 1863, the third son of Arthur Morley Francis, a police magistrate and member of the Legislative Assembly of Queensland.

He was educated at Brisbane Grammar School and entered St. John's College, Cambridge, in 1883. At Cambridge he was captain of the Lady Margaret Boat Club, won the Pearson and Wright Sculls, and rowed in the university trial eights. He entered St. Bartholomew's Hospital in 1886, where he worked under Sir William Savory, Howard Marsh, and Dr. James Aodrew. In his autobiography *Then and Now* (Chapman and Hall, 1935) he gives a most interesting account of Savory and his opposition to Lister. It was, however, working as clinical assistant to his cousin, Dr. Greville McDonald, at the Throat Hospital, Golden Square, that he first became interested in what was to be his life-work. He took the M.B., B.Ch.(Cantab.) in 1890, intending to return to Queensland. But before doing so he was told that the Cambridge degree was practically unknown in the Colonies, and if he did not take the M.R.C.S., L.R.C.P. people would think he was not properly qualified. So he also took the Conjoint diplomas in 1890. For two years he was in charge of hush hospitals in the back blocks of Queensland, where he was the only surgeon, physician, and obstetrician for an area of 100 square miles. It was an experience which he always said was of inestimable value to him in later life. Then he started in Brisbane as an ear, nose, and throat surgeon, at that time an almost unknown specialty. It was here that he first became interested in asthma, and in his autobiography he gives a vivid account of how the treatment, later associated with his name, originated.

On a visit to England in 1902 he read a paper at the Clinical Society on the treatment of asthma which caused much interest and not a little hostile criticism. His results, however, were so impressive that he was encouraged to return to practice in this country: he did so, and for the next 40 years practised in the Harley Street area, expounding his views on the aetiology, symptoms, and treatment of asthma at meetings of the British Medical Association, in the medical journals, and in two books *Asthma in Relation to the Nose* (1903) and *Asthma and its Treatment* (1932). He held the view that asthma is a disturbance due to instability of the vasomotor system, and that symptoms are caused by swelling of the bronchial mucosa, thus narrowing the lumen, and not by spasm of the bronchial musculature—the usual explanation. The rapid

## MEPACRINE FOR MALARIA

We print below a statement on the present position of mepacrine in the treatment of malaria which has been issued by the Medical Research Council Committee on Malaria.

In view of the great importance of malaria for warfare in the Far East and also in the Mediterranean region, a great deal of work has been carried out during recent years to evaluate the relative merits of the two chief antimalarial drugs available at the present time—namely, mepacrine (atebrin, quinacrine) and quinine. The conclusions reached are shown by the resolutions (reproduced below) which have recently been adopted by the appropriate official bodies in the United States and in this country.

According to the *Journal of the American Medical Association* (1944, 125, 977) the Board for the Coordination of Malarial Studies adopted the following resolution concerning the relative value to the armed Forces of mepacrine (quinacrine hydrochloride U.S.P.), quinine, and totaquine (U.S.P.).

"On the basis of controlled quantitative studies in civilian, Army, and Navy establishments, the evidence at hand justifies the following statement:

1. *In the Suppressive Therapy.*—Mepacrine (atabrine) has proved to have all the antimalarial properties ascribed to quinine in the suppression of malaria during and subsequent to exposure to infected mosquitoes. Effective suppression can be accomplished over long periods of time by proper use of mepacrine. Available evidence indicates that this end may be achieved without danger to the individual. Earlier reports indicated a significant incidence of gastro-intestinal disturbances in certain groups of men receiving suppressive mepacrine therapy. For practical purposes these adverse reactions can be avoided by proper administration of the drug. Quinine, in doses adequate to assure suppression of malaria equivalent to that produced by mepacrine in the dosage currently used by the armed Forces, is frequently attended by symptoms of cinchonism. Mepacrine has been demonstrated to prevent consistently the development of falciparum malaria when the drug is administered in proper dosage before, during, and after exposure.

2. *In the Therapy of the Acute Attack.*—Experience in the past two years has demonstrated conclusively that mepacrine (atabrine) when properly administered is fully as effective as quinine in the termination of the acute attack and is safer than quinine. The intramuscular injection of mepacrine is highly effective in securing a rapid therapeutic response. Evidence is not at hand to decide on the relative merits of mepacrine administered intramuscularly as compared with quinine administered intravenously in patients with fulminating cerebral malaria.

3. *In the Therapy of Vivax Malaria.*—Neither mepacrine nor quinine can be relied on to prevent relapses in vivax malaria following the discontinuation of therapy, although the interval between attacks is significantly longer following mepacrine than following quinine in the dosage schedules currently used by the armed Forces.

4. *In the Therapy of Falciparum Malaria.*—There is convincing evidence that mepacrine not only suppresses the clinical symptoms of falciparum malaria but also cures this malignant form. The evidence of a similar curative effect of quinine is not conclusive.

5. *Totaquine (U.S.P.).*—Because of its content of crystallizable cinchona alkaloids, totaquine (U.S.P.) has activity which approximates that of quinine and therefore can be used as a substitute for quinine when given orally. The antimalarial activity of totaquine (U.S.P.) is dependent on the amount of crystallizable alkaloids in the preparation rather than on the specific amount of each individual alkaloid. Gastro-intestinal disturbances occur more frequently following the use of the present totaquine (U.S.P.) than they do following the use of quinine or mepacrine.

On the basis of the foregoing statement it is resolved:

1. That no advantage, and possible disadvantage, would accrue to the armed Forces were quinine or totaquine to replace mepacrine for the routine suppression and treatment of malaria.

2. That the large-scale production of quinine or totaquine is not now considered a matter of importance for the management of malaria among Army and Navy personnel. It is possible that a supply of totaquine in excess of the present stockpiles may be required for therapy in civilian populations temporarily under the jurisdiction of the armed Forces in occupied territory where immediate dissemination of informa-

tion concerning the use of mepacrine (atabrine) is not practicable. In this connexion it should be kept in mind that after the war the overall need for all established antimalarial drugs will continue to be great."

The personnel of the Board is: R. F. Loeb (chairman), W. M. Clark, R. G. Coatney, L. T. Coggeshall, F. R. Dieulaide, A. R. Dochez, E. G. Hakansson, E. K. Marshall jun., O. R. McCoy, R. T. Norris, W. H. Sebrell, J. A. Shannon, and G. A. Carden jun. (secretary).

This resolution was considered by the Drug Prophylaxis and Therapy Subcommittees of the Medical Research Council Committee on Malaria at a joint meeting on Aug. 23, 1944. (The personnel of these subcommittees is: Major-Gen. A. G. Biggam (chairman), Brig. F. A. E. Crew, Col. S. P. James, Dr. W. D. Nicol, Lieut.-Col. B. Maegraith, Col. C. S. Ryles, Mr. P. G. Shute, Brig. J. A. Sinton, Air Marshal Sir H. E. Whittingham, Dr. F. Hawking (secretary). The various items were discussed, and it was agreed that British experience, and the extensive investigations carried out in Australia under the direction of Brig. N. Hamilton Fairley, led to the same conclusions as those which had been reached in America. In particular, the subcommittee endorsed the resolution that if quinine or totaquine replaced mepacrine for the routine suppression and treatment of malaria the change would not be advantageous and might possibly be disadvantageous.

It is not possible during wartime to disclose all the extensive investigations upon which these official American and British resolutions concerning the relative merits of mepacrine and quinine have been based, but when peace returns full details will doubtless be published in the scientific press. Meanwhile the position may be summed up by saying: Under proper administration mepacrine is no more liable to cause serious toxic effects than quinine is; mepacrine is as effective as quinine in the therapy of vivax malaria, but neither compound will prevent relapses at a later date; mepacrine if properly given will practically always suppress and cure falciparum malaria, while the action of quinine in this respect is less certain.

Accordingly it must be realized that mepacrine is not an inferior substitute for quinine forced upon us by the loss of Java, but it is a more effective agent against malaria which would still be employed even if the supplies of quinine were unlimited.

## MEDICAL RESEARCH IN SOUTH AFRICA

The annual report for 1943 of the South African Institute for Medical Research, Johannesburg, tells of further expansion of the South African Medical Corps Laboratory Service. This organization now includes seven large and fifteen small laboratories, in addition to the two mobile units based on the institute for field duties. An innovation has been the posting of junior naval medical officers from H.M. hospital ships for short courses at the institute in tropical medical and allied subjects. Among the field units the snake-catchers' section, operating in the Komatiport area, caught from 50 to 75 cobras and puff adders every month to provide venom for the production of antivenene. The newly formed section of gerbil catchers, working in the Benoni-Middelburg area, caught approximately one thousand gerbils a month for the typhus vaccine department. By the end of the year the monthly production of vaccine was nearly 40,000 doses. Experiments in the prophylaxis of typhoid fever by the intradermal injection of typhoid vaccine proved satisfactory; this method uses less vaccine, and there is neither local nor general reaction.

Vitamin assays revealed that processed cheese is an excellent vehicle for fish-liver oils. The survey of vitamins in African foodstuffs, continued during the year, included the completion of the study of the thiamine content of maize, Kaffir-corn, and other cereals. It was found that the thiamine content of millet is extremely low. Among legumes, the beans to which the native population is especially addicted, notably the speckled sugar-bean and the njugo bean, were found to have the lowest thiamine content.

Mrityunjoy Mitra, ship doctor, has been appointed M.B.E. (Civil Division). The citation in the *London Gazette* reads:

When the ship was sunk by a raider, Dr. Mitra was taken prisoner and after being kept on the prison ship for two and a half months, was interned in prisoners of war camps in France and Germany. While he was on board the prison ship, Dr. Mitra acted as doctor for the 343 prisoners. During his detention in Germany he attended Merchant Navy personnel and in addition had 1,100 other prisoners under his care, mostly Orientals. Dr. Mitra showed exceptional devotion in undertaking this work voluntarily. There is little doubt that he did much to alleviate the sufferings of his fellow prisoners and to maintain general health in the camp, although his own health was so bad that it eventually resulted in his repatriation.

effect of adrenaline in reducing swelling seems to support this view of his, as does also its success in the associated condition of giant urticaria and angioneurotic oedema. His theory was that, by stabilizing the vasomotor mechanism, asthma in a large percentage of cases, particularly if the blood pressure was high, could be completely stopped; and that, moreover, when the vasomotor system had been stabilized the usual irritants no longer produced an attack. His method of treatment was to cauterize *lightly* certain asthmogenic spots on the mucous membrane of the nasal septum. By this means he obtained striking results over many years, and earned the gratitude of innumerable patients. He particularly emphasized the fact that the cauterization must be extremely light—a point overlooked by many who attempted to carry out his treatment.

Like his father, he was a pioneer. He was interested in every new advance in medical science, and kept in touch with modern thought. He was one of the oldest members of the B.M.A., one of the earliest presidents of the Queensland Branch, which he helped to found, and he was on the Central Ethical Committee for many years in London and on three occasions a member of Council. In his life he was almost selfless. He literally spent it in helping others. On his 81st birthday, two days before he died, he was still seeing patients. He was twice married, and is survived by two daughters and a son who is also an ear, nose, and throat surgeon.

J. J. A.

## W. KNOWSLEY SIBLEY, M.D.

We regret to announce the death of Dr. W. K. Sibley, consulting physician to the St. John's Hospital for Diseases of the Skin.

Walter Knowsley Sibley, the eldest son of the late Mr. S. W. Sibley, F.R.C.S., was born in 1862. He was educated at University College School and Pembroke College, Cambridge, where he took a degree in natural sciences. He received his medical training at the Middlesex Hospital, qualifying in 1886. He took the M.D.Camb. and the M.R.C.P. in 1891. He was house-surgeon at the Middlesex, and house-physician at the Brompton Hospital. At one time Sibley was lecturer to the London School of Dermatology and physician to the North-West London Hospital. He held office in many medical societies, being at one time chairman of the Westminster Division of the Metropolitan Counties Branch of the B.M.A. Among his publications were *The Treatment of Diseases of the Skin*, and articles in various medical journals on the same subject. "He was," a colleague writes, "a friendly, popular, and congenial colleague, a vivid and energetic personality; and to the end was keenly interested in all that appertained to his special subject. A keen tennis player, he played regularly at his club until well past his seventieth year."

We regret to announce the death on August 18 at Douglas, Isle of Man, of Dr. CHARLES SATCHELL PANTIN, O.B.E., consulting surgeon to Noble's Isle of Man Hospital and surgeon to the Governor's Household. Dr. Pantin studied medicine at Guy's Hospital, graduated M.B., B.S.Lond. in 1892, and took the M.D. and F.R.C.S. in 1894, after serving as house-surgeon at Guy's and house-physician and house-surgeon at the Victoria Hospital for Children, Chelsea. In September, 1896, he was appointed the first assistant honorary surgeon to Noble's Hospital under a new rule of the committee, and in 1906 he became full surgeon. During his long period of service on the visiting staff of the hospital Dr. Pantin established himself firmly in the affections and goodwill of his colleagues and the community, and no medical man in the island stood higher in the esteem of Manx people. He joined the B.M.A. in 1906, was elected president of the Isle of Man Branch of the Association last year, and had been acting honorary secretary of the Isle of Man Medical Society. During the last war he worked as surgeon to the Fargo Military Hospital. In 1936 his public services were rewarded by appointment as an Officer of the Order of the British Empire. Two of his five children entered the medical profession—Dr. Dorothy Pantin and Dr. Charles Guy Pantin.

The following well known medical men have died abroad: Dr. ARCHIBALD JOHNSTON BUIST, emeritus professor of gynaecology at the Medical College of Charleston, aged 71; Prof. CARL HEGLER, director of the St. George's General Hospital and extraordinary professor of internal medicine at Hamburg, aged 66; and Geh. San. Rat. Prof. HERMANN WEBER, formerly director of the Medical Department of the Lazarus Hospital, Berlin, aged 78; Dr. ERNST EDENS, the eminent cardiologist and professor of internal medicine at Dusseldorf, aged 68; Prof. FRANZ LINKE, director of the Institute for Meteorology and Geophysics at Frankfurt University, one of the leading German bioclimatologists; Dr. ENRIQUE A. BOERD, professor of obstetrics at the University of Buenos Aires; and Dr. MAXIMO M. CASTEIGTS and Dr. ARTURO MO. of Buenos Aires.

## The Services

Squad. Ldr. Ernest Reginald Brown, R.A.F.V.R., has been appointed O.B.E. (Military Division), and Corporal George Greenwood, R.A.F.V.R., has been awarded the B.E.M. (Military Division). The citation in the *London Gazette* reads as follows:

"In February, 1944, a Mosquito aircraft crashed and caught fire when approaching to land. The pilot was killed instantly, but the observer was alive, and rescue parties tried in turn to extricate him from the blazing wreckage. Party after party failed, and each attempt became more difficult owing to the increasing heat of the fire in the cockpit area of the wreckage. Eventually Squad. Ldr. Brown, the station medical officer, and Corporal Greenwood made a final and desperate effort as the situation had become critical because the supplies of food were exhausted temporarily and the fire remained unchecked for some minutes. If their effort failed it was clear that immediate amputation of the observer's leg was the only way by which he could be released. Displaying extreme courage, Squad. Ldr. Brown and Corporal Greenwood withstood the intense heat of the flames and, by the skilful use of the tools at their disposal, succeeded in breaking away the wreckage which was trapping the observer's leg. They then removed the airman to the ambulance. While first aid was being rendered, Squad Ldr. Brown returned to the wreckage to make certain that the pilot was not alive. This officer and airman displayed outstanding courage and determination."

## CASUALTIES IN THE MEDICAL SERVICES

Squad. Ldr. JOHN HENRY PERCIVAL GAUVAIN, M.B., B.Ch., was killed on Aug. 14 in a flying accident. He was born in August, 1915, studied medicine at Cambridge and St. Bartholomew's, qualified in 1939, and was appointed to a commission in the Medical Branch of the R.A.F.V.R. on Sept. 27, 1939. At the date of his death he was serving over-seas.

Reported missing.—Surg. Lieut. C. J. S. Green, R.N.V.R.

## DEATHS IN THE SERVICES

Major-Gen. GODFREY TATE, C.I.E., I.M.S., died on July 29 after a varied and distinguished career at the age of 71. He was educated in Belfast and at Trinity College, Dublin, where he graduated in medicine in 1896. In 1898 he took a good place in the entrance examination for the I.M.S., and during his early military service he was medical officer to an Indian cavalry regiment. He saw active service in China in 1900 and on the N.W. Frontier in 1903, with medals for each campaign. In 1913-16 he held the important post of surgeon to the Commander-in-Chief, India, and was civil surgeon in Simla during the next five years. In 1920 he was appointed professor of midwifery and gynaecology at the Lahore Medical College, where he found scope for his surgical abilities. On reaching the administrative grade he was successively Chief Medical Officer, N.W. Frontier Province, Acting Inspector-General of Civil Hospitals, Punjab, and Surgeon-General with the Government of Bengal, when he was promoted to the rank of major-gen. and was awarded the C.I.E. In these posts he proved to be an able and popular administrator, and in 1926 he was appointed to be an Honorary Surgeon to the Viceroy. His high qualities led to his being appointed in 1931 to be Governor and Medical Superintendent, King Edward VII Convalescent Home, Osborne, the first such appointment of a medical service officer other than those of the R.A.M.C., and he held the post with distinction for five years. He was also devoted to hunting, shooting, and golf. He will be missed by his many friends; his wife survives to mourn his loss.

## Universities and Colleges

## MCGILL UNIVERSITY, MONTREAL

A diploma course in tropical medicine is offered for the first time during the session 1944-5. Its object is to train medical graduates to deal with medical problems which may be met in tropical areas. The course is divided into several units, each consisting of approximately three months' work. Three units are required to qualify for the diploma. In this way the course will meet the needs of individuals with different previous training. A unit of three months in parasitology and tropical medicine is compulsory for all. Students who have recently graduated will be offered training in the out-patient departments of the hospitals associated with the University, and in the child welfare clinics. They will also have an opportunity to receive three months of practical experience in an approved hospital in the Tropics. This training will satisfy the requirements of a fifth year of professional training for students who wish to take the examinations of the Dominion Council. The course is also suggested as a refresher course for medical graduates who have been



months the amount hoped for in August had been maintained. He took responsibility for the arrangements made. The allocation was on a regional basis.

The decision on how that allocation should be used. Mr. Willink continued, was made by the university medical schools. Each school had set up its expert committee. Treatment was given in teaching hospitals and in other hospitals which had been approved for that purpose. Penicillin was not a drug which could be used with advantage in every type of disease. In some it might be the only means of saving life; in others an alternative to sulphonamides; in others it might be ineffective. Some doctors even asked for penicillin for use in cancer, mycosis fungoides, and chronic leukaemia, in which it was quite ineffective. It was only suitable in cases which were treated in a hospital or nursing home under continuous medical supervision. In an address last month Prof. Henry Cohen had said that doctors should deprecate public clamour by responsible and influential persons for the use of penicillin in an isolated case where large amounts might be necessary in treatment and where results were extremely doubtful, at the expense, perhaps, of several cases in which the use of penicillin would almost certainly turn the balance in the patient's favour. Advice issued by the Ministry of Health, based on that of a committee of experts from many fields, was contained in a memorandum on the conditions in which penicillin should be used and in others for which it should not be used. Recommended as *prima facie* suitable for treatment by penicillin were staphylococcal infections. These included septicaemia, early acute osteomyelitis, severe carbuncle, cavernous sinus thrombosis, or any other life-endangering infection. The second class for which use was recommended were haemolytic streptococcal, pneumococcal, and meningococcal infections and any life-endangering infection of the type which had failed to respond to adequate sulphonamide treatment. The third class was gas gangrene. It was, however, recommended that penicillin should not be used for rheumatic fever, ulcerative colitis or other intestinal infections, bacterial endocarditis, or syphilis. Reports from the hospitals indicated that supplies had proved sufficient for all suitable cases in the first group. There was no satisfying evidence at present on the effect of penicillin in the treatment of bacterial endocarditis. Some believed that if a patient seriously ill with this disease was given large doses he would show an immediate improvement, but that the condition would probably lapse and that more penicillin must be given. There was not yet evidence to show whether by continued treatment the patient could be definitely cured or kept alive. Mr. Willink announced that it was proposed to investigate the effects of penicillin on this disease and to see whether a method of application could be devised which was likely to be successful. The quantities allotted to his Department were being progressively increased. By January there would be twice as much available for civilian use as there was to-day. It would be wrong to use penicillin for our civilian population on a more lavish basis than the United States used it for theirs. Before the end of 1945 the penicillin available would meet all, or nearly all reasonable demands.

#### Planning for Social Security

Sir WILLIAM JOWITT on Nov. 2 asked the House to approve the intention of the Government, as declared in the recent White Paper, to establish an enlarged and unified scheme of social insurance and a system of family allowances. He said the Government had addressed itself in an effective manner to an intricate job. In the main the proposals were not new. Social insurance had long been an essential feature of the national life. The time had come for improvement of existing benefits and for the introduction of new ones on the lines of bringing everyone into the new scheme and of welding fragments into a comprehensive whole. The benefits were calculated actuarially, and the taxpayer would pay one-sixth of the various benefits, except for unemployment insurance, where he pays to-day and is to pay in future one-third. He would not pay toward the death grant, but would pay the whole cost of family allowances. The Government thought that the State should help parents to discharge their responsibility. They proposed that all pupils attending primary and secondary schools under the Education Department should receive, free of cost to the parent, school meals and milk up to the age of 16. Discussing the proposals for old age pensions, Sir William said that at present there were 16 persons over the retirement age to 100 contributors. In 50 years there would be 31. The cost would increase by £155,000,000. That was on the assumption that fertility and death rates would remain as to-day. If our medical services should improve and cures be found for some killing diseases, those figures would be falsified. The net result of the whole social scheme was that in the first

year the taxpayer or the ratepayer would bear 54% of the entire cost. By 1975 he would bear 67%.

Mr. GREENWOOD recalled that a few months ago the House had discussed a national health scheme. That was an essential part of the plan. There was still an enormous amount of preventable disease. He hoped the House would bring that fully into the picture at a later stage. Mr. JOHN GRAMSTON regretted that the scheme had been made compulsory. Many people had a conscientious objection to using a doctor. He objected to paying a death benefit of £20. The sole result would be to put up the cost of funerals. He objected to the abolition of the friendly societies, which had adequate arrangements for medical referees and sick visiting.

When the debate was resumed on Nov. 3 Mr. BUTLER said the Government had a positive policy for the young, partly included in the new Education Act. There were also additional benefits under the health plan and under this insurance plan. The Government was spending £57,000,000 of public money on cash allowances for children, excluding the first child, and £60,000,000 on free milk and meals at school. The family was expected to maintain the first child. Family allowances helped to take the strain where the number of children created an insufficiency injurious to health. The Government hoped that family allowances would result in an increase in the birth rate. But confidence made the birth rate rise and the plan as a whole would give greater confidence to our families. If a child entered hospital there would be no charge on the parents under the provisions of the school medical service, but the parents would continue to receive the family allowance. Despite the difficulties of the war the number of children taking their midday meal at school had risen in the last three years from 300,000 to 1,600,000. Little short of 14,000 canteens had been provided to serve 19,000 out of 23,000 schools. Milk had been provided in 27,000 schools. For the "under-fives" the Government would continue for the time being the national milk scheme and the provision of orange juice, cod-liver oil, etc., which had been part of the wartime plan. The Government could not pledge itself to continue the scheme after the war in exactly the same form as now. It asked for time to consider how the needs of the "under-fives" and of nursing and expectant mothers should be met when liquid milk was freely available. Provision in kind would ultimately cover the whole child population. The Government was convinced that it was impossible within the new unified scheme to use approved societies administering only the National Health Insurance part of the scheme.

Sir WILLIAM BEVERIDGE begged the Government to take as its primary aim the elimination of want among children. Col. ELLIOT said a survey carried out in London last June by Lady Mellanby of the teeth of London school-children showed much improvement, which Lady Mellanby attributed largely to the milk scheme of the Milk Marketing Board. The initial work for the scheme had been carried through by the Medical Research Council.

Sir JOHN ANDERSON said that, taking a person "continuously" in employment from 16 to 65 with a normal expectation of life when he retired, 12% of his life from 16 would be spent in sickness or unemployment and during 11% he would draw pension. He added that the Government intended to do its best to ensure that employment in connexion with the new scheme, so far as they were qualified, was provided for full-time officers of approved societies.

The House carried a motion approving the Government's intentions.

## Medical News

Sir Joseph Barcroft will give a lecture on "Food and Processing—The Nutritive Value of Processed Food" at a meeting of the Food Education Society on Monday next (Nov. 20) at 2.30 p.m. in the Conference Hall of the London School of Hygiene and Tropical Medicine, Keppel Street, W.C.

A meeting of the Scottish Group of the Association of Industrial Medical Officers will be held on Wednesday, Nov. 22, at 3 p.m., in the Institute of Hygiene, University of Glasgow. Prof. Ferguson will give an address on the resettlement of disabled persons in industry. Time will be allowed for discussion. Members may bring friends, and those interested in industry are invited to attend.

At the meeting of the Section of Epidemiology and State Medicine of the Royal Society of Medicine on Friday, Nov. 24, at 3 p.m., Sir Leonard Rogers will read a paper on "Smallpox—Incidence and Vaccination in India." The discussion will be opened by Dr. C. Killick Millard.

working in the Tropics, and who wish to take advanced work in parasitology and other branches related to tropical hygiene

**Unit I**—The course in tropical medicine and parasitology is a basic one, covering bacteriology, parasitology and medical entomology as applied to tropical medicine and includes an introduction to nutrition and hygiene as applied to the Tropics, as well as a systematic review of tropical diseases. Ten weeks of this course are given at the Institute of Parasitology at Macdonald College, Ste Anne de Bellevue. Special prominence is given to laboratory work.

**Unit II**—The course in the care of ambulatory patients is arranged to give supervised experience in the important diseases common to tropical and temperate climates. Disease will be considered in its various aspects as a community problem. Syphilis, dermatology, tuberculosis, child welfare, paediatrics and haematology will be stressed.

**Unit III**—Facilities have been arranged for clinical experience in the Tropics under experienced supervision. The facilities of the Fiemerara Bauiste Company have been made available, and other opportunities will also be arranged in the Caribbean area.

The fee for the complete course will be \$250,000. Units of the course may be taken consecutively or separately as desired. Inquiries should be sent to the Secretary of the Faculty of Medicine, McGill University, Montreal, Canada.

## UNIVERSITY OF LONDON

### KINGS COLLEGE HOSPITAL MEDICAL SCHOOL

Awards have been made as follows:

Burnes Leo Scholarship R C Read G W C Johnson N Tate Raymond Good Schoharships C S C Roberts K J M Carruthers Epsom College Scholarship Norman Lees Anatomy and Physiology Scholarship Divided between Daphne Baker and A N Husain Pathology Exhibition P H A Sneath Science Scholarship G E Langley

### WESTMINSTER HOSPITAL MEDICAL SCHOOL

An examination for an Entrance Scholarship in Anatomy and Physiology will be held on Sept 19 and 20. The examination consists of a paper of three hours in both subjects. Candidates should apply to the Secretary of Westminster Hospital Medical School, 17, Horseferry Road, London, S.W.1, for further particulars not later than Sept 5.

### UNIVERSITY OF BIRMINGHAM

A course of six lectures for industrial medical officers and others will be held at the Medical School, Hospitals Centre, Birmingham, 15, on the undermentioned dates, at 4 p.m. in the Physiology Lecture Theatre—Sept 11 and 12 "Industrial Dermatitis," Dr E Baylis Ash and Dr Cranston Walker, Sept 18 and 19 "Problems of Vision and Colour Vision," Prof H Hartridge M.D., F.R.S., Sept 25 and 26 "Deafness its Disabilities Causes, Prevention, and Alleviation," Mr C S Hallpike. The fee for the course is £1 1s, payable in advance to the Secretary of the University, Edmund Street, Birmingham. Nurses engaged in industry are invited to join the course at a fee of 2s.

## EPIDEMIOLOGICAL NOTES

### Discussion of Table

In England and Wales during the week there was a big drop in the incidence of the common infectious diseases, notifications of measles, scarlet fever, whooping-cough and diphtheria fell by 339, 326, 324, and 43 respectively. The decrease in scarlet fever and whooping-cough was general throughout the country, the number of notifications of scarlet fever being the lowest since the beginning of 1942. The greatest fall in the incidence of measles was in Lancashire, with 83 fewer cases. In contrast to the remainder of the country the south western counties and Wales had a slight increase in measles, the notifications rising from 319 to 366. Eight of the 12 cases of typhoid were notified in Gloucestershire (Gloucestershire C.B. 3, Gloucester R.D. 5).

The notifications of dysentery were the lowest during the present year. The only fresh outbreak of any size was Hertfordshire 18 (Ware R.D. 13), the other big centres of infection being Lancashire with 30 cases, London 19, and Glamorganshire, Cardiff C.B. 12.

In Scotland there was a small general fall in the incidence of infectious diseases. Notifications of cerebrospinal fever exceeded the preceding week's low total by 10. There were 40 fewer cases of dysentery, Edinburgh and Glasgow, with 21 and 24 cases were still the chief centres of infection.

In Eire only 14 cases of measles were recorded, compared with 83 in the preceding week. Twenty-three cases of typhoid were notified, 10 from Dublin C.B., the remainder being isolated cases dispersed throughout the country, this is the second large outbreak of typhoid in Eire during recent months.

### Week Ending August 19

The notifications of infectious diseases in England and Wales during the week included: scarlet fever 1,068, whooping-cough 1,603, diphtheria 398, measles 1,606, acute pneumonia 345, cerebrospinal fever 34, dysentery 248, paratyphoid 5, typhoid 8.

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## INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended Aug 12.

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year, for: (a) England and Wales (London included), (b) London (administrative county), (c) Scotland, (d) Eire, (e) Northern Ireland.

Figures of Births and Deaths, and of Deaths recorded under each infectious disease, are for: (a) The 126 great towns in England and Wales (including London), (b) London (administrative county), (c) The 16 principal towns in Scotland, (d) The 13 principal towns in Eire, (e) The 10 principal towns in Northern Ireland.

A dash — denotes no cases, a blank space denotes disease not notifiable or no return available.

Disease	1944					1943 (Corresponding Week)				
	(a)	(b)	(c)	(d)	(e)	(a)	(b)	(c)	(d)	(e)
Cerebrospinal fever	52	4	25	1	—	46	—	23	1	3
Deaths	—	—	—	—	—	—	—	—	—	—
Diphtheria	428	18	103	64	16	491	28	151	59	24
Deaths	8	1	—	1	—	16	1	2	3	—
Dysentery	127	10	78	—	—	149	20	100	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Encephalitis lethargica, acute	2	—	—	—	—	2	—	—	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Erysipelas	—	—	33	9	2	—	—	36	8	4
Deaths	—	—	—	—	—	—	—	—	—	—
Infective enteritis or diarrhoea under 2 years	—	—	—	43	—	—	—	—	137	—
Deaths	70	4	14	15	—	39	5	10	24	16
Measles* Deaths	1,795	2	36	45	14	29	1,476	100	19	18
Deaths	—	—	—	—	—	—	—	—	—	—
Ophthalmia neonatorum	67	1	19	—	—	108	7	21	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Paratyphoid fever	8	1	61	1(B)	—	6	1	2	—	1
Deaths	—	—	—	—	—	—	—	—	—	—
Pneumonia influenzae† Deaths (from influenza)	356	10	2	—	—	346	23	2	—	1
Deaths	8	—	—	—	—	7	—	—	—	—
Pneumonia, primary	—	—	117	16	4	—	12	120	16	13
Deaths	20	—	—	—	—	—	—	—	—	—
Polio-encephalitis, acute	3	—	—	—	—	—	—	—	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Poliomyelitis, acute	12	—	9	—	2	11	—	—	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Puerperal fever	—	2	9	—	—	—	3	13	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Puerperal pyrexia†	143	6	14	1	—	118	11	7	2	2
Deaths	—	—	—	—	—	—	—	—	—	—
Relapsing fever	—	—	—	—	—	—	—	—	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Scarlet fever	1,084	22	169	26	27	1,553	155	221	32	42
Deaths	1	—	—	—	—	3	—	—	—	—
Small-pox	—	—	—	—	—	—	—	—	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Typhoid fever	12	—	2	23	1	10	—	3	3	1
Deaths	—	—	—	—	—	—	—	—	—	—
Typhus fever	—	—	—	—	—	—	—	—	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Whooping-cough* Deaths	1,444	61	64	30	13	1,855	137	57	21	33
Deaths	14	—	2	—	—	13	—	4	—	1
Infant mortality rate (per 1,000 live births)	228	20	20	23	18	278	29	50	56	38
Deaths (excluding still births)	3,972	646	99	153	105	3,562	515	49	169	112
Annual death rate (per 1,000 persons living)	—	11	5	9	7	—	11	2	11	7
Live births	6,175	491	854	276	248	6,027	783	57	371	263
Annual rate per 1,000 persons living	—	17	18	0	7	—	17	5	24	7
Stillbirths	197	20	39	—	—	18	20	3	—	—
Rate per 1,000 total births (including stillborn)	—	—	—	44	—	—	—	36	—	—

\* Measles and whooping-cough are not notifiable in Scotland, and the returns are therefore an approximation only.

† Paratyphoid A, B, S.

‡ Includes primary form for England and Wales, London (administrative county), and Northern Ireland.

§ Includes puerperal fever for England and Wales and Eire.

\* Owing to evacuation schemes and other movements of population, birth and death rates for Northern Ireland are no longer available.

if the pastille were also made. These investigations showed that penicillin was present in the saliva in large quantities immediately after removal of the pastille and in fair quantities after 15 minutes, and was still present in small quantities up to 30 minutes after removal of the pastille.

2 The experiments described above showed that the penicillin remained active in the gelatin base, and similar experiments repeated on pastilles three months old have shown that there is no apparent diminution in their activity after this period.

3 Investigations on the effect of the pastilles on the bacterial flora of the mouth and throat have produced many interesting results from the bacteriological point of view. It is not felt that these results lie within the scope of the present paper and they will therefore be reported in detail at a later date. It must be mentioned here, however, that it is possible greatly to reduce the number of organisms and even to produce sterile cultures. Numerous control cultures in which penicillinase has been employed to neutralize any penicillin present have shown that any decrease in the number of organisms cannot be due merely to penicillin having been transferred with the organisms on the swab to the culture medium. Further control experiments were performed in which pastilles made of the normal base but without penicillin, and similar pastilles without penicillin but containing citric acid were employed in the same manner as the pastille containing penicillin. These experiments showed that there was no appreciable alteration in the bacterial flora when penicillin was absent from the pastilles even with the excessive salivation evoked by the pastilles containing citric acid. The effect of the penicillin pastilles on the organisms associated with Vincent's infection and on haemolytic streptococci will be dealt with when the treatment of disease associated with these organisms is described.

4 The standard dose adopted is 200 units of penicillin in each pastille, although in cases of acute ulcerative gingivostomatitis (Vincent's type) pastilles containing only 250 units are now employed as this strength has been found adequate in treatment. It is possible that pastilles containing 1,000 or more units might prove even more effective, but limitation in the supplies of penicillin has made it imperative to use the minimum adequate dose.

#### Method of Employment

Patients were seen daily for clinical and bacteriological control. On starting treatment each patient was instructed to place a pastille in the buccal sulcus, to leave it there until it had dissolved without chewing or sucking, and then to replace it with another. The time taken for the pastille to dissolve varied in different patients, and in general tended to be shorter in the earlier and more acute stages of the infection owing to the greater degree of salivation. The average however was about three-quarters of an hour. Particular instructions were given that a pastille should be inserted last thing at night and that it should be replaced should the patient wake. Great attention was paid to seeing that the patient fully understood the instructions given and the importance of regularity in the taking of the pastilles since it was clear that much depended on intelligent co-operation. Apart from one patient who in error ate 10 pastilles in the first five minutes of treatment, we have received excellent co-operation. The very slightly bitter taste of the pastilles does not appear to be noticed in the presence of an acute oral infection, and even in the normal mouth it is not actively unpleasant.

Cases were divided into the following groups: (1) Acute ulcerative gingivostomatitis (Vincent's type). (2) Acute streptococcal tonsillitis (including scarlet fever). (3) Chronic streptococcal throat carriers. (4) Operations in the mouth and lesions of the oral cavity involving loss of surface. In this group were included post-tonsillectomy cases, fractures of the mandible compound into the mouth, trauma to the bone and mucosa following difficult dental extractions, and ulcerative conditions of the mucosa other than Vincent's.

#### 1. Acute Ulcerative Gingivostomatitis (Vincent's Type)

So far, 25 cases of this type have been treated, including one of glandular fever and three in which the disease, of very severe form was subsequent to a bismuth stomatitis while under treatment for syphilis. The response is best studied under the headings of "clinical" and "bacteriological."

**Clinical.**—All patients became asymptomatic in 24 hours, including several severe cases with pain, insomnia, and general symptoms. At the same time the characteristic fetor had gone. In 48 hours the sloughs on the ragged edges of the gums had disappeared, together with the signs of acute inflammation in the gums themselves. Epithelization of the ulcerated areas

proceeded rapidly and within five days the improvement in all cases was such that treatment was stopped. No patient had any treatment other than the pastilles, and no attempt was made to clean the gum pockets by syringing mouth washes, or instrumentation. Patients have been inspected at fortnightly intervals after the cessation of treatment and no relapse has yet been seen though the shortness of the period during which the investigation has been conducted (three and a half months) clearly does not allow any conclusions to be drawn in this respect.

**Bacteriology.**—Twenty-four hours after treatment had started it was found that the spirochaetes which had previously been present in large numbers were absent, while the fusiform bacilli were much reduced. In 48 hours the fusiform bacilli were further greatly reduced and in many cases absent. In 72 hours both spirochaetes and fusiform bacilli were entirely absent and at this stage it was a common experience to find that the films showed epithelial tissue with very few organisms of any sort. Films made at weekly and fortnightly intervals after cessation of the treatment have shown no evidence of recurrence in any patient. In order to be certain that the clinical and bacteriological improvement was due to penicillin and not to salivation or other mechanical factors one patient with a severe infection was given pastilles made of gelatin and 0.1 g. nipagin only. There was no clinical or bacteriological improvement after 48 hours. Treatment with penicillin pastilles was then started. Films taken 24 hours later showed no spirochaetes or fusiform bacilli. This result coincided with clinical improvement and a rapid cure ensued.

#### 2. Acute Streptococcal Tonsillitis

As already stated it was shown experimentally that it was possible very greatly to reduce the number of bacteria in the normal mouth and throat, and it was therefore evident that the penicillin was at least effective superficially. This diminution in the number of organisms including the haemolytic streptococcus suggested that the pastilles might be of practical value in the reduction of droplet infection. It was doubtful whether it would penetrate deeply enough into the tonsillar crypts to be effective in cases of tonsillitis, but its high diffusibility did not rule out the possibility and it was therefore decided to try the pastilles in a group of patients with acute tonsillitis.

So far 17 patients have been treated, and all showed pyrexia and the presence of Lancefield Group A haemolytic streptococci. In the tonsils there were variable degrees of hyperplasia. Included in this group are four cases of scarlet fever, one in an adult. No salicylates, mouth washes or any other treatment was given. The response will again be described under two headings.

**Clinical.**—The majority of patients became apyrexial within 24 hours and all were apyrexial within 48. There was great relief of local symptoms within 24 hours. This was particularly marked in a severe case of scarlet fever in an adult, who was taking solid food 24 hours after the beginning of treatment, in striking contrast to the controls who were being treated with serum and sulphonamides.

In view of the small number of cases definite conclusions cannot be drawn, but the results certainly seemed to be better than could be accounted for by the chance selection of cases which happened to improve more rapidly than the normal. The results have however appeared striking enough to warrant further work being carried out, and it is hoped shortly to issue a report on a larger series.

**Bacteriology.**—In 7 patients haemolytic streptococci were no longer demonstrable 24 hours after treatment had started. In a further 6 they were no longer demonstrable after 48 hours. Of the remaining 4 of whom three had scarlet fever, one became negative only after six days while the others possessed small numbers of haemolytic streptococci during the whole period of treatment and after it had finished, although the pyrexia had gone in 48 hours and the throat felt normal. The penicillin sensitivity of the organisms in these particular patients was comparable to that found in the others.

It is of importance to mention that in all these cases the usual technique of inoculation often failed to demonstrate

## Medical News

Air Marshal Sir Harold Whittingham will give an illustrated address entitled "Aviation's Contribution to Preventive Medicine" on the afternoon of Thursday, Sept 21, at the Royal Institute of Public Health and Hygiene, 28, Portland Place, W.

At the opening of the new session at Westminster Hospital Medical School the inaugural address will be delivered by Sir John Fraser, Bt, Principal and Regius Professor of Edinburgh University, in the Meyerstein Lecture Theatre on Monday, Oct 2, at 3 p.m. Tea will be served in the School.

Dr Robert G. Cochrane, who for nine years has been a missionary of the Church of Scotland and medical officer at the Lady Willington Leprosy Sanatorium at Chingleput, South India, has been appointed Principal of Vellore Medical College, a missionary institution originally founded for the training of women doctors and nurses.

The Association of Scientific Workers has now published its report to the University Grants Committee on the future development of university teaching and research in fundamental and applied science (Oxonian Press, Queen Street, Oxford, 1s). Discussion is confined mainly to the ways in which the rapid extension of scientific knowledge and its application are affecting the universities, chiefly in the physical and biological sciences and related applied branches. The subject is dealt with under six main headings: degree courses, teaching, research, applied science, extra mural activities, and the post-war problem with appendices on salary scales for academic and technical staff.

National scales of salaries for 30,000 nurses employed in mental hospitals in England and Wales are recommended in the report of the Mental Nurses Subcommittee of the Nurses' Salaries Committee. Some of the salaries are: women, from £380 to £600 with emoluments worth £200 for the matron of a mental hospital or institution of 670 beds or over which is a training school, staff nurses, £120, rising by £5 a year to £160, with emoluments of £90. Men, non-resident chief nurse of a hospital of 670 beds or over which is a training school, £450 to £620, plus £5 emoluments (resident £315 to £485, plus £140 emoluments), staff nurse, 95s a week, rising by 5s to 110s if non-resident, with emoluments to the value of 2s weekly, and 62s 6d rising by 5s to 77s 6d, with emoluments valued at 3s 6d weekly if resident. Among other recommendations are new appointments to posts above the grade of ward sister or charge nurse to be filled only by State-registered nurses, free medical and surgical in-patient treatment, uniform free of charge, one complete day off duty a week and 28 days' annual leave. The Rushcliffe Committee have now to report on superannuation and pension rights.

In St Dunstan's Hospital wards there are, regrettably, some wounded men just returned from the fighting in France, who will, to quote Sir Ian Fraser in his annual report, "learn to be blind." For nearly thirty years St Dunstan's has been teaching the blind a new "design for living," how to look after their own personal needs, to read, to typewrite, to follow certain occupations such as carpentry, boot repairing, etc., and even to swim and ride. St Dunstan's method is to give comfort and hope in the early ages of blindness, then preliminary training after health has returned, and finally vocational and professional training to those who are fit for it. Veterans of the last war (1,800 survive) are ill being looked after, and some hundreds of men blinded in the present war, including Canadians and Americans, have passed through St Dunstan's. Sir Ian adds no appeal in so many words, at St Dunstan's is a cause which to-day more than ever deserves generous support.

A report of the midwifery cases attended by the Queen's Institute District Nursing and by village and other nurse-midwives in 1943 states that the shortage of domestic help has resulted in a larger number of patients entering hospital, and therefore the number of domiciliary cases was fewer by 4,723. The maternal mortality rate, though slightly higher than in 1942, was the second lowest on record, being 1.35 per 1,000 live births. The total number of cases attended where no doctor was engaged was 84,459; 22,771 of these were in primiparae. Medical aid was summoned for the mother in 28,721 cases (34.0%)—that is, during pregnancy 5,681 (6.8%), during labour 19,868 (23.5%), and during puerperium 3,167 (3.7%). Medical aid for the infant was summoned in 5,072 cases (6.0%). The report adds that as ill-health may be due to domestic circumstances of the patients the need for adequate home visiting during the antenatal period cannot be over-emphasized. The integral part of any antenatal scheme must be close co-operation with the doctor, for the summoning of whom in the event of illness or emergency the midwife is responsible.

## Letters, Notes, and Answers

All communications with regard to editorial business should be addressed to THE EDITOR, BRITISH MEDICAL JOURNAL, B.M.A. HOUSE, TAVISTOCK SQUARE, LONDON, W.C.1. TELEPHONE: EUSTON 2111. TELEGRAMS: *Anticopy*. Western London. ORIGINAL ARTICLES AND LETTERS forwarded for publication are understood to be offered to the *British Medical Journal* alone unless the contrary be stated.

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### ANY QUESTIONS?

#### Injectations for Osteo-arthritis

**Q.**—*Procaine is successfully used for intramuscular injection into painful spots in fibrositis and allied conditions. Has it ever been used for injection into the hip joint in intractable painful osteo-arthritis and with any success? Granted full sterile precautions are there any contraindications to this treatment?*

**A.**—Various solutions have been injected into osteoarthritic joints with, at the most, short-lived success. Procaine gives transient loss of pain, and is quite useless for this condition. In fibrositis the action of the fluid is largely mechanical, and saline will do equally well except that the immediate pain is greater, and, therefore, massage and exercises are carried out less willingly.

#### A Midwifery Anaesthetic

**Q.**—*I have heard that a new midwifery anaesthetic is being tried out which will render Minnitt gas apparatus obsolete for midwives. Can you tell me if this is true and what it is?*

**A.**—The Minnitt apparatus for analgesia has rendered yeoman service, but it suffers from the defect that the percentage of N<sub>2</sub>O delivered to the patient varies with the depth of respiration. The deeper the respiration the more the gas is diluted with air. Recently experiments have been carried out with nitrous oxide delivered through a Venturi jet. The percentage of N<sub>2</sub>O in the resultant mixture here remains substantially constant whatever the flow of gas. The Venturi jet principle has been applied to oxygen therapy, and an explanation of its working is to be found in an article by S. L. Cowan and J. V. Mitchell, "Improved Equipment for Oxygen Therapy" (*British Medical Journal*, Jan. 24, 1942, 1, 118).

#### Removal of Tonsils by Diathermy

**Q.**—*Is it possible to use the galvanic current to destroy infected tonsils by means of "needling," as for small growths, etc.? If so I should be grateful for details of technique, as I do not find these subjects mentioned in the textbooks.*

**A.**—The only effect of the galvanic current would be to produce a contraction of the muscles of the pharynx, a sufficient reason for the silence of the textbooks. Diathermy consists in passing a high frequency current of great power through the body. Used for surgical purposes the small electrode generates intense heat in the tissues in the immediate neighbourhood. Repeated applications can be used for the destruction of growths and similarly for the destruction of tonsils. The modern unipolar apparatus is more convenient in practice, as it is not necessary to use a second large electrode applied to an indifferent area. The procedure is painful, so that an anaesthetic is necessary, but ether must be avoided. The late Dr. Dan McKenzie described the procedure fully in *Diathermy* (Kegan Paul), and a description of diathermy may also be found in *The Nose and Throat* (Arnold) by the late Charles A. Parker.

#### Vagal Attacks

**Q.**—*A busy and active practitioner aged 69 who smokes about 12 cigarettes a day, frequently has, after morning surgery followed by a cigarette, and occasionally after a hot bath or a game of golf, a feeling of faintness with sweating and slow pulse (48), but with no loss of consciousness. A cardiologist finds heart and B.P. normal and suggestive of a younger man. Normal pulse 60 to 64. He calls it "vagus vagans" and can only suggest a holiday. The patient has some spondylitis of neck and osteo-arthritis in fingers and elbows. What is the pathology and treatment?*

**A.**—Faints or syncopal attacks may be due either to diminution of the venous inflow to the heart, as a result of active or passive dilatation of portions of the vascular bed (vascular syncope), or to

where both arm wounds were carefully cleaned and the soiled tissue excised; the wounds were packed with sulphathiazole and proflavine, 1%, with vaselined gauze, and the arms put in plaster. As her condition was deteriorating, the wounds of the back were washed with half-strength dettol, dusted with sulphanilamide powder and proflavine, and a vaselined gauze roll was applied. Many pieces of glass were removed from the gashes, most of which had penetrated the superficial fascia only. An intravenous drip was put into the long saphenous vein in the groin. The total time on the operating table was 2½ hours. On return to the ward she was given 2 pints of blood and 2 pints of glucose-saline within the next 12 hours. Her condition on the following day was quite satisfactory, considering her physique—temperature 99°, pulse 120, respirations 28. On account of her emphysema she was given breathing exercises and, anticipating sepsis of the wounds, she was put on sulphapyridine, 1 g. 4-hourly. By the fifth day after operation her condition began to deteriorate; she was eating little and became drowsy. There was no anuria or oedema of the feet. On the sixth day her temperature began to climb to 100°; she complained of severe abdominal pain, and the pulse, having been down to 90, rose to 110, and the respirations to 35. She had signs of a consolidation at the base of the right lung and the abdomen was distended. She died in the afternoon of the seventh day after operation with gross dilatation of the abdomen.

At necropsy all the coils of gut were distended from paralytic ileus, and there was oedema of the lower lobes of the lungs. After removal of the plaster the arm wounds were absolutely clean and appeared just as they had left the theatre. The wounds of the back were surrounded by nothing more than a small area of oedema with a little reddening, and many of the wounds were oozing a serous discharge—a picture of indolence. The gut was grossly distended, as it had been just before death, from paralytic ileus. Histological examination of the liver showed marked cloudy swelling and fatty degeneration, with toxic changes in the spleen.

In retrospect several points stand out about this case. First, our experience, and that of other hospitals in the district, has shown that it is most unwise to allow an operation to extend for more than one hour in these very shocked patients. After an hour their blood pressure falls and their general condition deteriorates very rapidly. One should curtail one's activities within this time limit. Our careful surgical toilet of the extensive arm wounds probably cost the patient her life, since as the wounds were unchanged after seven days one can assume that the patient's resistance was very low, and there was no attempt at repair or reaction against the bacteria which must have been present. Secondly, I think she was taken to the theatre too soon. We gained the impression that the tendency is to operate too early—before the patient has recovered from profound shock, both psychological and cardiovascular—rather than too late. We allowed far longer for recuperation in the later cases of the series, with improved results. Thirdly, the object of the plaster was to immobilize the soft-tissue wounds, as advised by Trueta, in order to avoid pain and to prevent bacterial spread via the lymphatics. Both these objects were achieved, but psychologically I think it was unsound to imprison both arms of this type of patient, which made her feel still more helpless.

#### Case II (Mr. Y., aged 63)

This patient was admitted on July 3, 1944, with multiple cuts of the back and arms, which were very dirty, with earth and grit driven into the depths of the wounds. He was very shocked, with blood pressure 75/50, but conscious and able to drink. He was therefore given hot sweet tea and 1½ gr. morphine, with A.T.S. 6,000 units and A.G.S. 22,500 units intravenously. It will be noticed that the latter was in accordance with the new instructions of the E.M.S. Memorandum, and a considerable increase on the dose given in Case I. His wounds were wrapped in sterile towels and he was left for a time, since his condition was considered to be almost hopeless and more promising cases demanded attention. About an hour after admission he was given 1 pint of plasma intravenously, followed by 3 pints glucose-saline in the next 12 hours. On July 4 he had not passed urine for 24 hours and, although the bladder was not palpable above the symphysis pubis, he was given carbachol 0.5 c.cm., and the dose was repeated half an hour later. Following this he passed about 10 oz. of urine. His condition next day had considerably improved, and his blood pressure rose to 100/80. His wounds had been entirely untouched apart from wrapping in the sterile towels. In view of our previous experience the correct course of treatment was debatable. We decided not to take him to the theatre; instead, his back was merely washed in the ward with dilute dettol, followed by half an hour's radiant heat, after which it was dusted with sulphanilamide powder, vaselined gauze and proflavine were applied, and the sterile towels were

replaced over the wounds. The next day (72 hours after admission) his blood pressure had risen to 120/80, and it was decided to take him to the theatre. There a large piece of wood, 4 in. long and 1 in. in diameter, was removed from his back and a few pieces of glass were taken from the cuts, but no extensive exploration was carried out. His back was sprinkled with sulphathiazole and proflavine, 1%, and he was returned to the ward within 15 minutes, having had under 0.75 g. of pentothal. I feel that this visit to the theatre was superfluous, apart from the removal of the large piece of wood, which we had not been able to do in the ward. As he was a very fat and flabby man of 63, he was given breathing exercises daily. On July 6 he started having hot normal saline baths, which relieved his pain considerably. After the first day he was allowed to sit up in the bath and use ordinary soap, which he did with very great enthusiasm. His progress from then onwards was highly satisfactory; every day saw marked improvement. After the baths his back was dusted with sulphathiazole, and dry dressings were applied, kept in place by three many-tailed bandages. On the seventh day, at his own request, he was transferred to another hospital, where his wife, also an air-raid casualty, had been taken. Nearly all the small cuts of the back had healed, leaving five or six of the larger ones a little septic and gaping, the worst being a gash some 1½ in. wide.

He reported again on Oct. 3. The back was then completely healed.

TABLE I.—Glass

Description	No.	Remarks	Deaths
Lacerations of face, scalp, and neck ..	77	19 T	—
Perforating wounds of eye ..	15	5 cases bilateral 2 T	—
Cut hands ..	9	—	—
Severe multiple lacerations ..	6	1 T	1
Other injuries ..	5	—	—

Any patient may appear in two or more tables.

#### B. Bomb Splinters

A striking feature was the low incidence of penetrating wounds of the body cavities. We did not have a single penetrating wound of the abdomen; and there was only one of the chest—giving rise to a haemopneumothorax. This is excluding two patients with multiple perforations who died a few minutes after admission, the cause of death being unknown, as necropsies were not performed. There were two perforating wounds of the cranium. This contrasts with the injuries of bullets and heavy bomb splinters. I think it is due to the shape of the fragments, which tend to be small flat pieces of metal, often about the size of a halfpenny, or smaller, and the thickness of a sixpenny piece. These disks have a high coefficient of friction and probably a low velocity. The longest track we discovered was some 5 in. through fat and muscle, in the region of the hip, and this patient had been lying within 20 yards of the crater edge.

Occasionally the bomb fragments are large tangled masses of crumpled sheeting, weighing a pound or more, and these may cause very severe injuries. One man hit by such a fragment had his right humerus shattered and some 6 in. of the triceps muscle torn away; another had his thigh nearly severed, with severe comminution of the femur.

Apart from the small splinters at very close range and the massive fragments mentioned above, the bomb splinters did little serious damage. There were six cases of injuries by wood splinters, which were confined to the soft tissues and did not penetrate to any of the body cavities. One patient had a large piece of wood driven between the head of the radius and the ulna in an antero-posterior direction and projecting 5 in. each side of the arm, yet, miraculously, no important structure was damaged.

TABLE II.—Bomb Splinters (24 Cases)

Description	No.	Remarks	Deaths
Multiple perforations all over body ..	2	—	2
Multiple perforations of face and head ..	1	—	1
Abdominal and buttock wounds, not entering peritoneum ..	3	—	—
Perforating wounds of cranium ..	1	—	—
Perforating wounds of chest ..	5	—	—
Fractures {Major ..	3	—	—
{Minor ..	9	—	—
Soft-tissue lacerations ..	6	1 T	—
Wood splinters ..	—	—	—



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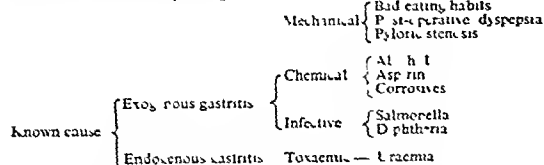
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Dr. Jones went on to criticize Schindler's classification of gastritis, first, because it was a mixture of cause and description, and, secondly, because it did not consider superficial chronic atrophic, and chronic hypertrophic gastritis as separate entities, but merely as phases of one disease process. Dr. Jones preferred the following classification:

Unknown cause—Non-specific gastritis



Naturally the full description should be given of the gastroscopic changes, but he did not advise subdivision on the descriptive basis. The points he looked for were degree, activity, position, thickness of mucosa and associated mucosal changes. Of 335 cases of haematemesis and melæna in which early gastroscopy had been frequently done, only 7 were diagnosed as active gastritis. He considered non-specific gastritis an important entity but a comparatively uncommon disease. Pathologically there was an important discrepancy. Atrophic pyloric gastritis was commonly seen microscopically but was very seldom diagnosed gastroscopically.

#### Radiological Diagnosis

Dr. MATHER CORDNER said that the radiographic changes which were to be seen in gastritis might be considered under four headings: (1) In gastritis there was an alteration in the slipperiness or stickiness of the mucosal surface. One got the impression on from the x-ray picture that the surfaces were sticking together and that they were slowly separated from each other by the opaque medium as it flowed slowly over the mucous membrane. (2) A mild degree of gastritis stimulated the autonomic motility mechanism of the mucous membrane so that an unstable and rapidly changing mucous membrane relief especially noticeable in the pyloric region was obtained. (3) The softness, mobility, flexibility and deformation and obliteration of the normal mucosal folds were important characteristics. Pathologically altered folds showed a loss of flexibility, a decrease of movement on palpation and were less easily deformed and smoothed out by pressure and by stretching. (4) In a large proportion of cases the basic pattern of the mucosal relief was not altered in gastritis. Large folds did not signify hypertrophy, a term which was only rarely justified radiologically in describing this condition. He summed up by saying that a radiological diagnosis of gastritis was possible when the mucosal relief was abnormal and was accompanied by rigidity of the folds. A diagnosis of hypertrophic gastritis was possible only in the presence of a polypoid hyperplasia of the mucosa. There were no characteristic findings which enabled the radiologist to diagnose atrophic gastritis.

#### A Condition rarely Diagnosable

Dr. P. E. THOMPSON HANCOCK said that of the various types of gastritis recognized clinically, histologically, and gastroscopically only two, apart from the acute forms, had a recognizable syndrome—namely, alcoholic gastritis and chronic diffuse atrophic gastritis. The first of these could often be recognized, though it was now on the wane. In the second the patient complained of fatigue, anorexia, and loss of weight. Dull epigastric discomfort rather than abdominal pain was the usual complaint, and was not alleviated by alkalis. Nausea and vomiting were exceptional. On examination there might be some anaemia but there was little or no epigastric tenderness. If with this clinical picture there was no radiological evidence of gastric abnormality and no free acid was found in a fractional test meal, a diagnosis of chronic atrophic gastritis was justifiable.

In his experience, radiology had not helped in the diagnosis of gastritis and had often, in fact been misleading. He had worked with several radiologists who had taken great interest in the correlation of the radiological and gastroscopic appearances, but he thought he could safely state that they now very rarely made any pronouncement about gastritis, confining their

comments to the size of the gastric rugae. He was afraid also that the gastroscopic diagnosis of gastritis was not irrefutable. He had made just over 1,400 gastroscopic examinations, and had diagnosed gastritis in about 21%, but whereas in his first 300 cases he diagnosed hypertrophic gastritis 18 times or in 6% of the cases, in his last 300 he had diagnosed it only twice, or in 0.66%. This was mainly due to the fact that the normal stomach had a far wider range of size and distribution of folds and degree of visibility of the area gastrica than was formerly recognized and the criterion of the diagnosis of hypertrophic gastritis must be the presence of definite inflammation. In all other forms of gastritis he found that his percentage frequencies were fairly constant throughout the series.

In short he believed that gastritis was rarely diagnosable as a clinical syndrome and that gastroscopy was the only investigation which enabled the positive diagnosis to be made. But the gastroscopic diagnosis was not infallible, the tendency being to diagnose gastritis too frequently owing to insufficient allowance being made for the great variations normally occurring in the gastric mucosa.

#### Emotional Reactions

Dr. MORTON GILL described some of the outstanding observations concerning gastritis which had been made during the last century down to the record series by Wolf and Wolff, who had shown that the gastric mucosa could reflect mental changes to an extraordinary degree. Thus with anxiety or resentment there were swelling and congestion, increased motility and increased excretion of HCl. Fear produced pallor of the mucosa accompanied by a diminished excretion of acid. From this it followed that while gastritis might be the result of direct damage to the mucosa by a local irritant, equally, visible mucosal changes initially vascular in the nature of alterations in the blood flow might be of central origin. Thus when it came to radiological or gastroscopic diagnosis of chronic gastritis it was at present difficult if not impossible, to be certain whether some at least of the mucosal changes might not be an expression of anxiety on the part of the patient, concerning either the examination itself or its results. It seemed to him that understanding of gastritis would be advanced perceptibly when it became possible safely to perform biopsy upon the gastric mucosa and to obtain a specimen of sufficient quality to allow histology of the living mucosa. He also suggested that the time had come to abandon the term "chronic gastritis" and to use instead purely descriptive terms—for example, mucosal hypertrophy, mucosal atrophy, mucosal hyperaemia, etc.

Sir HENRY TUDY criticized the classification of Schindler, in particular his use of the term "hypertrophic gastritis". He agreed with what Dr. Hancock had said that chronic catarrhal gastritis was the commonest form, but had no recognizable syndrome and probably was often symptomless. He also referred to Army experience and handling of so-called gastritis cases, the loose use of the term gastritis, and the advance towards precision, evidenced in the present discussion, as compared with what was held even as recently as four years ago.

Dr. J. JACQUES SPIRA submitted what he called a simple but comprehensive classification of chronic gastritis. Direct causes were inflammatory processes associated with increased acidity and chronic peptic ulcer and accounted for chronic superficial or catarrhal gastritis produced by mild repeated irritation by mechanical, thermal, or chemical factors or the swallowing of purulent material and chronic hypertrophic gastritis produced by severe repeated irritation, both being subject to immediate relief and cure by the removal of the offending agent. Indirect causes were degenerative processes associated with decreased acidity and gastric carcinoma, and gave rise to atrophic gastritis with primary factors associated with deficiency diseases, and secondary factors associated with other pathological conditions, calling for appropriate substitution of treatment.

Mr. JENNINGS MARSHALL, who was unable to be present, sent a contribution to the discussion in which he described primary and secondary gastritis, the latter arising as a generalized condition from any chronic obstructive. With regard to primary gastritis he made the interesting point that

much better," his temperature came down, and the inflammation of the varicella spots began to subside. In 48 hours the vesicles had dried up and the surrounding redness faded; in fact the rash seemed to abort and, reach in 2 days the condition usually seen after 5 or 6 days. The herpes ran a typical, somewhat severe course, the inflammation of the upper lid and swelling of the conjunctiva, with inability to open the eye, being his chief complaints. There was no definite ulceration of the cornea, but he was unable to open his eye for a fortnight owing to oedema of the upper lid, and when this subsided the scabs on the upper lid limited its movement until they separated. The neuralgic pain and altered sensation in the frontal area cleared up slowly in about 6 weeks from the start. In this case the herpes of the fifth nerve developed to its full extent before the varicella rash appeared. I was led to give sulphathiazole because a month previously I had seen a very severe case of chickenpox in a man of 37. He had a rash from head to foot and felt very ill. His temperature rose to, and remained at, 105° F. for nearly 12 hours. After a few doses of sulphathiazole he felt "a new man," and within 24 hours his temperature fell to normal and remained so in spite of the many infected spots.

Dr. MARY BARROW (Birmingham) writes: I have only met one case of these two occurring in the same patient concurrently. On Aug. 3, 1944, a man aged 59 had the eruption of herpes zoster in the mid-thoracic region—a moderately severe attack. The chickenpox vesicles appeared on Aug. 8 and he had a widespread rash by the next day. He does not remember whether he had chickenpox in childhood.

#### Ascorbic Acid in Treatment of Gums

Dr. K. MALIK, L.D.S. (London, N.1), writes: I was more than ordinarily interested in the article on ascorbic acid and its value in the treatment of gums (Aug. 19, p. 239). Some years ago I was asked to use the ascorbic acid tablets presented to me on a special case or cases. I did so and reported its uselessness to the manufacturers. I would, however, point out that the title "Bleeding Gums" is misleading, as ascorbic acid is of definite use in accelerating healing after extractions. A further point is this: What do the authors mean by a "dummy" tablet? Do they mean one made mostly of sodium bicarbonate? There is a school of thought that says "alkalis will cure any dental disease, including gum disease."

#### Meigs's Syndrome

Capt. C. BORG, R.A.M.C., writes from the Connaught Hospital, Knapthill: In the article on Meigs's syndrome by Clay, Johnston, and Samson in the *B.M.J.* of July 22 the authors state that previously only one case of this syndrome has been reported in the last 20 years in the British literature—namely, the case by Gild in Dec., 1943. I beg to point out that this statement is incorrect, as I reported a case in the *Journal of Obstetrics and Gynaecology of the British Empire* in Dec., 1941.

#### Pethidine in Asthma

Dr. F. BEDO HOBBS writes from Farnham, Surrey: I should like to send a note of warning in reply to Dr. Douthwaite's letter (Aug. 5, p. 200), wherein he recommends injections of pethidine for stubborn cases of asthma. I recently saw a woman with persistent urticaria and asthma for whom this treatment was recommended. It gave her so much relief accompanied by a sense of well-being that she had been in the habit of giving herself three injections of 50 mg. daily for several months. Just before coming under observation she had been behaving queerly and had, according to her sister, had twenty-six injections of 50 mg. in the course of three days. When admitted to hospital she was very excitable and talkative and completely irrational and disorientated. Although the pethidine was immediately stopped and sedatives given, she remained in the same state for a week, after which she gradually became quieter and less confused, although she relapsed at times for a further three or four days. As pethidine is now being prescribed more frequently the fact that this drug is not included under the D.D.A. and can be obtained by anyone without a prescription makes one realize that it should not be ordered lightly and without explaining the risk of habit formation to both patient and relatives.

#### Masturbation in Men

Dr. J. LUXFORD MEAGHER (Victoria, Australia) writes: In your column "Letters and Answers" in the issue of the *Journal* for Jan. 1 appears a note on the subject of masturbation in men. I have read the reply with frank feelings of disgust. The answer concerns the course to be followed by a young man of the Forces who feels disposed to masturbate. He is to be told to adopt this practice deliberately, and while "not attaching any sense of guilt to the act" should not do it too often, and "only as a relief for unbearable sexual tension." Acting on these lines he is assured that his health will not be impaired nor will his future sexual life be prejudiced. The end, of course, cannot possibly justify the means. Abstracting from the moral aspect, I am at a loss to know why, if the practice is intrinsically harmless, a restriction should be placed

upon its use. I deny the possibility of frustrating a physiological function in its very nature without harm resulting. Is not the danger of habit formation to be expected? Can the practice be taken up and relinquished at will? I know of at least one case in which the husband, though living under the same roof as his wife, was addicted to the vice. It is precisely those who are weak of will or whose wills are not yet fully developed to whom it appeals. Surely an act universally condemned throughout the ages cannot suddenly, owing to any "trend of opinion," become permissible. Further, it is not within the power of the individual to withhold the consciousness of guilt from any act which his conscience disapproves. The remedy for all unnatural urges is strenuous resistance, reinforced by prayer; also sublimation of those urges, as the answer rightly suggests, by athletic and intellectual interests. To propagate the notion of unnatural vice as the answer does is shocking. To suggest that medical men should lend themselves to the task is the limit.

#### Corticotrophic Hormone

Dr. R. E. HEMPHILL (Bristol) writes: As a result of the article by Reiss and myself published on Aug. 12 (p. 211) a number of inquiries have been made as to where this preparation may be obtained. So far as I know corticotrophic hormone is not as yet available commercially: The hormone we used was a laboratory product made available through Messrs. Organon.

#### Agricultural Rehabilitation of War Casualty Cases

G. D. G. writes: According to information received at the Chinese Embassy in London, the Chinese Ministry of War has opened a rehabilitation centre for war-damaged men in Szechuan Province. The first corps of 1,000 soldiers has arrived there and the men are being distributed for work on the land. Several thousand more helpers are required on farms in Britain for the corn, potato, and other harvests. The call-up of men for the Forces is said to leave many farmers facing serious loss, more especially as the embargo on Ire will interfere with the importation of Irish labourers. We shall be dependent on volunteer harvesters from our town-dwellers if these vital crops are to be gathered in. Farmers are offering good pay, food, and accommodation, and the healthiness of open-air life provides an additional advantage. That is one side of the picture. The other side concerns the thousands of soldiers who have become convalescent from their war injuries but who are as yet unfit to resume their former occupations. Their minds, bones, and muscles have been damaged and require to be made good again in as efficacious and natural a way as possible—by occupational therapy. The instruments and appliances of physiotherapy are most valuable up to a certain stage; but, after injured parts have again been induced to function, routine exercises in hospital lack the stimulus of productive work. Though the summer session is well under way it may be possible to accelerate arrangements through the three Service channels and the Ministry of Agriculture to put convalescent soldiers on the land. Whether as cultivators, harvesters, tractor drivers, carters, dairymen, poultry keepers, there are many roles they could fill for the mutual benefit of themselves and the farmers. There is no calling other than agriculture that would so satisfactorily bring these men back to health and fit them for return to civil life, in addition to the important factor of augmenting the national food supply. One has only to enter our hospital wards and see the number of tragically neurasthenic and shell-shock cases to realize the clamant need for treatment by recuperative occupation. There are also few physical injuries that do not favourably respond to functional use in health surroundings. The varied work of farm life and the peacefulness of it all never fail to interest men who have come through the inferno of modern warfare.

#### Chronic Vasomotor Rhinitis

Mr. J. BERNSTIEN (Liverpool) writes: I was extremely surprised at the reply which was given to the question concerning chronic vasomotor rhinitis (Aug. 12, p. 230). This is an accepted well known allergic condition, and local treatment is of only palliative effect and should consist of cautery application to any sensitive points found in the nose, which are usually at the anterior or posterior ends of the inferior turbinates and tubercle of the nasal septum, or by nasal ionization with zinc. But these local procedures are of very little value and should only be supplementary to treatment by desensitization and avoidance of the allergen concerned.

#### Correction

The first line of the fourth paragraph of the annotation headed "Seeing is Believing" (Aug. 26, p. 281) contained a misprint. I should have read "The first interest of a commercial firm is in its commerce."

#### Disclaimer

Dr. C. O'DONOVAN (Burbage, Hinckley) asks us to state that he had no knowledge that his name would be published (as it was in a provincial evening paper) in connexion with the supply of penicillin to a patient, nor did he give permission for it to be used.

Your most recent correspondents (Oct. 28 and Nov. 11) find fault with the procedure from the point of view of the Catholic Church (whose dictates on other obstetric matters are not accepted by the profession at large) or on grounds that it "offends" the marriage bond, and, apparently, on grounds of some vague ethical horror of semen being emitted anywhere other than in the vaginal canal. Other correspondents throughout the year have asserted that any woman who is artificially inseminated will later "draw away" from her husband; that the child "will come between" them; or that the husband will become jealous of the child. Indeed so many possible emotional disasters are portrayed that one wonders if they exist more in the fears of the critics than in their actual experience. There must be many patients who would share the feelings of such critics, but they would not, naturally, be found among those who seek advice upon the matter.

\* Practitioners experienced in dealing with sterility know how very deeply some women feel the deprivation of child-bearing. Their barrenness may be a source of such humiliation and depression as to be hardly credible to an outside observer. When such a woman is married to a sterile husband, in these days it is almost inevitable that the husband raises the question of artificial insemination; nor is it at all uncommon for a sterile man to wish that his wife should not, through his misfortune, be denied the fulfilment of her deepest desire. Out of respect for some of these husbands with whom I have spoken, I think it only fair to say that many of them express feelings totally dissimilar from those of your anxious correspondents. It has been often a privilege to see the tenderness and generosity with which such men may approach the subject. "I would give anything on earth for my wife to have a child of her own making" has been said to me; and, again, "How could I possibly love an adopted child as much as one born of the woman I most love?" How could such an attitude do anything but arouse gratitude and appreciation in the wife, and thus, enrich their marriage in the deepest way? If "organized religion" has no use for marital bonds of this sort, it may well be religion itself which will be found wanting.

Other objections raised against artificial insemination may apply to some cases, but not necessarily to others. Not every patient feels the procedure to be offensive or humiliating; as with most gynaecological work, this depends as much on the attitude of the practitioner as of the patient; nor do they fail to appreciate the good will which the donorship (gratuitous, at any rate, among clinic patients) has implied. Nor, indeed, need the husband be necessarily the "loser." I know of one husband, impotent as well as sterile, who has had his self-esteem most wonderfully enhanced since his wife has (unknown to other people) given birth to such a child.

No practitioner would ever claim that the procedure of artificial insemination can be lightly undertaken or have any wide application in this country. But surely it is time that the medical profession adopted a more realistic attitude towards it. Furthermore, since no two people feel alike in matters such as sexual intimacy or child-bearing, it surely behoves more fortunate people not to deny a barren woman the achievement of her greatest desire or to criticize her husband's generosity in helping her to reach it. Although such ways of feeling may be personally unacceptable to a practitioner, he could refrain from condemning aspirations admittedly outside his own philosophy.—I am, etc.,

JOAN MALLESON.

London, N.W.1.

SIR.—While agreeing with Dr. Newsholme that the medical profession needs to keep a careful eye on the ethics of insemination, I am frankly appalled by the attitude to masturbation which his letter reveals. Apparently he believes that a married couple should deny themselves the fulfilment of parent-hood unless ejaculation takes place through stimulation produced by friction of the penis with the vagina. If this is not possible and the semen is produced by friction with the fingers, he asserts the act to be "so besmirching as to make it wrong." Wrong in the eyes of what sort of deity, I wonder!

One does not expect a man of Dr. Newsholme's eminence to perpetuate the unbalanced emotional attitude to masturbation which is the basis of so many neuroses. One should properly distinguish between masturbation as a habitual expression of sex life and masturbation as an occasional resource when

there is prolonged deprivation of normal or accustomed sex life. In the one case it is an immature self-centred act, betraying an infantile personality. The addict needs to be freed from the fixations which are keeping him at that level. In the other case it is the deliberate choice of a free adult personality, and no stigma of any kind need attach to it. In the case of the married couple aforesaid the desire to produce a child at the cost of a mechanical intrusion on their emotional life is a proof of their mutual love, which nothing can "besmirch"—I am, etc.,

Birmingham

R. MACDONALD LADELL.

### Physiology of the Vagina

SIR.—I have read your annotation on the physiology of the vagina (Nov. 11, p. 635) with much interest. Will you, however, forgive me for a criticism? You say: "The Fallopian tubes, uterus, and vagina are all developed from the Müllerian ducts. It is therefore not surprising that the tubes and vagina resemble the uterus in that they react to ovarian hormones." Even if the first of these sentences be entirely correct, which I doubt, why should we therefore expect that the organs concerned would react to ovarian hormones? Such reactions are not confined to structures of Müllerian origin, nor within the Müllerian system are the reactions alike in nature or equal in degree. Apart from the supposition (which I do not accept) that the vagina is wholly derived from the Müllerian ducts, it may be borne in mind that the response to oestrogen does not cease abruptly at the introitus.

I would not wish to trouble you with a letter on the subject if it were not that the biological actions of sex hormones comprise a new branch of knowledge of which we are only now working out the principles; at this stage expectations and assumptions may be unreliable guides.—I am, etc.,

The Chester Beatty Research Institute,  
Royal Cancer Hospital.

HAROLD BURROWS.

### Supplement to Breast-feed

SIR.—Dr. Lydia Fehily's interesting article on human-milk intoxication (Nov. 4, p. 590) prompts me to call attention to a fairly prevalent human-milk deficiency condition, increasingly common nowadays, which, while not so directly lethal to the baby, is serious enough to merit early diagnosis and treatment. I am referring to protein deficiency in breast milk. It is my impression that about every one in six "new" babies suffers from it in the welfare centres I attend. The clinical picture is as follows. A worried mother explains that the baby appears always to be hungry. It is restless, sometimes even during sleep, of which there is relatively little because it cries so much and appears generally irritable. The baby feeds voraciously but does not appear satisfied. The general wretchedness of both is usually apparent. Test-feed results sound reassuring, the milk being adequate or even abundant. The pathognomonic answer usually requires to be elicited carefully; sometimes visual evidence is necessary. It is that the stools are dark green and contain curds, sometimes slime, and, if the condition has been present long enough, sore buttocks in addition. The baby has gained very little if at all.

If food fads are persisted in under present-day rationing conditions, and these are very common, such as refusal of cheese and fish and sharing the pint of milk, it is not surprising that the breast milk should contain insufficient protein. Further, in infant welfare centres most of these cases are seen in very young babies, so that the mothers are still not recovered from the effects of childbirth, or, as I recently found, the condition was present in an exceptionally well-fed woman of frail type who was still having uterine haemorrhage after six weeks.

Treatment consists of giving minimal amounts of supplementary cow's milk, which fortunately is rich in protein. For instance, a baby of a month or so usually has all its protein requirements restored by one tablespoon of cow's milk three times a day. Maximum requirements at any suckling age are no more than four tablespoons four times a day, after the breast, assuming there is adequate secretion. Apart from larger amounts being unnecessary, it is often strategically inadvisable to give encouragement to the idea that the bottle feeds are superior to the breast, the magical effects in such cases being so striking that preparatory explanation is very necessary. Too often such babies are soon weaned, with the explanation that the mother's milk "can't be any good," and

## RETINAL DETACHMENT: A SERIES OF 78 CASES IN THE MIDDLE EAST FORCE

BY

H. B. STALLARD, M.B.E., M.D., F.R.C.S.

Major, R.A.M.C.(T.A.); Assistant Eye Surgeon, St. Bartholomew's Hospital

In the war of 1914-18 the treatment of retinal detachment was a failure, and indeed this was so up till 1929, when Jules Gonin (Switzerland) described to the International Congress of Ophthalmology in Amsterdam his successes obtained surgically by sealing a retinal tear or tears and evacuating the interretinal fluid by means of puncture with a galvano-cautery. Before this discovery very few cases of retinal detachment underwent improvement and spontaneous recovery; such were quite exceptional.

Gonin's principles still hold good to-day, but the operative technique has changed. Accurate location of the retinal tear or tears in relation to the outside of the sclera is essential. The edges of the retinal tear and the choroid overlying this site are rendered adhesive by electro-coagulation. This is effected through diathermy, applied either to the surface of the sclera at the site of the tear or by a diathermy needle penetrating the sclera and choroid to reach the retina but not entering it. The interretinal fluid beneath the detachment is drained thoroughly either by penetrating diathermy needle punctures and suction or by trephining the sclera and puncturing the choroid, and secure choroido-retinal adhesions completely surrounding the tear are encouraged by placing the patient's head so that the retinal tear and the drainage puncture lie in the most dependent position obtainable. The effects of gravity of the vitreous assist this.

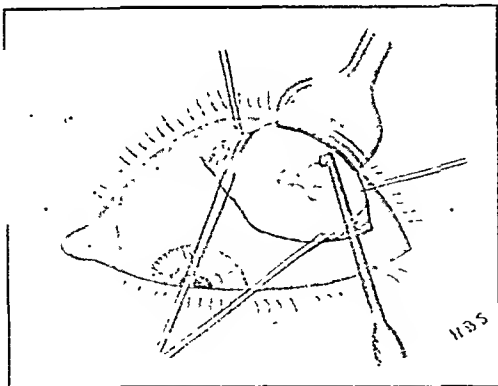


FIG. 1

The following statistics concern 78 officers and men of the Middle East Force suffering from retinal detachment and admitted to a military hospital in Egypt for investigation and treatment of this disorder from 1941 to 1943. Seventy-six were operated on; for one case surgical treatment was not advised, and another made a spontaneous recovery.

The operation performed in these cases was a combination of surface diathermy (90 to 100 mA for 8 seconds) placed around the edges of a tear or tears and penetrating diathermy;

one, two, and very rarely more punctures were made in the sclera with the diathermy needle carrying a current of 40 mA for 1 second (see Fig. 1). The interretinal fluid was sucked into a glass tube and rubber suction bulb applied to the sclera over the diathermy penetration. The patients were soldiers in good health between the ages of 20 and 47, the majority being in the third decade of life. This survey differs from a survey of retinal detachment in civil practice in two respects: (1) the incidence of myopia in retinal detachment would be appreciably higher than 3 in 78 cases; and (2) in civil practice injuries peculiar to war are of course not present. In the last the prognosis is adversely affected by the severity of the intraocular damage caused by blast and the ravages of high-velocity metallic missiles with ragged edges and rough surfaces.

I have classified the 78 cases as follows:

(1) Cystic degeneration	..	..	..	13
(2) Choroido-retinal degeneration	..	..	..	21
(3) Myopia	..	..	..	3
(4) Trauma (civil)	..	..	..	23
(5) Trauma (military)	..	..	..	18

Of these, 11 were officers—one a nursing officer (Q.A.I.M.N.S.). The remainder were other ranks, and included: Royal Navy, 2 cases; Royal Air Force, 2 cases; Royal Canadian Air Force, 1 case; and the Merchant Navy, 1 case. The following table shows the age incidence in decades in these five groups.

TABLE 1.—Age Incidence

Age (Years)	Cystic Degeneration	Choroido-retinal Degeneration	Myopia	Trauma, Civil	Trauma, Military
20-30	9	16	2	18	15
31-40	4	3	1	5	3
41-47		2			

The nationalities were: British, 60; Canadian, 2; New Zealand, 1; South African, 3; Indian, 3; Greek, 4; Polish, 2; Czech, 1; German, 1; Italian, 1.

### 1. Cystic Degeneration (13 Cases)

The date of origin of the detachment was unknown in 11 cases. In these the condition was discovered in the course of routine examination. In two cases a sudden spread of the detachment from the limits of the cystic area caused separation of the macula so that the soldier noticed the visual defect. One sought advice one week after this event and the other four months later.

The position of the cystic area was peripheral in all cases. In 10 it was in the lower temporal quadrant, and in two of these it had spread to strip off the macula; in 2 cases the upper and lower temporal quadrants were affected at the periphery, and in 1 case the lower temporal and lower nasal quadrants were involved. In 9 cases there was a well-defined area of pigmentary disturbance in the choroid and retina at the posterior periphery of the cyst up to the ora serrata, where these changes ceased. In 3 others this was faint. The ophthalmoscopic appearance suggested a line of adhesion between the retina and choroid, which was more marked in some cases than in others. In one case these changes were present in only part of the arc at the posterior periphery of the cyst.

In one case of haemangiogliomatosis resected a retinal cyst was at the periphery of the lower temporal quadrant, remote from the neoplasm, which was behind the equator along the course of the



showed subacute inflammatory infiltration of the sinusoids, and the kidney post mortem degeneration. The lungs showed congestion and patchy collapse.

The one obvious comment on this case is that laparotomy was delayed too long, but the history and the physical signs on the right side led to a misdiagnosis. Why this spleen ruptured is difficult to determine and lends itself only to speculation. Though trauma is impossible to exclude, the husband was closely questioned and no history of trauma was forthcoming. From the pathological report this was not a strictly normal spleen, but no primary focus of infection was found—I am, etc.

Lambeth Hospital S.E.11

R. I. HENDILASS

### Service Medicine

SIR—Capt Piper's letter (Sept. 2) paints a very inaccurate picture of the life and work of a regimental medical officer. I was in general practice for some three years before becoming an R.M.O. of a gunner unit in 1940. I have remained with the unit in that capacity ever since. During two and a half years in the U.K. I was able to get to know the officers and men, their strong points and weaknesses without any difficulty whatsoever. The suggestion that mistrust is engendered by an R.M.O.'s "friendliness" with his C.O. is an extraordinary one. It presupposes that the men have no trust in or respect for the average C.O. that he is in effect an ogre and completely inhuman. Nothing could be further from the truth.

I found the job of weeding out those men whom I considered to be unfit mentally or physically for active service overseas, and helping to promote and maintain the health of the remainder, both novel and stimulating. For the first time in my life I was able to appreciate the importance of preventive medicine, and had time to think over the elemental reasons for sickness and to realize the major part played by environment, living conditions, nutrition, etc.

The statement that "any sick must immediately be sent to hospital as the equipment provided lacks the essential for diagnosis" is grossly exaggerated. Every R.M.O. has an auriscope and I have never been handicapped by the lack of a sphygmomanometer, having for the most part to deal with constitutionally fit men between the ages of 20 and 40. Admittedly I have no microscope, but here I should like to digress a moment. In the alternatives that Capt Piper offers for a G.P. in the Army he makes no mention of field ambulances or dressing stations. It is possible that he includes these in the term "collecting unit," but it so he is doing them an injustice. When not functioning on an active front these units hold and treat a large number of sick. These are cared for by M.O.s without clinical interference from their C.O. They have access to a microscope which they can and do use.

Diagnosis remains the crux of medicine, and cases have to be sent to hospital for investigation even in civilian practice. My only regret is that I have not had the opportunity to practise obstetrics or administer anaesthetics—I am, etc.

J. A. J. HANMOND,  
Capt R.A.M.C.

SIR—Under Thirty is clearly but recently commissioned. If he had had more experience of medical practice before joining whatever Service he now belongs to he would have understood better what is required of a doctor, either in a Service or out of it, for the good of his patients.

In many branches of the fighting Services, and particularly in the medical branch, the number of forms to be completed is certainly large and the work involved is considerable and tedious. But, although many attempts have been made to effect a reduction, it has proved impossible to do so without impairing efficient administration or the clinical records which are so essential to the ultimate welfare of the individual patient and his comrades still actively engaged in war. Let "Under Thirty" try to understand the purpose of each of the returns which he has to render, and then decide if any one of them can be eliminated. And when he has had longer service he will probably better understand the responsibilities which make it necessary that every officer should inspect and be answerable for the equipment of troops in his charge.

Having myself just completed a long period of active service in the Army there is one remark in his letter which I consider should not be passed without comment, for it is a gross misrepresentation of the spirit both of the troops and of the doctors who look after them, and I do not doubt that it has no fairer application to either the Navy or the R.A.F. He says, speaking of sick parades: "One thinks not of a patient to be hurried but of a man who may be trying to get away with something (not a malingerer, for they are rare, but an exaggerator) and he has to prove he is ill before you start to think of him." It is most sincerely to be hoped that

Under Thirty is serving in some large medical unit and is therefore under the immediate command of a senior officer. For if he were on his own—for example, M.O. to a battalion—his attitude at sick parade might well prove disastrous until the C.O. quite realized what was going wrong.

But Under Thirty "need not despair." When he returns to civil life he will learn, in whatever form of practice he may follow, that the great proportion of his patients who exaggerate are not trying to get away with something but truly need his advice. Fortunately, most Service M.O.s realize this, give their advice gladly, and thereby do much to maintain the fighting efficiency of the troops—I am, etc.

London W.1

R. OGIER WARD

## Obituary

SIR JAMES DUNDAS GRANT, KBE,  
MD, FRCS

One of the best known names in British otology and laryngology has passed into history with the death of Sir James Dundas-Grant on Nov. 13. It is astonishing over how long a period his career extended. He had already been in general practice for ten years when he took up his specialty in 1886, and more than fifty years later he was still a prominent figure at all assemblies of ear, nose, and throat surgeons. Though he had long retired from practice, and his vitality in recent years had been diminished as a result of a street accident, he would examine clinical cases or specimens with the eagerness of youth and join in the discussions, recalling details of like cases he had seen or surgical procedures he had followed at any time within the last half century.

James Dundas Grant was born in Edinburgh in 1854, the son of a Scottish advocate. He received his education at Edinburgh Academy and went to Dunkirk College, France, as a finishing school. He then entered Edinburgh University, where he took his M.A. in 1873, spent some time also at the University of Würzburg in Bavaria and afterwards came to London, where he completed his medical studies at St. Bartholomew's. He qualified in 1876, took the Edinburgh M.D. with honours in 1879, became Fellow of the Royal College of Surgeons of Edinburgh in 1884, and Fellow of the English College, by examination, in 1890. In 1879 he was appointed surgeon to the Central London Throat and Ear Hospital, an appointment he continued to hold until 1913, when, retiring under the age limit, he became consulting surgeon, and so remained for many years. No doubt it was his association with the institution in Gray's Inn Road that determined him eventually to confine his work to otology and laryngology (he would never have it that they were two separate specialties). He also held appointments at various other hospitals—Brompton Hospital for Consumption, where he continued to be consulting surgeon to the ear and throat department for many years after his retirement, the Cancer Hospital, the West End Hospital for Diseases of the Nervous System, the Freemasons' Hospital at Hammersmith, and the Sussex Throat and Ear Hospital at Brighton. He was an excellent and intimate instructor and held a teaching post in laryngology and otology in connection with the University of London. His pen also was extremely active. It does not appear that he ever wrote a book, but he was a prolific contributor to the medical journals, general and special, and to the annuals and encyclopaedias, on the subject of the ear and throat. He had an inquiring mind, an aptitude for precise detail, and a good deal of mechanical ingenuity. Again and again at medical meetings he would bring forward some new contrivance—or more often perhaps some old contrivance of his own devising—such as a cannula for aspirating the middle ear, or a ligature applicator for tonsillar and other deeply seated vessels, or some modification of an aid for hearing so as to make it more efficient or comfortable. He rarely lost an opportunity to intervene in debate, and generally it was to contribute something from his own experience.

upper temporal vessels. There were no apparent degenerative and pigmentary changes in the retina and choroid at the edge of the cyst.

**Retinal tear or tears** were found in 12 cases; in the remaining one, which was associated with haemangiogliomatosus retinae, there was no tear. The retinal tears were at the ora serrata in 9 cases, in five of which a single tear was present; in 2 there were two tears, in 1 there were two tears at the ora serrata and two posterior to this, in another case four at the ora serrata and three posterior to this. In one case the tear was a single round hole about 1.5 mm. behind the ora serrata. In two instances no clearly defined hole was evident; in one of these there were two thin areas of atrophic retina and in another four such areas, two of which were minute. These were all placed about 1.5 to 2 mm. behind the ora serrata.

The right eye was affected in 9 and the left in 4 cases. The intraocular pressure was 1 to 2 mm. Hg below normal in 3 cases, in 1 it was 2 mm. Hg above that in the other (normal) eye, and in the remainder it was equal in both eyes. One month after operation it was 6 mm. Hg, often less, and it gradually returned to normal in 3 to 6 months after operation.

One operation in each case successfully replaced the retina, sealed the tear, and restored the visual field. There were no failures. This type of case is particularly favourable for surgical treatment. The danger of a sudden spread of the detachment justifies an operation in which the chances of success are, it seems, 100%.

The change in refraction from before to after operation was too slight to be of any significance. Between 3 and 6 applications of surface diathermy were made to the sclera, and the difference of 0.5 to 1 D of astigmatism and the change of axis up to 30° may have been due to subsequent contracture of the sclera at the diathermy sites and the effect of this on the cornea. The change in refraction was not constant until the intraocular pressure was re-established.

**Visual Result**—In 11 cases the visual acuity was 6/9, 6/6, and 6/5, and it remained unchanged after operation. The two patients in whom the macula was detached improved to 6/24 (1 letter).

## 2. Choroido-retinal Degeneration (21 Cases)

Retinal detachment in this group was associated with areas of choroido-retinal scarring and degeneration. In many instances multiple small holes were present in the thin degenerate area of the retina. The duration of the detachment, so far as could be ascertained from the patients' history, was as follows: 2 to 8 weeks, 9 cases; 4 to 12 months, 4 cases; 2 years, 1 case; 5 years, 1 case; 6 years, 1 case; 8 years, 1 case; 13 years, 1 case; 17 years, 1 case; and unknown in 2 cases. The area of detached retina was: upper and lower temporal quadrants and lower nasal quadrant in 7 cases; the lower temporal and lower nasal quadrants in 9 cases; the lower temporal quadrant in 3 cases; the upper temporal quadrant in 1 case; and the upper nasal quadrant in 1 case.

**The tears in the retina** were single in 10 cases, and these were all placed at the ora serrata. Two holes were present in 3 cases; in two these were in the upper temporal quadrant and in one at the ora serrata. In one case there were three holes on the temporal side, and in another four holes at and near the ora serrata in the lower temporal quadrant. In 4 cases many minute holes were present in an area of choroido-retinal atrophy in the upper temporal quadrant in each instance. In 2 cases there were very thin atrophic areas of retina in the lower temporal quadrant at and posterior to the ora serrata, but no definite hole was evident.

The right eye was affected in 11 cases and the left in 10. The intraocular pressure was 0.75–2.25 mm. Hg below that in the other normal eye in 4 cases; it was 3.75 mm. Hg higher than the normal

eye in 1 case and 2.25 mm. Hg higher in another. In the remainder the intraocular pressure was equal in both eyes. In all cases the retina was replaced and the visual field restored.

**Visual Result and Refraction**.—In 18 cases in this group macula was detached. Two of these recovered 6/12, two 6/18, 6/24, and the remainder 6/36 to 6/60. The 6/60 was obtained eccentrically by a few. Two patients had visual acuity of 6/5 and one 6/6. In 4 cases astigmatism of 1.25 D—two myopic and two hypermetropic—was present after operation.

## 3. Myopia (3 Cases)

The degree of myopia was 8 D in one case, 5.5 D with 2.5 astigmatism in another, and 3.75 D in the third. The duration of the detachment was two to three weeks in all cases. The area of detachment was in the upper temporal quadrant in 1 case, the upper temporal and upper nasal quadrants in 1 case, and the upper and lower nasal quadrants in 1 other.

**Retinal Tears**.—In one case there were seven tears between the equator and the ora serrata in the upper temporal quadrant. Two of these were crescent-shaped and larger than the others, which were ragged and irregular. The line of tears in this case was continuous with a zone of choroido-retinal degeneration about 2 mm. wide in the lower temporal quadrant. In another case there was a single arrowhead-shaped split at the ora serrata in the upper temporal quadrant in the 11.30 o'clock meridian. Also in this case there were two linear areas of atrophic retina in the 11 o'clock meridian between the equator and the ora serrata. In the third case there were three holes just in front of the equator. In the upper nasal quadrant one of these was in the 3 o'clock meridian, 4.5 mm. in length and kidney-shaped. Another, about 2 mm. in length, was crescent-shaped in the 2 o'clock meridian, and close above it was the third hole, which was round and about 0.25 mm. in diameter.

The intraocular pressure behaved similarly to that in the other groups of retinal detachment. In the eye with the retinal detachment it was 1 to 2 mm. Hg below the other. One month after operation it was less than 6 mm. Hg in

2 cases and 6 mm. Hg in 1 case. In three months it had risen to 8.75–10 mm. Hg.

Two cases were successfully treated by operation. The third had a vitreous haemorrhage on the fourteenth day, and subsequently a shallow localized retinal detachment associated with a fold in the retina appeared in the upper nasal quadrant.

**Visual Result**.—In the two cases with the retinal detachment in the upper temporal quadrant the macula was detached and visual acuity was less than 6/60 before operation. One of these, a myope with 8.25 D, recovered 6/36; the other, with 2.75 D of myopia, had 6/9 (4 letters) after operation. The recovery of the visual field was complete in the latter case and apparently so in the former, although indeed the physiological conformation of the lower nasal field must have masked the peripheral scotoma resulting from the applications of diathermy to the upper temporal quadrant. In the third case, in which a retinal fold occurred in the upper nasal quadrant, the visual field was substantially improved by operation.

## 4. Civil Trauma (23 Cases)

In these cases the cause of the detachment was a blow from a blunt object or a severe contusion around the eye—e.g., in boxing and football, from a door handle, the corner of a bed-post, a "kennekee" stick, a fall from a motor vehicle, and the explosion of a battery accumulator. The duration of the detachment was unknown in 1 case, 9 to 21 days in 5, 1 to 9 months in 8, 1 year in 2, 3 years and 5 months in 1, 5 years in 1, 6 years in 2, 8 years in 1, 10 years in 1, and 27 years in 1.

### LEGENDS FOR FIGURES

FIG. 1.—Retinal detachment operation. Exposure of the sclera at the site of a retinal tear in the upper temporal quadrant of the left eye. The flap of conjunctiva and Tenon's capsule is held reflected by two sutures. Two traction sutures pass through the tendon of the adjacent recti muscles. Surface diathermy has been applied to the sclera and penetrating diathermy is being made at the posterior edge of the tear about the equator.

FIG. 2.—Drawing of left fundus of Dvr. H. E. Intraocular contracting scar tissue on nasal side from 6.30 to 10 o'clock. In the 3 o'clock meridian there is a dense fibrous band which runs posteriorly behind the equator. The retina is detached above and below this band.

FIG. 3.—Dvr. H. E. Diagram of operation. The internal rectus is divided. The small shaded circles represent the sites of surface diathermy applications, and those with the dark point in the centre are the positions of penetrating diathermy. Two sutures retract the posterior edge of the conjunctival incision. Two mattress sutures have been passed through the external rectus muscle, and one is acting as a traction suture in the tendinous insertion of the muscle. The scleral wound is exposed.

FIG. 4.—Fundus drawing of right eye of Soldat R. K. (German Army). Dense white contracting fibrous tissue from 4.30 to 7.30 o'clock. A sheet of this fibrous tissue extends posteriorly to a point between the equator and the optic disk. In this band is a mass of proliferated choroid which resembles a foreign body. The lower half of the retina is detached. Just below the optic disk there are some vertical retinal folds and a transverse arc of pigment deposits. In the upper nasal quadrant above the upper level of the retinal detachment and near the optic disk are two choroidal splits. On the surface of the retina in the lower nasal quadrant are some interlacing bundles of fibrous tissue.

A joint meeting of the Scientific and Technical Group of the Royal Photographic Society and of the Association for Scientific Photography to discuss electron microscopy will be held to-day (Saturday, Nov. 25) at 3 p.m., at the rooms of the Royal Photographic Society, 16, Prince's Gate, London, S.W.

A lecture on research in all its various aspects essential for the promotion of health and the prevention of disease (arranged by the Chadwick Trustees under the Malcolm Morris Memorial Trust) will be given by Dr. J. A. H. Brincker on Tuesday, Nov. 28, at 2.30 p.m., at Westminster Hospital Medical School, 17, Horseferry Road, S.W.

Mr. Somerville Hastings, chairman of the L.C.C., will deliver an address on "Hospitals in a New World" to a meeting of the Polish Medical Association in the United Kingdom on Tuesday, Nov. 28, at 5 p.m., in the Hastings Hall of B.M.A. House. Medical practitioners and medical auxiliaries will be welcome.

Brig. L. E. H. Whitby will give a lecture on the Army Blood Transfusion Service, illustrated by lantern slides, at the Royal Society of Arts, John Adam Street, Adelphi, W.C. on Wednesday next, Nov. 29, at 1.45 p.m.

The Scientific Film Association is presenting a programme of recent films of medical interest, chosen by its Medical Standing Committee, by invitation of the Royal Society of Medicine, at 1, Wimpole Street, W.1, at 5.30 promptly, on Thursday, Dec. 7. The meeting is open to medical practitioners, medical students, and nurses in the London area, but by ticket only, to be obtained from the Medical Hon. Secretary, 14, Hopton Road, S.W.16, before Dec. 1.

The Council of the Royal Medical Foundation of Epsom College will shortly proceed to award St. Anne's Scholarships to girls attending Church of England schools. Candidates must be fully 9 and under 16 years of age, and must be orphan daughters of medical men who have been in independent practice in England or Wales for not less than five years. The Council will also in March award a "France" pension of at least £30 per annum to a necessitous medical man, fully 55 years of age, who has been registered for five years. Forms of application for the scholarships and for the pension can be obtained from the Secretary's Office, Epsom College, Epsom, Surrey, and must be completed and returned to that office by Jan. 15, 1945.

The Ministry of Health has issued to County Councils, County Boroughs Councils, and Joint Cancer Committees a circular (123/44) enclosing printed directions for the use of record cards for cancer cases which the Minister has prescribed after detailed consultation with the Cancer Subcommittee of his Medical Advisory Committee.

## EPIDEMIOLOGICAL NOTES

### Discussion of Table

In England and Wales during the week measles, diphtheria, and whooping-cough rose in incidence by 385, 79, and 74 cases respectively, while falls were recorded for scarlet fever 139, and dysentery 106.

Yorks West Riding recorded a rise of 188 in the incidence of measles. There were also rises in Cheshire and Warwickshire of 101 and 96 respectively, but a fall of 116 in Lancashire, where, nevertheless, one-third of the notifications for the country were reported. Cheshire had 31 more cases of whooping-cough than last week. The great increase in diphtheria resulted in the largest weekly total for over six months. Lancashire had 48 more cases than last week (Lancaster M.B. 24 more), and Cheshire 28. The fall in scarlet fever ends a continuous rise of ten weeks; Nottinghamshire had 45 fewer cases than last week, and Yorks West Riding 42.

Although the notifications of dysentery fell by 106 to the lowest level of the past eleven weeks, the incidence is still high, 256 cases being recorded. The largest returns during the week were London 38, Surrey 33, Essex 31, Lancashire 30, Glamorganshire 22, Gloucestershire 11, Yorks North Riding 11. During the past eleven weeks 35% of the total notifications were recorded in the region comprising London, Surrey, Kent, Middlesex, Hertfordshire, and Essex.

In Scotland the only notable fluctuations in the incidence of infectious diseases were an increase of 34 for scarlet fever, and a decrease of 35 for diphtheria.

In Eire the incidence of infectious diseases underwent little change. One case of typhus fever was reported from Galway, Loughrea R.D.

In Northern Ireland the notifications of measles in Belfast C.B. rose from 96 to 143.

### Week Ending November 11

The notifications of infectious diseases in England and Wales during the week included: scarlet fever 2,132, whooping-cough 1,297, diphtheria 642, measles 5,752, acute pneumonia 583, cerebrospinal fever 37, dysentery 320, paratyphoid 3, typhoid 4, acute poliomyelitis 13.

## INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended Nov. 4.

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year, for (a) England and Wales (London included), (b) London (administrative county), (c) Scotland, (d) Eire, (e) Northern Ireland.

Figures of Births and Deaths, and of Deaths recorded under each infectious disease, are for (a) The 126 great towns in England and Wales (including London), (b) London (administrative county), (c) The 16 principal towns in Scotland, (d) The 13 principal towns in Eire, (e) The 10 principal towns in Northern Ireland.

A dash — denotes no cases, a blank space denotes disease not notifiable or no return available.

Disease	1944					1943 (Corresponding Week)				
	(a)	(b)	(c)	(d)	(e)	(a)	(b)	(c)	(d)	(e)
Cerebrospinal fever Deaths	42	3	24	4	—	44	4	27	3	4
Diphtheria Deaths	633	12	169	120	30	770	41	179	117	40
Dysentery Deaths	256	38	90	1	—	146	43	156	—	7
Encephalitis lethargica, acute Deaths	—	—	—	—	—	4	—	1	1	—
Erysipelas Deaths	—	—	55	14	5	—	—	60	6	2
Infective enteritis or diarrhoea under 2 years Deaths	45	3	7	39	1	44	10	14	29	3
Measles Deaths	4,827	80	307	27	145	553	46	62	29	2
Ophthalmia neonatorum Deaths	74	6	14	1	1	85	8	17	—	1
Paratyphoid fever Deaths	3	1	(B)	—	—	4	—	—	—	1
Pneumonia, influenza Deaths (from influenza)	520	26	10	3	4	676	32	29	2	1
Pneumonia primary Deaths	18	3	2	—	2	31	4	20	1	1
Poliomyelitis, acute Deaths	—	—	—	—	—	—	—	—	—	—
Poliomyelitis, acute Deaths	14	—	4	1	—	11	—	1	2	—
Puerperal fever Deaths	—	4	21	—	—	—	2	26	—	—
Puerperal pyrexia Deaths	155	7	13	1	—	142	7	14	1	2
Relapsing fever Deaths	—	—	—	—	—	—	—	—	—	—
Scarlet fever Deaths	2,149	56	359	42	61	3,374	237	407	61	111
Smallpox Deaths	—	—	—	—	—	—	—	—	—	—
Typhoid fever Deaths	5	1	3	4	—	4	—	2	10	—
Typhus fever Deaths	—	—	—	1	—	—	—	—	—	—
Whooping-cough Deaths	1,135	49	82	13	11	1,755	108	216	16	29
Deaths (0-1 year) Infant mortality rate (per 1,000 live births)	332	30	53	42	14	318	41	63	35	22
Deaths (excluding stillbirths) Annual death rate (per 1,000 persons living)	4,352	584	596	207	106	4,171	611	630	204	135
Live births Annual rate per 1,000 persons living	6,653	545	896	320	274	5,675	717	839	336	263
Stillbirths Rate per 1,000 total births (including stillborn)	228	19	39	—	—	185	22	42	—	—

\* Measles and whooping-cough are not notifiable in Scotland, and the returns are therefore an approximation only.

† Includes primary form for England and Wales, London (administrative county), and Northern Ireland.

‡ Includes puerperal fever for England and Wales and Eire.

§ Owing to evacuation schemes and other movements of population, birth and death rates for Northern Ireland are no longer available.

**The Area of Retinal Detachment**—The retina was totally detached in 2 cases—one a Greek and the other an Italian—and in both here was a large tear at the ora serrata in the upper nasal quadrant. In the latter the retina was cobbled up in a mass of scar tissue, an organized haemorrhage in the course of the superior temporal branches of the central retinal vessels about 4.5 mm from the optic disk. The former showed opacities in the upper nasal quadrant of the lens. The detachment was present in the upper temporal, lower temporal, and lower nasal quadrants in 10 cases, the upper and lower temporal quadrants in 2, the lower temporal quadrant in 2, the upper temporal quadrant in 1, the upper temporal and upper nasal quadrants in 1, the upper temporal and upper and lower nasal quadrants in 1, the upper and lower nasal quadrants in 1, the upper and lower nasal and lower temporal quadrants in 1, the lower temporal, upper nasal, and lower nasal quadrants in 1, and the lower nasal quadrants in 1.

**Retinal Tears**—The tear in the retina was single in 18 cases. In 10 it was at the ora serrata in the lower temporal quadrant, and in three of these the tear extended into the lower nasal quadrant. A tear at the ora serrata in the upper nasal quadrant was present in 2 cases and in the lower nasal quadrant in 1 case. A long elliptical tear, with its long axis horizontally, ran across the equator of the upper nasal quadrant in 1 case and was accompanied by a vitreous and retinal haemorrhage. In another case a large rent at the ora serrata extended into both the upper and lower temporal quadrants. A round hole was present between the equator and the ora serrata in the 9 o'clock meridian on the temporal side in one case. A large crescent shaped tear occupied most of the upper temporal quadrant between the equator and the ora serrata in one case. In one case there was a round hole in the upper nasal quadrant between the equator and ora serrata. In the 5 multiple cases the number and disposition of these tears were as follows: upper temporal quadrant, five tears between the equator and ora serrata, one of which was arrowhead shaped and the other four smaller and irregular; lower temporal quadrant at the ora serrata, two tears in one case, in another case between the ora serrata and the equator six tears, one of which was crescentic and the other five smaller than this and irregular; lower temporal and lower nasal quadrants, two tears—one at the ora serrata and the other a round hole about 1 mm posterior to it. In the fifth case two large rents each ran obliquely across the equator and along the course of the upper temporal and the lower nasal branches of the central retinal vessels respectively. The upper temporal tear was the larger, and extended to within 1 mm of the optic disk.

The right eye was affected in 9 cases and the left in 14. The result of operation was successful in 20 cases. Of the three failures, two were cases of total retinal detachment—the Greek and the Italian described above. In the case of the Italian there was little chance of success on account of the cobbling together of the retina in a mass of organized blood-clot. At the best we hoped to give him some slight improvement of visual field. The failure of the Greek to co-operate in post-operative postural rest may or may not have been responsible for failure in this serious case. In the third case two large rents were present, one extended from in front of the equator to within 1.5 mm of the edge of the optic disk along the upper temporal vessels, and the other was long but less extensive along the course of the lower nasal vessels. The retina was detached in the nasal half of the fundus and part of the upper temporal quadrant. The retina remained in place for 25 days after operation and then the detachment recurred in the lower nasal quadrant.

**Visual Result, Visual Field and Refraction**—In 4 cases vision improved from 6/60 to 6/9, 6/60 to 6/12 (4 letters), 6/12 to 6/6, and 6/6 to 6/5. In 7 cases it remained the same, in three of these it was 6/5, in one 6/6, in one 6/12, and in two others 6/36. In 9 cases the macula was detached, and in all these the vision was less than 6/60. It improved to 6/9 in one case and 6/60 in eight. In the three failures it remained "hand movements" in two cases and was 6/60 in the other. The visual field was improved in all the successful cases. The alterations in refraction were small in the majority and amounted to the appearance of +0.5 D and -0.75 D astigmatism, with axis variations of 15° from before operation. In two instances when seven and nine applications of surface diathermy had been made respectively at the ora serrata in the lower temporal quadrant it seemed that subsequent contraction of the sclera produced two months after operation an increase of corneal curvature opposite the site of application, so that -1.75 and -2.25 cylinders set at an oblique axis (20-30°) were necessary to correct this.

### 5. Military Trauma (18 Cases)

The area of retinal detachment was extensive in a number of these cases. Large splashes of blood on the retina, in the choroid and vitreous, exudates, subsequent fibrous organization of intraocular blood, the presence of blood between the retina and the choroid, and the lowered intraocular pressure as the result of severe concussion of the eye from blast were factors against successful treatment. It is probable that vitreous gel passes through some of the large ragged

rents in the retina and is a mechanical factor in preventing choroidal-retinal adhesions from forming after diathermy.

In one case in this series of 18 the intraocular changes were such that surgical operation seemed to hold out no hope of effecting any improvement. The soldier had sustained a blast injury from an aerial bomb which exploded 200 yards to his right front. Three months after the injury the retina was totally detached, dense white broad sheets of organized blood clot were adherent to it in the lower half of the eye, over the macula, in the upper nasal quadrant, and in front of the equator above. The inferior branches of the central retinal vessels immediately below the optic disk were linked and tortuous. There was much pigmentary disturbance in the retina and the intraocular pressure was 6.5 mm Hg. Vitreous had herniated forwards into a coloboma of the iris in the lower temporal quadrant, the suspensory ligament having been ruptured at this site.

Spontaneous recovery of retinal detachment in the upper temporal quadrant occurred in an officer who was wounded by a fragment of shell which struck the temporal end of his left supraorbital margin. There were a severe contusion of the left eye and a rupture of the choroid at the macula, and large splashes of blood and exudate were present on the retina and in the choroid and vitreous of the upper temporal quadrant. One month after this wound the retina in the upper temporal quadrant became detached. There was no bile evident. The intraocular pressure was 6 mm Hg and visual acuity less than 6/60. Postural treatment was tried for three and a half weeks. The detached area became slightly smaller and some of the interretinal fluid was absorbed. Within two months of the onset of the detachment the retina was completely restored to its normal place.

In this group of 18 cases 3 had lost one eye (the left in each case), which was destroyed beyond hope of repair at the time of wounding. In 8 cases the right was affected, and in 10 the retina was detached in the left eye. In most the actual duration of the retinal detachment was difficult to assess accurately. In some instances it was apparent a few days after wounding, in others it was obscured by intraocular haemorrhage and did not become evident for several weeks, while in a few it occurred as a late sequel, 6 to 14 months after the injury. In the latter the contraction of fibrous tissue attached to the retina and the lowered intraocular pressure were likely causes. The times, taken from the date of wounding, were 1 to 11 days 6 cases, 1 to 4 months, 8 cases, 4 to 6 months, 3 cases, and 14 months, 1 case.

Retinal detachment occurred in association with an intraocular foreign body in 5 cases. The detachment happened immediately in one case, 53 days later in another, and in a third 6 weeks after the extraction of an intraocular foreign body, at another hospital, by the posterior route, in which diathermy was not used at the site of sclerotomy. In the other 2 cases the date of onset of the detachment was not known. Of the intraocular foreign bodies, three were extracted by the magnet through the posterior (scleral) route, one was removed by a snare and forceps guided under ophthalmoscopic view, and another was too small and non magnetic, and so was left.

In 3 cases tangential cuts in the sclera were caused by a shell fragment, which did not remain in the eye but passed on into the orbital tissues. Blast from a shell and an aerial bomb caused retinal detachment in 3 cases, hand grenades were responsible for 2, land mines for 2, a rifle-butt for 1, a bullet traversing the orbit for 1, and a fragment of mortar bomb for 1.

**The site of the retinal detachment** was total in 2 cases, almost total in 2, involved the lower half of the retina in 4, the upper and lower temporal quadrants in 2, the upper and lower temporal quadrants and lower nasal quadrant in 4, the upper and lower nasal quadrants and the lower temporal quadrant in 2, the upper temporal quadrant in 1, and a curtain like detachment affecting the upper nasal and upper temporal quadrants and the lower nasal and lower temporal quadrants in 1 (see Fig 2). There was no hole present in this case. Fig 3 is a diagram of the operation. The internal rectus muscle was divided temporarily at its insertion in front of two mattress sutures. Beneath the muscle belly was seen a tangential wound in the sclera just in front of the equator in the 9 o'clock meridian. The wound was linear, 3 mm long, vertical, and, gaping, it revealed the choroid. The application of surface diathermy on either side of it closed it by contracting the sclera. A line of surface diathermy applications was made at the equator between the nasal borders of the superior and inferior rectus muscles. From the upper and lower ends of this line applications of diathermy were made forwards to the ora serrata. Thus a frame was made just clear of the scar tissue inside the eye and with the object of pinning down the retina. The interretinal fluid was drained by penetrating diathermy at two points—one at the equator just above the upper margin of the internal rectus and the other at the equator in the lower nasal quadrant.

A retinal tear was present in 5 cases, in one of these there were three tears and in another two tears. In two of these cases the retina was torn by the passage of the foreign body through it. In

## Treatment of Varicose Ulcer

**Q.**—A man aged 65 has had an ulcer on the medial side of the lower third of the leg for four years. When I saw him first it extended half-way up his leg. I injected his veins with ethamolin and they are now normal. W.R. negative. He has had elastoplast and viscopaste bandages, but now he cannot tolerate either of these or ichthopaste. Despite many treatments with rest the ulcer remains indolent.

**A.**—First, the presence of diabetes, local or general nerve disease, obliterative arteritis, and syphilis should be excluded. In addition, active absorption from septic or dead teeth and infected tonsils will prevent an ulcer from healing. The diabetes is occasionally latent by the patient having a high renal threshold—recently a case was seen where it was 280, only a complete diabetic investigation revealed it. The ulcer, which had been under treatment on and off for four years, healed in less than a fortnight when dieting and insulin were started. The obliterative arteritis is detected by the absence of pulsation in the dorsalis pedis artery and when it is calicified, by x-ray examination of the leg.

The local conditions are the persistence of varicose veins. There are two types, although rare and not generally known which may be present. The first is incompetence of the external saphenous vein, which can be detected by the two tourniquet test—i.e., elevating and emptying the veins, putting on two tourniquets, one above and the other below the knee, and asking the patient to stand. The lower band is then released, and if the external popliteal vein is incompetent a down tilting wave of varicose size will be seen in the veins of the leg. The second item is inefficient deep communicating veins, usually situated in the lower third of the inner surface of the leg and diagnosed by feeling a defect in the deep fascia somewhat like a button-hole. There may be one or two such vessels. They are not easily detected. Another way to prove their presence is to put on a tourniquet below the knee, ask the patient to stand, and if the communicating veins are faulty the empty veins will be seen to fill up within thirty seconds.

The treatment is to ligature and inject the external saphenous vein at its termination in the popliteal space. The communicating veins are cut down on and dissected out, divided between ligatures, and the deep fascia closed. The bleeding from them is surprising in its volume and pressure. The operation is more difficult than ligatures and injection of either the internal or external saphenous veins, but the results in these persistent ulcers make the trouble worth while.

## Synovial-tissue Proliferation

**Q.**—Is the operation of bilateral removal of patellae likely to be worth while in treatment of serious synovial-tissue proliferation with much grating on knee movement and pain in rubbing the patellae against femoral condyles?

**A.**—The operation of bilateral removal of the patellae for the relief of serious synovial tissue proliferation with much grating on knee movement and pain would appear to be a heroic remedy which might easily increase the disability it was sought to relieve, simple synovectomy, which has been practised especially in America, would be a more appropriate procedure.

## Human Semen by Post

**Q.**—Artificial insemination of human semen is, I believe, increasingly practised in America. Can you tell me what is the ideal temperature for keeping semen and, if sent by post, how long it will remain active?

**A.**—Semen for artificial insemination should be as fresh as possible (not older than 3 hours). It should be collected without a sheath into a warm glass tube. Sudden chilling seriously disturbs the viability of some specimens. If the semen is going to be used within 2 hours of collection it is probably best to keep it warm (near to blood heat). If the interval between collection and insemination is going to be longer (2 to 6 hours) it is best to allow the specimen to cool gradually to cool-room temperature (about 25°C) and to inseminate at this temperature; contact with the female genital tract will do all the warming up that is needed. It is not desirable to delay longer, as the chances of success, even with highly fertile specimens, are then much reduced. It is extremely unlikely that a specimen of human semen sent by post (12 to 36 hours old) would still be capable of effecting fertilization, but perhaps they would find speedier postal services in America than we have here in war-time. The only chance of preserving fertilizing capacity for 12 hours or more would be to dilute one part of semen (provided it had an initial density of at least 100 million per c.c.m.) with 2 or 3 parts of Walton's buffered glucose or egg-yolk-citrate solution, cool it gradually to 4°C, and post it in a thermos packed with ice. The writer has no first-hand experience of this method, and feels it would be simpler to get the donor to transport himself nearer to the recipient.

## Staphylococcal Infection of Bone

**Q.**—How long can a staphylococcal infection of bone remain latent or quiescent? Can an osteomyelitis of lower end of femur, which eventually necessitated amputation, be attributed to a compound fracture of lower end of same femur which happened 25 years ago? There was no history of any recent accident but the patient had a meningococcal meningitis about a year previously.

**A.**—That staphylococcal or other infection of bone may remain latent for many years is well known, and it would be rash to put any limit to its latency. It is unusual for the organism to remain quiescent and alive in bone for many years without giving some indication of its presence. C. W. Pannett (*Surgery: A Textbook for Students*, Hodder and Stoughton) writes of osteomyelitis of bone on p. 462. The organism which is responsible appears to acquire a predilection for growing in bony tissue, and it also appears to be capable of remaining quiescent for a very long time, often many years so that in subsequent life it may be responsible for inflammation of the bone in its neighbourhood, or attack another bone. While it would certainly be possible to attribute an osteomyelitis of the femur to a latent infection incurred at the same site twenty-five years earlier it would nevertheless be unreasonable to do this in the complete absence of symptoms referable to that site during the whole of that period.

## Eczema-Prurigo-Asthma Syndrome

**Q.**—Can you advise me as to treatment of a chronic irritation of skin of face, neck, front of chest and arms in a girl of 18 who has had infantile eczema when she was 6 months old which left her with eczema on and off till she was 9 years old? Her asthma now only comes on when she has a bad attack of cold but lately (last 18 months) she is troubled with skin irritation which does not respond to our treatment—lotions or ointments. She is healthy and well developed in all respects and has a varied diet. Rash at times looks urticarial at other times it resembles a bright-red inflammation—very rarely weeps. Face at times gets puffy and she has difficulty in opening her eyes in the morning.

**A.**—The girl described is suffering from what is usually known as the eczema-prurigo-asthma syndrome if the skin irritation is predominantly round the neck and in the flexures of the elbow and wrists. In addition she appears to get some urticaria, and the swelling of the eyelids and face in the morning is an angioneurotic oedema. These are allergic conditions, due in early childhood largely to foods but after puberty more often due to a sensitivity to feathers, dusts, powders, animal hairs, pollens, and even drugs, and the patient should be skin-tested intradermally with such irritants. Failing this the pillows, bolster, mattress, and eiderdown should be freed from any feathers, down, horsehair, or dusty substances such as old kapok or flock, orns-root face or talcum powders be forbidden, and animals be removed from the environment. If dust or pollen sensitivities are suggested or shown on testing, desensitization is necessary. Most of these cases show a diminished secretion of hydrochloric acid in the stomach, so 20 minims before each meal in a glass of water would be beneficial. To cut down the irritation, ephedrine hydrochloride (1/2 gr) and luminal (1/2 gr) each morning and evening would be helpful. If the general skin is very dry, thyroid therapy leads to improvement. The puffiness of the face on waking is due to a sensitivity to a feather, down, or horsehair pillow or to an aspirin or veganin tablet taken at night or both. As many of these cases in early childhood are fish-sensitive, a synthetic vitamin preparation should replace halibut oil.

## A Case of Myxoedema

**Q.**—Could you please give me advice on the following case? History: Patient aged 30 married, no children, operated on for toxic goitre August 1943. Subsequently developed what I took to be myxoedema with thickening of the subcutaneous tissues and complete loss of hair. I treated her with thyroid extract up to 6 grains daily. The hair came but has again suddenly fallen out, although she is still taking 6 grains of thyroid daily. The thyroid never had any effect on the general body swelling, and the pulse rate never went above 76. She also has amenorrhoea, for which I gave her stilboestrol, with no effect. Is there a possibility of pituitary involvement? The pupils are often widely dilated, sometimes she sees double and has headache. Urine normal, no sugar. B.P. normal. She will not consent to go into a hospital for treatment and investigation.

**A.**—This is a bit of a teaser. We can assume that the diagnosis of post-operative myxoedema was correct. It is a possibility (made probable by the fact that the body swelling was not reduced or the pulse rate greatly increased) that the dose of thyroid was insufficient. Much higher doses are sometimes required. The recent relapse suggests that even to the insufficient dosage she has developed some degree of tolerance. Amenorrhoea is a fairly common concomitant of myxoedema. The exact explanation is not known with certainty. One hypothesis relies on the fact that both the gonadotrophic and thyrotrophic hormones are secreted by the basophil cells of the



two instances the tear and detachment were the result of blast, and in a third these were caused by the contusion from a blow with the butt end of a rifle. In 2 cases there was doubt as to the presence of a minute tear. In the remaining 11 cases no tear was evident.

**Vitreous.**—There was prolapse of vitreous at the site of a penetrating wound in one case; a knuckle about 3 mm in diameter was lost. Some vitreous haemorrhage was present in 5 cases at the time of wounding, and in 1 case it occurred 9½ months after an operation for retinal detachment. A moderate vitreous haemorrhage was evident in 7 cases. The contracture of organized bands of fibrous tissue was a factor in producing the detachment in 9 cases. Fig. 1 shows, like Fig. 2, the result of contracture of fibrous tissue

6 failures, 3 were at first successful but later showed a recurrence localized to part of a quadrant of the fundus, the onset of this after operation being 6 weeks in one case, 5 months in another, and 8 months in the third case. The patient whose retinal detachment recurred 5 months after operation had for military reasons to be evacuated 18 days after operation, and the long journey from Egypt round the Cape of Good Hope to the United Kingdom may have been a factor in causing this misfortune. A spontaneous vitreous haemorrhage 8 months after operation was probably responsible for another case. In one case it was difficult to account for a shallow residual detachment in the lower part of the eye. This patient had an intra-ocular foreign body extracted by the giant electro-magnet and the

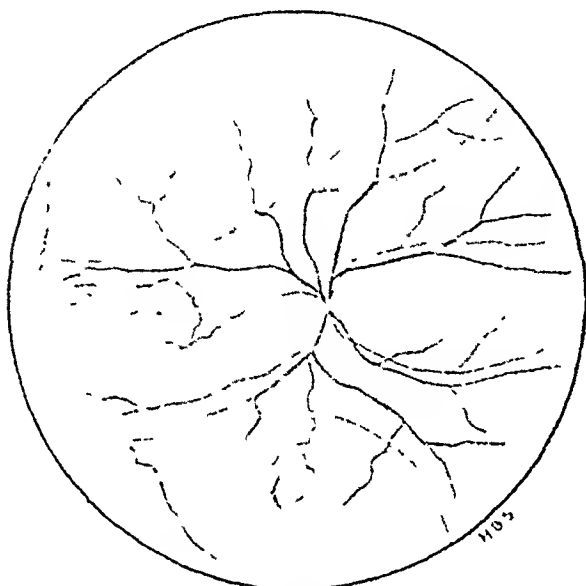


FIG. 2

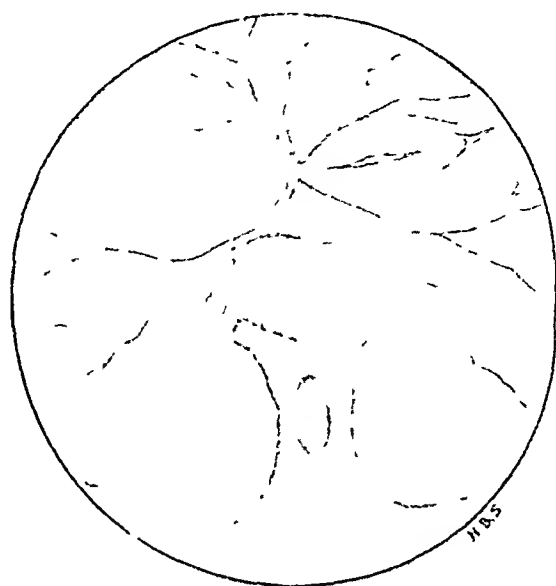


FIG. 4

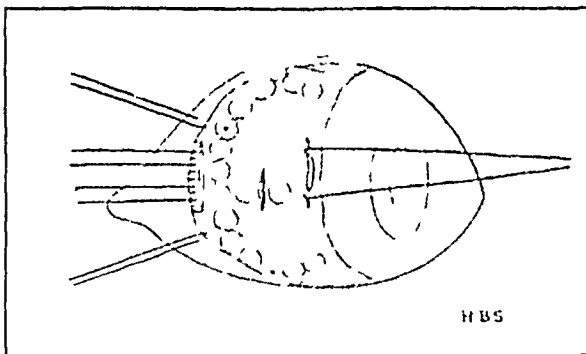


FIG. 3

bands in a contused eye. Fig. 3 is the fundus of the right and only eye of a German prisoner. He was wounded in the face with multiple shell fragments. The retina became detached 14 months after he was wounded. Operative treatment was successful in this case. A line of diathermy applications was made to the sclera beyond the limits of the scarred area, the interretinal fluid was drained, and the detached retina pinned down to the choroid. The retina remained in place.

**Intraocular Pressure.**—In 6 cases of severe contusion of the eye the intraocular pressure was reduced. In two of these with total detachment of the retina the intraocular pressure was less than 6 mm Hg in one case and 6.5 mm Hg in the other. In one case of severe contusion with retinal detachment on the temporal side the intraocular pressure was less than 6 mm Hg. In the 3 other cases it was from 1.25 to 9.5 mm Hg lower than that in the normal other eye. In 2 cases the intraocular pressure was higher in the eye with the retinal detachment than in the other (normal) eye. This amounted to 1.25 mm Hg in one case and 4 mm Hg in the other. After operation the recovery of the intraocular pressure was slower than in the other groups of this series. The normal was not reached until 10 to 11 months after operation, and in some instances the intraocular pressure remained 1.5 to 3 mm Hg below this.

**Results of Operation.**—Sixteen out of 18 cases in this group were operated on. In 10 the retina was completely replaced. Of the

detachment treated by diathermy. No definite hole was found in the retina, and despite the recurrence of the detachment his vision was 6/9 and the intraocular pressure within physiological limits. In another case a shallow detachment persisted in the lower part of the eye up to two months after operation, when the patient was last seen. Vitreous bands were probably the cause. In the sixth case the operation failed to seal off a large rent at the ora serrata which occupied most of the lower temporal quadrant and to secure replacement of over half of the retina. A further operation is necessary in this case.

**Vision. Visual Field. Refraction.**—Vision improved after operation in 6 cases. In one it was 6/36 before operation and was reduced to counting fingers at 1 ft. as a result of a late vitreous haemorrhage 9½ months after operation. In the remaining cases the vision was made neither better nor worse by operation, whether this was successful or not. In 7 cases the visual field was improved. In one case in which there was a vitreous haemorrhage 9½ months after operation it became 10° worse than it was before operation, and in the others there was no appreciable change. In 16 cases in this group the intraocular changes as a result of severe trauma made it impossible to estimate the refraction with any measure of accuracy before operation. In one case astigmatism amounting to  $\pm 1.25$  axis  $15^\circ$  was evident after operation; but there was a posterior corneal traumatic cataract in this case, so it is difficult to be sure whether the altered refraction was the result of operation or not. In this instance the operation of pinning back a curtain-like detachment in the upper and the lower half of the fundus (see Fig. 2) was successful, and the visual result was 6/9, with an unavoidable sacrifice of  $30^\circ$  in the temporal field.

In the other case there was no change in the refraction.

### Results of Operative Treatment

TABLE II.—Summary of Results

Retinal Detachment Group	Successes	Failures
(1) Cystic degeneration	13 (100%)	—
(2) Choroido-retinal degeneration	21 (100%)	—
(3) Myopia	2 (67%)	1 (33%)
(4) Trauma (civil)	20 (87%)	3 (13%)
(5) Trauma (military)	10 (62.5%)	6 (37.5%)
Total	66 (86.8%)	10 (13.2%)

## AMOEBIASIS: SOME DIFFICULTIES OF DIAGNOSIS\*

BY

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### Amoebic Dysentery

Amoebiasis is a disease of military importance and, as an aftermath of the war, may well produce diagnostic pitfalls and surprises. Colonic and rectal tumours, anal and perianal ulceration, recurrent colitis, enigmatic and insidious liver abscess, are among its sequelae. The early diagnosis of amoebic dysentery is not always easy, and, furthermore, no treatment at present known is a guarantee against recurrence. There is evidence that the chance of cure bears an inverse relation to the duration of the symptoms before emetine treatment is started. Even in countries where amoebiasis is common its manifestations are protean, and the disease may exist for long periods before diagnosis is made and treatment begun.

**Sigmoidoscopic Appearances.**—These are varied and the lesions are often minute and easily missed. In addition to the typical discrete ulcers, which, owing to their usual position on a mound of oedematous mucous membrane, resemble a tiny pouting mouth, other changes are seen in the bowel wall. Briefly these are: scattered discrete petechial haemorrhages with no ulceration; a patch of deep-red inflamed hypertrophic oedematous mucous membrane which may be nodular to the touch; a large solitary irregular indurated ulcer infiltrating the rectal wall; diffuse proctitis with no particular characteristics except that it is usually sharply limited to the rectum.

The association of bacillary with amoebic dysentery has to be remembered. The diffuse inflammation of bacillary dysentery, with or without irregular erosions, or, in the healing stage, large irregular flame-shaped submucous haemorrhages, may overshadow amoebic lesions, which become obvious only when the former is cured. Discrete clean-cut ulcers, identical in appearance with those of amoebiasis, may sometimes be seen in bacillary dysentery. Not infrequently the sigmoidoscopic findings are indefinite and scrapings are negative, so that re-sigmoidoscopy after a course of sulphaguandine and/or emetine may be necessary.

In amoebiasis, dysenteric symptoms may be slight or absent, and amoebae may not be found in the stools on direct examination; in fact, secondary manifestations of the disease may be the first indication of infection.

Six weeks before admission a soldier developed pain in the right lumbar region, was treated, and returned to duty. Three weeks later he had persistent pain in the right chest accompanied with high fever, and was admitted to hospital. Sterile pus was aspirated from the right chest on several occasions; sulphathiazole was given. Three weeks after the first aspiration a total right empyema was treated by rib resection. Six days after the latter operation he had diarrhoea for two days, during which time the stools contained no blood, mucus, amoebae, or cysts. After drainage of the empyema the patient remained ill and febrile. Twenty-two days later (11 weeks after the first symptom) rectal examination revealed an indurated and somewhat hypertrophic ulcer, 2½ in. by 2 in., on the posterior wall of the ampulla—diagnosed as an amoeboma, though repeated stool examination had revealed no amoebae; amoebae were, however, cultured later from the stool. He was put on eoinetiae: discharge from the empyema quickly diminished, and recovery was rapid.

### Amoeboma (Amoebic Granuloma)

Medical officers working in the East are fully alive to the occasional development of a tumour of the colon or rectum resulting from amoebiasis. Repeated amoebic invasion of the colon, together with superadded pyogenic infection, may produce a progressive inflammatory lesion leading to tumour formation. The inflammatory process spreads through the bowel wall into the pericolonic and perirectal fat and infiltrates surrounding structures. The tumour consists of fibrous tissue, overgrowth of granulation tissue, and varying degrees of ulceration.

The wall of the gut is destroyed and small abscesses may be present in the centre of the mass. There is considerable round-cell infiltration. Lymphocytes and eosinophils are present in large number.

Typical amoebic ulcers may be present or, on the other hand, no evidence of amoebiasis may be forthcoming. It is likely, in the latter case, that the parasite is dwelling comfortably in the depths of the gradually growing tumour.



FIG. 1.—Amoebic granuloma, showing *E. histolytica* inside a blood vessel.



FIG. 2.—Higher magnification of area marked in Fig. 1, showing *E. histolytica* lying in a small vein.

The usual sites for a granuloma are the rectum, recto-sigmoid junction, and caecum. When the mass is situated at the recto-sigmoid junction or in the ampulla of the rectum the patient complains of tenesmus and may pass blood and slime with or without faeces. An amoeboma of the rectum may be submucous and nodular, protruding into the lumen, or may take the form of a deeply indurated ulcer. The surface of the bulk of the tumour is usually smooth, but it may be irregular, friable, and infiltrating. Diagnosis from carcinoma of the rectum is difficult, and often impossible, by digital examination or by sigmoidoscopy. The dark-red nodular and ulcerated lesion looks like a carcinoma. Further, a smooth rounded non-ulcerated mass cannot be distinguished from submucous spread of a carcinoma. Even when amoebae are isolated from the stools the coincidence of a carcinoma cannot be excluded until a biopsy has been made.

A gunner aged 28 had been operated upon 10 months previously for haemorrhoids. 24 months later he had pain on defaecation and rectal bleeding. On admission to hospital a large craggy mass was felt in the lower rectum, and *Entamoeba histolytica* was found in the stools. Emetine 12 gr. and carbarsone 0.5 g. daily for 7 days had no effect. Transferred to rectal centre: biopsy—carcinoma of the rectum; removed by combined excision.

The symptomatology of amoeboma in the colon and caecum, together with a palpable tumour, the chronicity of the disease, ill-health, loss of weight, and a filling defect demonstrated by barium enema radiograph, make the differential diagnosis from carcinoma difficult. The history of previous amoebic dysentery

\* Abridgement of a paper read to the Teheran Medical Association on July 1, 1944.

In Table II I have included as a failure any recurrence of retinal detachment, however limited and slight, as indeed this was in 4 cases.

The prospect of successful surgical treatment depends much on the type of case. The prognosis is reasonably good in early cases when the retinal tear is relatively small, easily accessible, the ocular tissues are in a good state of health, and an operation by a skilled surgeon is done within a month of the onset of the detachment. It is generally better when the retinal tear is in the lower half of the eye than when in the upper. Successes in early cases are about even in hypermetropes, emmetropes, and low and moderate degrees of myopia.

Large and multiple retinal tears are generally unfavourable but not always so. One patient with 26 holes in a band of degenerative choroid and retina from 12 to 6 o'clock near the equator on the temporal side recovered after one operation and retained 6/9 vision. Other retinæ with large ragged rents occupying a quadrant of the eye have become reattached after operation and remained so.

The prognosis is slightly worse in deep detachments than in shallow ones on account of the distance of the retinal tear from the choroid. This is met and to some extent effectively dealt with by passing penetrating diathermy needles through the sclera and choroid sufficiently long to reach the retina but not perforate it. Interretinal fluid drains away and the detachment is shallower for subsequent diathermy applications. The prognosis is bad in long-standing cases. The incidence of success falls appreciably three months after the onset of detachment but reattachment may occur after 4 and even 10 years, particularly when the lower half of the retina only is involved.

Extensive intraocular degeneration affecting the choroid, retina and vitreous, total retinal detachment, high myopia, very low intraocular pressure and detachment in an aphakic eye, particularly when vitreous has been lost in the course of cataract extraction and vitreous shrinkage are bad prognostic signs.

Detachment on the nasal side is less serious as regards rapid extension than is the case with detachment originating on the temporal side. In the former the attachment of the retina at the optic disk affords a barrier against sudden involvement of the macula, a complication which may occur within a day or two of a detachment originating in the upper temporal quadrant. When the macula has been stripped off vision is rarely better than 6/24, and is often less than this in spite of successful reposition. Metamorphopsia may also distress the patient for some months after operation when the macula has been involved.

The prognosis is bad in cases of retinal detachment associated with persistent inflammatory lesions of the choroid, sclera, and orbital tissues (orbital cellulitis). Such cases are unfavourable to operation, and if an operation is done through mistaken diagnosis the condition is aggravated and the detachment made worse.

Poor co-operation by the patient after operation and the persistence of marked local reaction with pain are unfavourable prognostic signs. The chances of success are also less favourable in operations which are repeated, although in some cases a fourth operation has resulted in reposition of the retina, the restoration of visual field, and a fair measure of sight.

Although the number of cases due to trauma peculiar to war is small (18 in this series) these few afford an indication of the seriousness of the prognosis and the difficulties which confront the surgeon in planning an operation on an eye which is often severely damaged as a result of either contusion or a penetrating wound or both. The large splashes of blood on and sometimes beneath the retina which may organize into fibrous tissue bands and ultimately contract, the presence of large rents in the retina through which vitreous gel may have herniated into the interretinal space, and the lowered intraocular pressure are factors which militate against surgical success. In civil practice the counterpart of such cases is found in eyes with degenerative changes in the intraocular membranes and vitreous, commonly as a result of high myopia and emmetropia. As the above statistics show, such cases are for obvious reasons, rare in military practice.

### Summary

This paper reviews 70 cases of retinal detachment occurring in officers and men of the Middle East Force from 1941 to 1943. The cases have been divided into five groups according to the main feature of their pathology. Seventy-six were operated on by the same technique in one case operation was contraindicated and another underwent spontaneous recovery.

The prognosis is favourable in cases of reinal detachment due to cystic degeneration and to chorioid-retinal degeneration, at any rate in young men of military age. It is least favourable in war injuries. The reasons for this are discussed.

I thank Brig G. I. Scott (Consultant Ophthalmologist, M.E.F.) and Col H. D. F. Brand, Officer Commanding the General Hospital for their kind permission to publish this paper.

## NUTRITIONAL IRON DEFICIENCY ANAEMIA IN WARTIME

PART III: THE HAEMOGLOBIN LEVELS OF SCHOOL-CHILDREN AND PREGNANT WOMEN IN 1944, COMPARED WITH THE LEVELS IN 1942 AND 1943

BY

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In previous papers (Davidson *et al* 1942, 1943, 1944) the haemoglobin levels of various groups of people representative of different sections of the Edinburgh population have been reported. Of these groups the two that showed the highest incidence of anaemia were the municipal primary-school children and the pregnant women. They have therefore been investigated further the last examination in the summer of 1944 being made two years after the original one. The estimation of the haemoglobin was made with the Haldane haemoglobinometer under standard conditions recommended by the Haemoglobin Survey Committee of the Medical Research Council and using apparatus which had been standardized by the National Physical Laboratory.

### School-children (7-13 Years in 1944)

Children from two schools (Schools I and III, Davidson *et al*, 1944) have now been investigated on five occasions in the past two years. It has not been possible to test all the children each time, but none have been included in the present report who were not tested on the first occasion.

The mean haemoglobin levels found for the two schools on the five dates together with the number of children tested, are shown in the accompanying Table and also graphically in the Chart.

Table showing Mean Haemoglobin Levels of School-children and Pregnant Women on Various Dates in 1942-4

	1942	1943		1944
		June	Dec.	June
<b>School I</b>				
Mean Hb %	Sept. 29 (347) 72	Feb 83.1 (149) 68	87.1 (+0) 48	86.0 (110) 88
St Dev				87.5 (237) 61
<b>School III</b>				
Mean Hb %	July 77.5 (96) 46	March 81.9 (42) 67	87.5 (28) 66	85.8 (56) 81
St Dev				90.8 (64) 54
<b>Pregnant women</b>				
Mean Hb %	July 77.0 (64) 73			Jan/July 86.5 (61) 72
St Dev				

Numbers of children in parenthesis.

It will be seen that there has been a considerable rise in mean haemoglobin level in the past two years, School I risen from 82.9% to 87.5%, and School III from 80.8% to 87.5%. Both these increases are statistically significant, more than twice the standard error of the mean. The greater part of the time there was no significant

## THE ROYAL COLLEGE OF SURGEONS

### MEETING OF FELLOWS AND MEMBERS

meeting of Fellows and Members of the Royal College of Surgeons of England was held at Lincoln's Inn Fields on Nov. 16.

Sir ALFRED WILBY-JOHNSON, the President at the outset referred with satisfaction to the presence at the Council meeting of six invited representatives of special departments of practice, including general practice. Of these six four were Fellows and two were Members (one of them Dr H. Guy Dain). It was proposed that, in the Supplemental Charter which would be applied for after the war, power should be obtained to co-opt such representatives to the Council. It was obvious that representatives of special departments of practice, however much their presence was desired on the Council, might not be successful in the general elections of Council members, and it would be grossly improper for the Council to indicate to its electorate that, for example, a radiologist or an otolaryngologist was desired. Therefore power was being sought to co-opt.

In commending the general Annual Report the President referred to the generous gift of £100,000 by Sir William H. Collins for the endowment of the department of pathology and the institution of a chair of human and comparative pathology. Dr Willis of Melbourne had been appointed as the first professor. Concerning the rebuilding of the College and the proposal to build the other Royal Colleges on adjacent sites, the possibilities of building elsewhere had been explored, but the manifest advantages of the present site in Lincoln's Inn Fields seemed to outweigh them. A building committee had been set up and an architect engaged. An appeal would presently be made to Fellows and Members. Already £12,000 had been accumulated, including a gift of £2,000 from the American College of Surgeons.

On the motion of Mr. McADAM ELLIS, seconded by Mr. J. B. HUNTER, the objects of the proposed Supplemental Charter were approved by the meeting—namely, to grant the Fellowship to ophthalmological candidates under special conditions, to grant a Fellowship in dental surgery, to increase the number of permitted elections to the Fellowship in each year and to render non-Members eligible for such election and to co-opt to the Council up to six additional members representative of special branches of practice.

The meeting also gave general approval to what had been done in regard to the site for the enlarged building.

### The White Paper

The PRESIDENT then asked for expressions of opinion on the White Paper. He asked for first consideration to be given to the proposed administrative structure and also to the question of freedom for the profession. That freedom would be enroached upon unless independent—he disliked the word "private"—practice was preserved. Those of them who were in responsible positions had had discussions, formal and informal, with the Ministry, and he believed that they had made it plain that on the fundamental points there could be no compromise. Having taken a firm attitude on fundamentals, it was possible to give way on non-essential details.

Mr. LAWRENCE ABEL said that what they did not want was further control of the profession. Medicine would make progress in so far as it was free, not under bureaucratic control. The reform he had hoped to see was an enlargement of the present National Health Insurance which did not imply control of a free profession and left private practice untouched. Mr. DICKSON WRIGHT declared himself against the whole system of social security. He did not believe it was inevitable and he thought it should be fought. A new Parliament should deal with the matter.

The PRESIDENT agreed that it was desirable to have a new Parliament to deal with the matter, but unless there was an outcry from the people to that effect, an outcry from the profession would not carry much weight. He then asked the meeting (which numbered some 50 Fellows and Members) whether it agreed with nine points which had been tabulated by the Council as of fundamental importance. The assent of the meeting was given to each point in turn, and there appeared to be no dissent. The points were as follows—

- (1) That the administrative structure, both centrally and locally, should be modified to ensure that the medical profession had a more direct responsibility for advice and administration through nominees chosen by representative bodies of the profession.
- (2) That the scheme should not apply to the whole population, but that the general practitioner service particularly should be "provided" only for those below a certain income limit.
- (3) That contributions under a social security insurance scheme allotted to the health services should be devoted entirely to the financing of the general practitioner service, and that the hospital and consultant services should be provided for by general taxation.
- (4) That the regions for hospital administration should be large enough to provide a complete service for all purposes, and that no

existing local authority is in a position to provide such a complete service.

(5) That there should be no "direction" of members of the profession, but that they should be free to practise in places of their own choice. An adequate supply of doctors should be obtained for areas sparsely settled by offering special inducements.

(6) That the continuity of the voluntary hospitals should be ensured.

(7) That the attitude towards the conversion of the profession into a whole-time salaried service should be resisted.

(8) That control of the profession by the Civil Service and the local authorities was not in the best interests of the people.

(9) That the facilities of Health Centres should be available for all practising in the district.

### The Goodenough Report

The PRESIDENT then made some comments on the report of the Interdepartmental Committee on Medical Schools. He said that the report was an extremely valuable document and had assembled some information which should enable right conclusions on this subject to be reached, which did not mean necessarily that the committee itself had reached right conclusions. The Council of the College was rather disposed to quarrel with the Ministry for changing the terms of reference without informing Parliament or the College. It also disliked certain features of the report suggesting that the power of the purse should be used to enforce certain proposals, such as that every medical school should admit women, that the curriculum should be reformed before any additional grants were made for medical education (the reform of the curriculum was entirely an affair of the General Medical Council, which ought not to have pressure brought to bear upon it by a Government Department) that grants to schools should depend on the number of students attaining the degrees of the university, and that the examination fees after meeting all expenses should be devoted entirely to undergraduate assistance. The Council thought that a student who entered a great profession like this should have some proportion of his fee go to the maintenance of a headquarters which would be available to him throughout his career, particularly a headquarters like the College, which provided museum, library, research laboratories, and facilities for meetings. The Council thought that the report placed undue emphasis on academic teaching without proper regard to the value and importance of being trained in the art of medicine and surgery. "Perhaps the thing which concerns this College most intimately, and I hope will concern the whole of the profession and your great Association, Dr Dain is the tendency towards saying that there should be no other means of qualifying for the profession than university degrees. We contest that very strongly. We regard it as the duty of a great corporation like this, which through the centuries has insisted on a high standard being attained by practitioners of surgery, including a proper standard of practice after qualification, and a proper ethical standard to maintain a portal of entry into the profession which is entirely under the control of the profession and independent of any subsidized body like a university." (Applause)

He pointed out that the Royal Colleges had an international significance with an influence in the Dominions and in British possessions abroad such as no individual university could exert. On the question of clinical professors the Council took the view that a professor of surgery should not be barred from independent practice within limitations. "You are not going to get the best young men by restricting their activities in that rigid way." The Council also took strong exception to the view that all schools should be large. It had been deeply impressed by the value of the smaller medical schools, and those who were teachers knew that many men did well in small classes who would do far from well if thrown into a large class of a hundred or so. They also felt that the Goodenough Committee was unduly anxious about the number of medical schools in Central London. If London was to maintain its position as a great consultative centre its hospitals should be quickly accessible from the great London termini.

The President's remarks were endorsed by the meeting, no contrary opinions were forthcoming, and the proceedings ended with an exposition of the plans for the rehabilitated College.

### EXCHANGE OF INFORMATION BETWEEN ARMY AND E.M.S.

We print this week a letter from Major-Gen. D. C. Monro, Consulting Surgeon to the Army, on the subject of follow-up postcards for the interchange of medical information between Army hospitals on the Continent and the E.M.S. hospitals at home. His letter is an appeal to E.M.S. surgeons. To the Medical Research Council is due the credit not only for appreciating that such an exchange of information would be of great value to medical officers engaged in routine war medicine or surgery, or in research projects, but also for having inaugurated a system which the Army has since adopted. During the last war the M.R.C. printed a special card and distributed it free to various medical units with the B.E.F. The idea was repeated

between the levels of the two schools; but School III, which started lower, was on the final test significantly higher than School I. No explanation for this has been found. It would also appear from the figures that the increases have tended to occur in the spring months (see Chart).

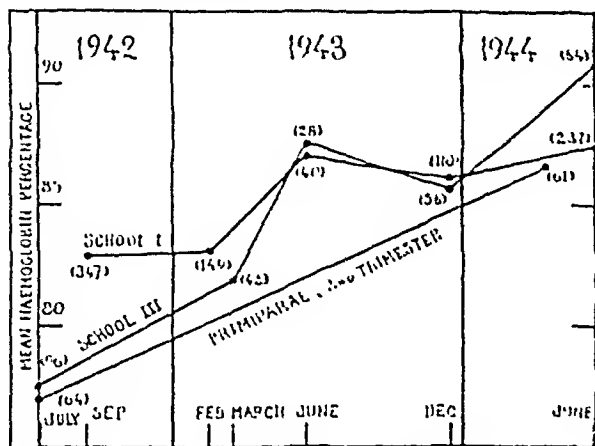


Chart showing mean haemoglobin levels of school-children and pregnant women, 1942-4.

Since the same children have been tested throughout the period their average age has risen by two years, and it might therefore be thought that the rise in the haemoglobin level was due to this. That aspect has been investigated by comparing the mean haemoglobin levels of the children, divided into two-yearly age groups. It was found that the slight increase present with advancing age could not account for the rise in the haemoglobin levels between the first and final readings. No difference between the sexes was observed.

As was reported by Davidson and Donaldson (1944) children from School I were given ferrous sulphate for three months, and those from School III ferrous sulphate and ascorbic acid for six months. The improvement resulting from this treatment was apparent, especially among the younger children, up to a year from the conclusion of medication. The haemoglobin figures for these children were accordingly not included in the mean levels recorded for 1943. By June, 1944, there was no difference between the levels of those who had treatment and those who had not, so the haemoglobin levels of both groups have been included in calculating the means for the last examination.

#### Pregnant Women

A comparison has been made between the haemoglobin levels of pregnant women from the same antenatal clinic in 1942 and 1944, grouped according to the trimester of pregnancy and the number of pregnancies. The results show a progressive fall in the haemoglobin level during the course of pregnancy, which was most marked in the case of women who had had three or more pregnancies. In each group the figures for 1944 are approximately 10% higher than those for 1942. Thus it was found (Table; Chart) that in 1942 the mean haemoglobin level of 64 primiparae in the second trimester was 77.0%, while in 1944 61 primiparae, at the same stage of pregnancy, had a mean of 86.8%—an increase of 9.8%.

#### Discussion

It is thus apparent that both the school-children and the pregnant women have in 1944 a much more satisfactory haemoglobin level than in 1942. This increase in the mean haemoglobin is due to a marked improvement in those who were most anaemic. Thus it was found that a mean increase of 11.7% had occurred in those children whose haemoglobin was less than 80% in 1942, whereas those who had a level of 80% or more showed a mean increase of only 2.6%. Or, put in another way, while in 1942 39.3% of the children had haemoglobins of 80% or less, in 1944 only 12.3% were at or below this level.

It is impossible to be certain of the cause of this improvement. It would appear from the data given in the Report of the Special Joint Committee, set up by the Combined Food

Board, on Food Consumption Levels, 1944, that there has been no material increase in the gross amounts of foodstuffs available for civilian consumption in this country between 1942 and 1943-4. Qualitatively, however, there has been an increase in the calcium, iron, and vitamin B available, the last two owing to the replacement of white flour by national wheatmeal flour. McCance and Widdowson (1940) give figures of 0.66 mg. per oz. for national wheatmeal bread and 0.28 mg. per oz. for white bread. In the course of a study of school-children's diets made in Edinburgh it has been found, using the above figures for iron in bread, that the calculated daily iron intake of children varied from 14 to 26 mg.—mean 19 mg. If the same amounts of white bread had been eaten instead of wheatmeal the iron intakes would have been from 9 to 21 mg., with a mean of 14 mg.

In Edinburgh during the past two years there have also been an increase in the number of children having school milk and an improvement in the school meals, both of which factors may have raised the protein intake of the children. The children reported on here have been divided into groups according to whether they were having school dinners or not. In December 1943, those with school dinners had improved more than those without; but by June, 1944, there was no difference in the haemoglobin levels of the two groups. The school meals therefore do not appear to be an important factor. Again, whereas the school milk may have raised the protein intake of the children, the pregnant women had not received any supplementary rations when the tests were made, on their first visit to the clinic, so there is no reason to believe that their protein intake is better than it was two years ago.

For the above reasons we consider that the increase of iron in the diet has been the chief factor responsible for the rise in the haemoglobin levels. It is also possible that the increase of calcium and vitamin B has facilitated the absorption of iron—either by precipitation of the phytin, the latter by improvement of absorption.

#### Summary

A survey of the haemoglobin of school-children and pregnant women, made in Edinburgh during the past two years, has shown that there has been a progressive rise in the mean haemoglobin levels of these two sections of the population. The cause of this rise is discussed, and evidence is put forward to suggest that the introduction of national wheatmeal flour has been an important contributory factor.

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## INDUSTRIAL PROBLEMS IN THE MIDDLE EAST

BY

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AND

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During four years of war industrialization has taken place on a scale hitherto unknown in the Middle East. For security reasons details cannot be given, but it may be stated that a large number of R.E., R.A.O.C., and R.E.M.E. workshops and factories have been set up for the manufacture of articles ranging from anti-tank mines to hospital bedsteads. Other large units repair and maintain tanks, guns, vehicles, and instruments. These installations have presented industrial problems varying from those met with in the United Kingdom at the time of the Industrial Revolution to tetra-ethyl-lead (T.E.L.) hazards. All this has taken place in countries with a predominantly agricultural economy and little or no pre-war industry. Many thousands of fellahin who had previously known only the bullock-cart and the ancient plough of biblical pattern have become fitters, welders, blacksmiths, and the like.



getting doctors to certify that the dermatitis had been caused by his employment.

Dr. MORGAN said he viewed the scheme with misgiving. He knew no more damaging evidence against medical tuition than was found in the Workmen's Compensation Acts. He had seen doctors and specialists go into the witness-box and make mendacious statements against the workmen. He had wondered where the General Medical Council was and why some of these witnesses were not struck off the Register. Doctors had not, in the past, been taught anything about the assessment of injury. They had to make assessments without knowing the nature of the occupation. There was no lectureship on industrial diseases in this country. Under the scheme the employers would have no urge for prevention. Take the case of the nurse. If she went to a sanatorium and got tuberculosis she could not get compensation because tuberculosis was not in the list of scheduled diseases. The same applied to scarlet fever. The only remedy for the nurse was to fight a common law action. Sir Thomas Legge had advocated the abolition of the test that a disease must be proved to be specific to the employment before it could be accepted for the Schedule. Nothing had been done. Chronic carbon-monoxide poisoning was scheduled in Australia but not in Great Britain. Vibrational diseases contracted in boot factories and road repairing were scheduled in Germany but not in Britain. Nothing in these matters was changed under the Government scheme.

Mr. PEAKE said that if the nation was to have a separate industrial scheme with special rates of benefit higher than that laid down in the general scheme, there must be a clear line of demarcation between an industrial accident and misfortunes giving entitlement to sickness benefit. The Government was prepared to consider any good alternative to the words arising out of and in the course of the employment. He did not think the words "attributable to or aggravated by" were appropriate for industry.

The House then carried without a division the motion welcoming the Government intention to proceed with the new scheme of Industrial Injury Insurance.

#### Ministry of Social Insurance: Sickness Benefits

Mr. ATTLEE moved on Nov. 11 the second reading of the Social Insurance Bill. He said the Bill was designed to transfer to a single Ministry of Social Insurance powers now divided between the Minister of Health, the Secretary of State for Scotland, the Minister of Labour, and the Home Secretary. These powers were contained in the Acts of Parliament and many regulations. The appointment of this Minister and transfer of powers would enable the new scheme to be brought more quickly into legislative form. The Minister would have the task of framing legislation and working out administrative changes and would have at his disposal the trained staff now dispersed between various Departments. Clause 6 of the Bill laid down the powers and duties hitherto belonging to other Ministers which were to be transferred by Order in Council. Provision of medical benefits remained with the Minister of Health.

Mr. GREENWOOD said the social insurance scheme was not merely a scheme for co-ordinating the payment of insurance benefits. Behind the scheme was a close association of constructive treatment with payment of benefits.

Col. ELLIOT said that on the divorce of the handling of insurance finance from the payment of health benefit the Bill was obscure. The ideal of associating rehabilitation with health insurance had never properly been carried out. The Ministry of Health Act had torn medical research from the insurance scheme and put it under the Lord President of the Council. He understood there was no proposal that it should be integrated again. By an Order in Council under the new Bill powers could be taken away from the insurance authority in Scotland and concentrated in London. Lord Addison once acclaimed the uniting of health insurance with local government and housing. Now a cry of delight went up at their separation. Col. Elliot saw no reason why the Chief Medical Officer of Health should not be found a further place in the proposed legislation. Sir Wilson Jameson had lately said that there was no means of assessing the day-to-day health of over 40,000,000 people. But he was getting medical certificates daily about millions of those people. Proper use had never been made of those certificates, and the Bill, if anything, would push them further into pigeon-holes.

Sir DAVID MAXWELL-FYFE said the Government desired that there should be co-operation and co-ordination between the Ministry of Social Security and the other Departments which would work, for example, the rehabilitation proposals. What Col. Elliot had said about regional devolution would receive the attention of the Government. For the National Health Service the Minister of Health would continue to be responsible.

Provision of its benefits must lie within his purview. Services in kind came under the Minister of Health; services in cash would be transferred to the Ministry of Social Insurance. The Ministry of Health must keep control and administration of medical services.

The Bill was read a second time without a division.

#### Demobilization of Doctors

Mr. ERNEST BEVIN announced on Nov. 15, when replying to a debate on release from the Forces, which had been opened by Col. PROTOMU, that doctors and dentists would be released from the Forces by age and length of service, in accordance with the general scheme. Mr. Bevin asserted that after the 1918 election such political pressure was used to get individuals from the Forces out of their turn on the plea of being specialists that the whole demobilization scheme broke down. The Ministry of Labour must examine the figures of what they would get released under Class A before it began pressing for any special people. With regard to the universities a large number would come back under Class A. The Government would then have to see what number was necessary to supplement them. The further educational training scheme would give a person in the profession a chance to take courses to make good the break in his training.

Dr. HADEN GUEST said weight should be given to the wounds a man had suffered, the illnesses which he had suffered, and any changes in his medical category. In Burma the admissions to hospital for the most part for serious tropical diseases, increased by 100% in the year. These things should be considered in relation to the theatre of war in which the man had been, when deciding time and priority of demobilization. Dr. Guest said he did not know how the Government was going to release a large number of doctors. It had not the doctors. The proportion of doctors engaged in the Services was larger than the proportion of miners or of building workers. There were not, in fact, enough other doctors to release them according to age and on the lines laid down in the White Paper. Unless plans were being made for the more rapid bringing forward of new doctors and for obtaining others for the civil population of this country Parliament would not be able to tackle the question of Forces doctors as it should be tackled.

#### Domestic Staffs of London Hospitals

In a reply on Nov. 16 to Mr. Keeling, Mr. BEVIN said he knew of the shortage of staff in the London hospitals. During the period of the heavy "flying-bomb" attacks the London hospitals evacuated a large number of their patients and their staff demands were much reduced. In the last two months these demands, enlarged by the need to replace excessive wastage consequent upon the dislocation caused by the bombing again became urgent. This coincided with the need to provide domestic staff for the hostels for building workers brought into London to repair bomb-damaged houses. A measure pressed from all quarters as one demanding the highest priority. Some 1,400 domestic workers had been found for these hostels. Even during this exceptionally difficult period the hospitals were not neglected. In the past two months 63 cooks, 756 full-time and 115 part-time domestic workers, and 163 orderlies, porters, stokers and maintenance men were placed. Of 62 domestic vacancies notified from Aug. 23 to Nov. 7, 51 applicants had been submitted and 44 placed. Further demands had since been received. Now that the staffing of the building workers' hostels was almost completed it should be possible to make further progress in meeting the demands of hospitals. These would enjoy first priority for the supply of domestic labour. Mr. Bevin appealed to the voluntary hospitals in London to introduce more up-to-date personnel management. He said he would be helped if their staffing measures were not so antiquated. He added that in regard to cooks and staff there was first priority for hospitals all over the country.

**Charge for Certificates.**—On Oct. 31 Mr. ROBERT MORRISON asked the Minister of Health by what authority doctors charged their panel patients a fee of 1s. for signing their certificates for priority milk and eggs. Mr. WILLIAMS replied that insurance medical practitioners were required to give medical certificates only for the purpose of the National Health Insurance Acts. They were not forbidden to give and charge for certificates required for other purposes.

**Antimalaria Tablets for S.E.A.C.**—Asked on Nov. 7 whether antimalaria tablets and water-sterilizing powder were now available to all ranks who were in need of them in S.E.A.C., Sir JAMES GRIGG said these preparations were supplied to South-East Asia Command by India, and so far as he knew all demands had been met.

#### Notes in Brief

Mr. Ernest Bevin, on Nov. 2, told Dr. Russell Thomas that he was unable to state his intentions on the demobilization of students who had not completed their professional examinations.

Equipment and machinery for the most part have had to be imported and have often arrived broken or with parts missing or have been lost at sea. Production lines have had to be created in buildings never intended for industrial use. Huge workshops have appeared covering many square miles of desert. Environmental difficulties have further complicated this remarkable industrial expansion.

### Environmental Difficulties

Operational needs led to the siting of many War Department factories in unhealthy spots, in overcrowded slums, in malarious swamps, and in some cases near primitive native villages. Steps were always taken to improve the factories and to reduce the amount of dirt, flies, mosquitoes, and other insects. So far as was possible British personnel have been protected against typhoid, smallpox, and typhus. In the case of native employees, protection has been afforded against typhoid and smallpox, and regular disinfection has been arranged. In some cases leathene belts have been of value in keeping natives louse-free, but they lose their efficiency after 14 days. No skin sensitivity has been noted in Egyptian labourers, but British personnel have often suffered from intense irritation after using these belts.

Even though the native workers usually return to their homes each evening regular monthly disinfection has reduced both the number of louse infested men and the degree of infestation. Records kept at one disinfection centre showed the following figures:

*Proportion of Men found Louse each Month before Disinfection*

1943					
January	80%	May	20%	September	4%
February	80%	June	18%	October	11%
March	40%	July	9%	November	12%
April	46%	August	8%	December	12%

These precautionary measures have had a marked influence in preventing disease. During the twelve months under review approximately 43,000 cases of typhus were notified in Egypt, the majority in Cairo. Yet in Cairo area factories under our supervision an ong 4,000 British troops working in the closest contact with 20,000 employed civilians, there were only 4 British and 21 native cases of typhus during the year—compared with an estimated rate of 2.5 per 1,000 population over the same period. All our cases were in the first six months of the year—before typhus vaccine was available for general inoculation.

Even in Cairo standards of sanitation were low. Whole districts were without any water carriage system, and promiscuous and indiscriminate defaecation was customary. Proper conservancy systems were invariably installed, and, in addition to being taught their work native employees were "house-trained".

Ventilation and lighting have given rise to various problems. The intense summer heat has necessitated the provision of double roofing for many workshops. This simple measure lowers the internal temperature by several degrees. The provision of fans has been restricted owing to shortage. In some factories the ordinary fan has been entirely contraindicated owing to the danger of an electric spark causing an explosion. In such shops ventilation has been maintained by extractor fans installed on the exterior of the building. The constant sunshine experienced in Egypt has rendered the daylight illumination of most factories good, but nocturnal lighting has been difficult owing to the shortage of high-power electric bulbs. In the former civilian factories taken over, the illumination had to be modified and improved in the majority of cases. The latest machinery which had just started to arrive in the Middle East, is usually self-lighted by adjustable lamps. In an underground basement where ATS were operating mechanical accountancy plant the provision of daylight type artificial illumination reduced the incidence of cases of headache and eye strain from over 20 to less than 5 a week.

The shortage of British man-power has led to the posting of many men of low medical category to base installations, and great care has to be exercised by medical officers to ensure that the physical defect is such that it will not interfere

with the efficiency of a man's work, will not be aggravated by the nature of his employment, and will not render him specially prone to industrial diseases. Thus, men down graded on account of dermatoses or chronic pulmonary disease have had to be weeded out after posting to TNT factories. Similarly, care has been taken in the selection of native workers, but employees have been accepted for non-hazardous occupations at a much earlier age than would be legal in the United Kingdom. These juveniles have proved most efficient workers and their health has benefited by the greatly improved nourishment resulting from the wages they earn.

In spite of linguistic difficulties Egyptian labourers have speedily been taught to use complicated machinery, and have developed considerable skill, while their capacity to work for prolonged periods without evidence of fatigue surpassed that of the British personnel. Particularly did this apply to monotonous repetitive work. In general, the native labourer was found to be unadaptable. While quickly learning one job, he cannot be switched over to a different task with any degree of success. This inability to accommodate himself to fresh work has prevented the rotation of labourers in hazardous occupations. The usual British practice of never keeping a worker who is exposed to industrial hazard on a dangerous task for very long but of switching him on to a safe post at regular intervals, has been tried many times with native workers but has had to be abandoned. This non-adaptability has resulted in natives being kept on highly dangerous tasks for 8 to 12 hours daily for many months and a high incidence of toxicosis was expected. These fears have, with one exception, proved groundless and the resistance of the native epidermis to such toxic substances as TNT, lead, and various oils has been most noticeable.

### Industrial Fatigue

In one huge tank workshop near Alexandria 300 British 'other ranks' were closely studied over a period of eight months in 1941. They were subjected to prolonged fatigue for 18 consecutive weeks during which they had no leave and no days off. The actual hours worked ranged from 72 to 84 a week. The main points that emerged from this study of 1,467 cases of sickness or injury involving a wastage of 8,770 man-days were as follows:

First, sickness, disability, and injury rates were increased by the period of prolonged fatigue.

Secondly, the extent to which sickness was thus increased was much the same in the Army in Egypt as in civilian employees in the United Kingdom, despite a much closer control of feeding and housing arrangements than is ever possible among civilians.

Thirdly, the nature of this sickness was similar to that which follows fatigue in the United Kingdom. The principal cause of wastage of man-power was the common cold. The next most important cause sandfly fever, may be regarded as an Egyptian condition corresponding closely to influenza. Infections of areolar tissue and those diseases of the skin which cause invalidism were also manifestations of a lowering of the general resistance. Combined with this was a steady increase in minor and major injuries, especially at the end of the working day.

Fourthly, the most potent 'psychological incentive' operated for just so long and no longer. In this group of men "just so long" was about four weeks. At the beginning of this study the working week was increased suddenly from 56 to 80+ hours, and there was at that time a considerable 'psychological incentive'. The work was done and there was no significant increase in sickness rates till just over four weeks later, when the steady rise in the incidence of sickness began. An exactly similar situation arose again, and there was the same time lag.

Accurate recording is essential in this kind of study and it was found useful to have two or more different records which could be cross-checked, and which showed the same material from different angles. Absolute figures for new cases, man-days lost, and so on were difficult to bring into perspective. Percentage figures—relating, for instance, the man-days lost to the man-days that might have been worked assuming no sickness of any kind—gave a truer picture. But what appeared to be the simplest and most sensitive index of general health in a group of men was the average disability period, a figure which was worked out each month. This figure was arrived at by dividing by the number of cases under treatment

ketonuria. When the fat in the diet was increased gradually, glycosuria disappeared without the appearance of ketonuria (except on one day in 8 weeks). The amount of diet eaten containing 70% of added fat provided 90% of the calories available in the amount of normal diet eaten; and maintained body weight.

After successive periods of high-fat diet the glycosuria seen on return to the normal diet steadily diminished.

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## ANTIBACTERIAL ACTION OF 2-AMINOPHENOL (O-AMINOPHENOL)

BY

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In the course of work with a compound between cholic acid and sulphanilamide we discovered that some intermediate substances devoid of sulphanilic groups had a greater activity against Gram-negative bacilli than the final compound. This led to the investigation of a series of compounds for their activity against this group of organisms. Although the investigation is still in progress this paper records the results obtained with 2-aminophenol, as they appear to warrant its trial as a local antiseptic.

The use of sulphonamides and penicillin has brought to light the need for adequate chemotherapeutic treatment of infections due to or kept up by such organisms as *Proteus* and *Ps. pyocyanea*. Acridine derivatives are perhaps the most effective in this respect, although these compounds are toxic to leucocytes and tissue cells. McIntosh and Selbie (1944) recommend a powder consisting of 1 part proflavine and 99 parts sulphathiazole, and claim that it affords protection against pyogenic cocci, clostridia, and Gram-negative bacilli. Recently a group of compounds classified as synthetic detergents have been recommended for local antiseptics. Their action *in vitro* was described by Baker *et al.* (1941), who showed that the cationic detergents had a significant effect on Gram-negative bacilli, although this was less pronounced than their action on Gram-positive organisms. Two of this group—C.T.A.B. and phemeride—have received a clinical trial. The action of C.T.A.B. has been studied by Barnes (1942) and Williams *et al.* (1943, 1944), but unfortunately its antibacterial action is drastically reduced by the presence of organic matter. Phemeride has been shown by Iland (1944) to have an antibacterial action stronger than that of C.T.A.B., to be effective in the presence of 1:50 blood, and to be relatively non-toxic to the tissues of the body. Unfortunately both these compounds are very much less active against Gram-negative bacilli than against the pyogenic cocci. For the treatment of *Ps. pyocyanea* infections Berry (1944) and Gough *et al.* (1944) have recommended

ethylene glycol monophenyl ether (phenoxetol), which, although a rather feeble antibacterial agent, appears to be particularly active against this organism.

## Experimental

In the following experiments proflavine (2:8-diaminoacridine sulphate) has been tested in parallel with 2-aminophenol in order that a comparative picture can be obtained. 2-aminophenol is readily soluble in water. Fresh aqueous solutions have a pale-brown colour which deepens on standing, and after a time a slight precipitate forms. In spite of this well-known instability to oxygen and light there is no appreciable difference in bacteriostatic activity between fresh and 7-day-old solutions.

**Bacteriostatic Action in Broth.**—Serial dilutions were made in broth and then a suitable inoculum of the organism to be tested was added to each tube. Most of the tests were carried out in broth at pH 7.5 containing 1% "lab-lemco," 1% peptone (B.D.H.), 0.5% NaCl, and 0.005% *p*-aminobenzoic acid. Variation of media, however, did not materially affect the results. Table I shows the

TABLE I.—Bacteriostatic Action in Broth at 37° C. (Size of Inoculum less than 500 Organisms in Each Case)

Organism	Limiting Dilution of Chemical causing Complete Inhibition of Growth			
	2-aminophenol		Proflavine	
	1 Day	7 Days	1 Day	7 Days
<i>Bact. typhosum</i> ..	32,000	16,000	64,000	64,000
<i>Proteus vulgaris</i> ..	32,000	32,000	64,000	64,000
<i>Ps. pyocyanea</i> ..	8,000	4,000	8,000	4,000
<i>Staph. aureus</i> ..	64,000	32,000	64,000	64,000
<i>Str. pyogenes</i> ..	64,000	64,000	500,000	500,000

bacteriostatic activity of 2-aminophenol and proflavine obtained with various bacteria when a small inoculum of less than 500 viable organisms was used. Some variation in results occurred in different experiments with 2-aminophenol; the figures given represent an average. The activity of proflavine was rather more constant.

Table II shows the results obtained with *Staph. aureus* when inocula of 3.4 million, 34,000, and 340 viable organisms respectively

TABLE II.—Effect on Antistaphylococcal Action of Varying Size of Inoculum

Size of Inoculum of <i>Staph. aureus</i>	Limiting Dilution of Chemical causing Complete Inhibition of Growth			
	2-aminophenol		Proflavine	
	1 Day	7 Days	1 Day	7 Days
340 viable organisms	128,000	32,000	128,000	64,000
34,000 " "	32,000	32,000	64,000	64,000
3.4 mill. " "	4,000	4,000	64,000	32,000

were used. As will be seen, 2-aminophenol is very much less active against a large inoculum than against a small one, whereas the activity of proflavine is not so greatly affected by the number of organisms.

**Bactericidal Tests.**—Suspensions of organisms in 2-aminophenol and proflavine respectively were made, such that the final concentration of chemical was 1:1000 and the number of organisms per ml. about 20 millions. The tubes were left at room temperature, and viable counts were made after 6 hours and 24 hours. In a typical experiment with *Bact. typhosum* the original concentration of organisms was 17.5 millions per ml. After 6 hours 5.5 millions

TABLE III. Effect of 2-aminophenol and Proflavine on *Str. pyogenes* in Human Blood in Slide Cells

	Fresh Debrinated Blood							Blood in 1:1000 Liquid				
	1/1000	1/5000	1/10,000	1/32,000	1/64,000	1/128,000	None	1/16,000	1/32,000	1/64,000	None	
2-aminophenol	0	0	0	0	2	2	2	0	0	32	28	
Proflavine	1/100,000	1/200,000	1/400,000	1/800,000	1/1,600,000	1/3,200,000	None	1/100,000	1/200,000	1/400,000	None	
	0	0	1	1	2	2	2	0	30	35	28	

in any one month the sum of the days during that month on which they were treated. Thus, if five individuals were treated during one month for two, seven, three, six, and five days respectively, the sum of these days is twenty-three, and the average disability period for any one of these five cases is 4.6 days. This figure, of course, was irrespective of the clinical condition for which the men were being treated. It was an index of the rapidity of recovery of the group as a whole from disease or injury of any kind. The point is well shown by the following comparative figures in this particular group of 300.

Month, 1941	New Cases	Man-days Lost	Average Disability Period
March	89	358	1.0
April	123	510	1.4
May	187	855	1.6
June	225	1,156	5.1
July	275	1,573	6.8
August	302	2,147	8.1
September	143	912	6.2
October	110	599	5.5

The hours of work were increased in early April, and the period of long hours continued till the middle of August. It is perhaps worth noting, too, that with shorter hours and men on leave a maximum output of tanks was achieved in October; this was bettered in November, and the output reached a new record figure in December.

Certain conclusions were put forward tentatively after consideration of these records.

1 Young healthy adult males who are well fed, well housed, and well cared for can work effectively for long periods without showing signs of strain or ill-health provided that their hours of work do not exceed 60 a week. This is a maximum and not an optimum figure. The optimum may well be appreciably below 60 hours a week.

2 If such men are made to work more than 60 hours a week for more than four consecutive weeks there will be a rise in the incidence of sickness and disability among them. This rise will be due to conditions of minor ill-health—typically the common cold—associated with a lowering of the general resistance to disease, and will continue, and increase, until such time as the hours of work are reduced again to a figure below 60 a week.

3. Where a group of men has a high rate of sickness due to a prolonged period of fatigue from overwork, steps should be taken at once to reduce the hours of work to below 60 a week and to grant leave. No other measures will affect the situation appreciably.

4. The most potent "psychological incentive" will not keep a large group of men in good health if that group is working more than 60 hours a week for a longer period than four weeks.

As a result of this study the many large R.A.O.C. and R.E.M.E. installations in the Middle East were all instructed to work a 57-hours week. In emergencies these hours were occasionally increased, but never for more than three weeks. The system of recording sickness rates was also generally adopted.

#### Methods of Recording Sickness

This method of recording sickness is being described in full elsewhere by one of us (I. H. F.). Briefly, a daily note was kept of "all sick." This included every man not 100% effective. Thus men receiving specialist treatment of any kind were included, as were men doing a full day's work but under treatment for, say, corns. Cases under this heading would range from men in hospital or on sick leave, through the "exused all duties" and the "light duties" group, up to men returned to duty that day. This figure was related daily to the ration strength of the unit and expressed as an average weekly percentage figure to the nearest one-half per cent.

This method was applied to all R.A.O.C. and R.E.M.E. base installations in the Middle East. Records were kept by companies (usually 300 to 400 strong). In all companies and in widely differing areas the usual figures were below 5%. A local epidemic of, say, sandfly fever might bring the figure up to nearly 10%, but that happened rarely. In the company previously referred to the figure ranged constantly from 3 to 4%. In 18 weeks of prolonged hours of work there was no appreciable effect for four weeks. After that period the sickness rates rose steadily to just over 30%. At that point

hours were reduced and leave was granted, but it was six months before the weekly figures had returned to the usual level below 5%.

#### Major and Minor Injury Rates

It was not possible to record sickness rates among civilian native employees, as the Army does not accept responsibility for the treatment of diseases other than the essentially industrial; but over the last two years injury rates have been recorded. Injuries were classed as major—i.e., involving injury of some kind—or as minor; in the latter case they were trivial injuries treated by native medical orderlies. The orderlies had all to be trained, and they were given first-aid supplies according to scales depending on the number of men employed, type of work, usual nature of injury—cuts, burn, eye injuries, etc. All injuries were recorded as major or minor and rates were standardized to the number of injuries per 100 employed civilians per month.

#### Major Injuries

Table I compares major injury rates in two base workshops each employing over 7,000 civilians. One installation was engaged on the production of war stores ranging from ration-boxes and refrigerators to gun-mountings and blast-furnaces. The other was concerned with the repair and maintenance of all types of instruments, guns, and vehicles.

TABLE I.—Major Injury Rates per Month per 100 Employed

	1942			1943								
	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.
Production	2.2	2.9	2.1	2.9	2.6	1.9	1.6	1.4	1.8	2.0	1.8	1.2
Repair and maintenance	4.4	4.4	3.1	4.2	4.1	4.2	3.2	3.1	3.6	3.2	2.6	1.9

These figures represented 1,759 major injuries in a year among an average civilian strength of 7,192 on the production side. The corresponding figures for the repair and maintenance installation were 2,972 major injuries with an average daily strength of 7,166 civilians. As anticipated, more injuries occurred on the repair side than in straight production; but in both cases there was an improvement over the year, due to the adoption of different safeguards and also to the increasing skill of the natives employed. The rise in June, 1943, was due to a rush of work essential to the Sicilian campaign.

#### Minor Injuries

In each of 24 sub-workshops—factories ranging from units of 100 to 3,000 civilians with a sprinkling of British troops as overseers—minor injury rates were similarly recorded and standardized to the rate of minor injuries per month per 100 employed. These were trivial injuries—cuts, abrasions, burns, etc.—treated by the native orderlies and rarely seen by a medical officer. These figures brought out clearly several points of interest.

*Effect of Increasing Skill.*—Three shops, each employing some 300 natives, were engaged on the production of wooden articles—tables, chairs, packing-cases, ice-boxes, ration-boxes, desks, etc. Shop No. 1 had been in existence in peacetime with much the same employees. Shop No. 2 was a wartime creation, and at the time of this study most of the native employees had been engaged on the same job for over twelve months. Shop No. 3 had been started two months before, and all the employees were new recruits and learnt their jobs the hard way. Table II shows the injury rates in these three different groups—each of similar size and engaged on much the same work.

TABLE II.—Minor Injury Rates per Month per 100 Employed

	1942			1943				
	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May
Shop No. 1	15	17	14	11	10	12	16	12
Shop No. 2	26	25	31	28	30	27	29	25
Shop No. 3	81	59	47	41	43	33	37	34

The same point was shown equally well in a shop (No. 4) in which the average civilian strength leaped from 600 to 1,200 in the first week of March, 1943 (Table III).

Shop No. 5, which showed very constant figures, was a peacetime workshop employing over 3,000 natives, making hospital beds, Soyer stoves, and the like. In this shop expansion took place early in the war, and as it was in an isolated district its employees, once they had moved to this area with their families, tended to remain. Frequently the injuries have been of the "avoidable" type. Thus

P. D. Wilson) of *Fractures and Dislocations*, 1928, and of a textbook on *Orthopaedic Surgery*, 1926.

A first-rate golfer, he was well known on Edinburgh and East Lothian courses as a prominent player in club competitions up to the outbreak of the war. Tribute to him as sportsman and friend, and as pioneer in the development of orthopaedic surgery in Scotland, has been paid by a colleague writing in the *Scotsman*.

We regret to announce the death on Nov. 9 of Dr. WALTER MARTIN ASH, O.B.E., county medical officer for Derbyshire. He was born at Castle Cary, Somerset, on March 27, 1889, and from Blundell's School, Tiverton, went to the London Hospital. During student days he played rugby football for his hospital and for Somerset. He graduated M.B., B.Sc. with honours in anatomy and physiology in 1912, held five resident posts in succession at "the London," and served throughout the last war as temporary surgeon lieutenant, R.N. In 1920 he obtained the D.P.H. of Manchester University after taking a course in sanitary science there, and entered the Public Health Service; before his promotion to the senior Derbyshire post he had been assistant county M.O.H. for Lancashire and school medical inspector, and deputy county medical officer for Middlesex. Dr. Ash took the F.R.C.S.Ed. in 1923. He published a report on concurrent vaccinia and variola, and articles on goitre, on hereditary microphthalmia, and on school closure in mild smallpox epidemics. He was awarded the O.B.E. for services to Civil Defence in the Birthday Honours list of 1943. Dr. John Cahill writes: One morning in 1941 Dr. Harold Fernandes, medical superintendent of Derbyshire County Sanatorium, informed me that Dr. Ash was to call that day on a visit of inspection. I received the news with very mixed feelings indeed. The efficiency of Ash was almost a legend, and, in addition, he was reputed to be somewhat of a disciplinarian. I was to discover, however, that this man of masterful manner and rather severe expression knew how to unbend on occasion. Although his health was at that time seriously impaired, no one less like an invalid could be imagined. His conversation raved through memories of Russell Howard, memories of days spent at cricket and football, and memories, amusingly humiliating perhaps, of sparring bouts in which the late Jim Driscoll, round after round, had prevented him from landing a punch. Later, we saw quite a lot of him and always looked forward to his visits with pleasure. Ash, a former surgical registrar, retained a keen interest in surgery and loved to steal occasional hours from his work to watch operations. He once said that *Gray's Anatomy* was his favourite bedside book (a choice which I found altogether strange). He also possessed the rather uncommon gift of leadership (in the good sense of the word), as a result of which he maintained almost a family spirit among the medical officers of the Derbyshire County Council.

WILLIAM MCCREADY, F.R.C.S.I., who died at his residence in the Ulster countryside on Oct. 29, was the third son of the Rev. I. M. McCready (himself a graduate in medicine), Rector of Magheradroil, Co. Down. Born in 1880 he was educated at "Inst." Belfast, and Trinity College, Dublin, where he took his B.A. degree with a senior moderatorship and gold medal in English literature. Entering Queen's College, Belfast, in 1902 he qualified M.B., B.Ch. in 1907. After a term as resident in the Royal Victoria Hospital he studied ophthalmology and otology in Vienna, and on his return in 1910 was at once appointed ophthalmic surgeon to the Belfast Hospital for Sick Children and assistant surgeon to the Ophthalmic Hospital to both of which he was consulting surgeon at the time of his death. In the war of 1914-18 he served as assistant officer with the 10th Battalion, Royal Irish Rifles, 1916, when he was transferred to the R.A.M.C. to act as ophthalmic specialist. In 1933, much to the grief of his friends and patients, a serious breakdown in health forced him to retire from practice, and he went to live in a small cottage overlooking the waters of Strangford Lough which he had bought some years before. There he and his charming daughter, who showed a generous hospitality to their host of friends, and his wife, who was feeling "ruffled" with a serious case of rheumatism, spent their days. It became the customary thing "to run down" to see him for an hour, sure that this would mean a return to work with a different outlook on things in general. Before his retirement yachting was his principal hobby, and there is something fitting in the fact that he died quite suddenly while typing out the log of one of his last cruises up the West Coast. The sympathy of the profession in Northern Ireland for his widow and only son, now serving with the C.M.F., is a well-remembered and widespread—R. H.

## INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended Nov. 25.

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year, for: (a) England and Wales (London included), (b) London (administrative county), (c) Scotland, (d) Eire, (e) Northern Ireland.

Figures of Births and Deaths, and of Deaths recorded under each infectious disease, are for: (a) The 126 great towns in England and Wales (including London), (b) London (administrative county), (c) The 16 principal towns in Scotland, (d) The 13 principal towns in Eire, (e) The 10 principal towns in Northern Ireland.

A dash — denotes no cases; a blank space denotes disease not notifiable or no return available.

Disease	1944					1943 (Corresponding Week)				
	(a)	(b)	(c)	(d)	(e)	(a)	(b)	(c)	(d)	(e)
Cerebrospinal fever ..	41	4	19	2	2	43	3	30	6	—
Deaths .. ..	—	—	1	—	—	—	2	—	—	—
Diphtheria .. ..	616	23	209	133	19	732	47	188	92	45
Deaths .. ..	8	1	1	2	—	15	1	2	2	—
Dysentery .. ..	380	44	82	2	1	147	26	44	—	2
Deaths .. ..	—	—	—	—	—	—	—	—	—	—
Encephalitis lethargica, acute .. ..	1	—	—	—	—	4	—	2	—	—
Deaths .. ..	—	—	—	—	—	—	—	—	—	—
Erysipelas .. ..	—	—	62	9	3	—	—	57	9	—
Deaths .. ..	—	—	—	—	—	—	—	—	—	—
Infective enteritis or diarrhoea under 2 years .. ..	—	—	—	28	—	—	—	—	70	—
Deaths .. ..	38	2	9	4	1	39	5	15	6	7
Measles* .. ..	7,137	110	425	19	25	518	49	65	30	3
Deaths .. ..	10	—	—	—	—	—	—	—	—	—
Ophthalmia neonatorum .. ..	81	5	16	—	—	75	2	13	—	—
Deaths .. ..	—	—	—	—	—	—	—	—	—	—
Paratyphoid fever .. ..	1	—	5(B)	—	—	2	—	1	—	—
Deaths .. ..	—	—	—	—	—	—	—	—	—	—
Pneumonia, influenza (from influenza) .. ..	755	24	10	1	8	1,647	121	65	1	1
Deaths .. ..	27	2	—	—	—	375	29	43	8	5
Pneumonia, primary .. ..	—	—	314	14	—	—	—	326	13	—
Deaths .. ..	—	—	34	5	1	—	—	98	14	19
Polio-encephalitis, acute .. ..	2	—	—	—	—	1	—	—	—	—
Deaths .. ..	—	—	—	—	—	—	—	—	—	—
Polymyositis, acute .. ..	10	—	—	2	2	13	2	1	3	—
Deaths .. ..	—	—	—	—	—	—	—	—	—	—
Puerperal fever .. ..	—	6	15	—	—	—	1	18	—	—
Deaths .. ..	—	—	—	—	—	—	—	—	—	—
Puerperal pyrexia† .. ..	165	11	17	—	—	166	7	16	2	1
Deaths .. ..	—	—	—	—	—	—	—	—	—	—
Relapsing fever .. ..	—	—	—	—	—	—	—	—	—	—
Deaths .. ..	—	—	—	—	—	—	—	—	—	—
Scarlet fever .. ..	2,350	60	348	32	117	3,157	240	402	30	94
Deaths .. ..	1	—	—	—	—	5	—	—	1	—
Smallpox .. ..	—	—	—	—	—	—	—	1	—	—
Deaths .. ..	—	—	—	—	—	—	—	—	—	—
Typhoid fever .. ..	4	1	—	9	1	—	—	3	7	5
Deaths .. ..	1	—	—	—	—	—	—	—	—	—
Typhus fever .. ..	—	—	—	—	—	—	—	—	—	—
Deaths .. ..	—	—	—	—	—	—	—	—	—	—
Whooping-cough* .. ..	1,388	56	151	41	10	1,800	163	225	38	29
Deaths .. ..	9	1	1	1	—	16	3	4	—	1
Deaths (0-1 year) .. ..	358	41	65	28	11	394	44	81	31	34
Infant mortality rate (per 1,000 live births) .. ..	—	—	—	—	—	—	—	—	—	—
Deaths (excluding stillbirths) .. ..	5,118	760	697	220	132	6,863	1,055	793	221	172
Annual death rate (per 1,000 persons living) .. ..	—	—	16.0	14.3	§	—	—	17.9	14.5	§
Live births .. ..	6,772	598	907	315	251	5,635	709	807	410	260
Annual rate per 1,000 persons living .. ..	—	—	18.4	20.4	§	—	—	16.5	27.0	§
Stillbirths .. ..	192	11	37	—	—	191	18	36	—	—
Rate per 1,000 total births (including stillborn) .. ..	—	—	39	—	—	—	—	43	—	—

\* Measles and whooping-cough are not notifiable in Scotland, and the returns are therefore an approximation only.

† Includes primary form for England and Wales, London (administrative county), and Northern Ireland.

‡ Includes puerperal fever for England and Wales and Eire.

§ Owing to evacuation schemes and other movements of population, birth and death rates for Northern Ireland are no longer available.



TABLE III.—Minor Injury Rates per Month per 100 Employed

	1942			1943					
	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
Shop No. 4	88	92	83	74	71	169	148	139	123
Shop No. 5	45	43	41	52	59	47	54	43	48

many of the "foreign bodies, eye" injuries would not have occurred if the victim had used the eye-shields provided. It may be noted here that almost all British cases of "F.B. eye" were back it work within 48 hours, whereas natives sustaining the same injury were as a rule off work for 5 to 7 days. This is a difference easily applicable in a country in which some 90% of the population have rachomatous eyes. Another prevalent avoidable injury has been burns of the feet, due to the practice of working bare-footed in foundries and blacksmiths' shops. Boots were provided for these workers, but it took some time to teach them that they should be worn on the feet and not dangling round the neck.

### Specific Hazards

There was a risk of plumbism in some installations; the chief of which were (i) battery reclamation, (ii) petrol storage, (iii) printing.

### Battery Reclamation

In the reclamation of batteries the following processes are carried out: (a) Preparation of metal by breaking down old accumulators with the lead run out in a reducing furnace:—This is done in the open, hence is not very dangerous. (b) Casting of plates:—The lead is melted in a cauldron and poured into moulds. The danger from fumes has been minimized by the provision of hoods with extractor fans. (c) Pasting:—The paste is made by mixing litharge, lead chromate, and a binder manually, as a mechanical mixer is unobtainable. The risk of inhalation and skin absorption of lead is very high. The paste is introduced into the prepared frames with a hand spatula. Dust has been lessened by keeping the floors, benches, etc., constantly damp, but the risk of absorption through the skin prevails, as gloves have been found useless. (d) Drying:—The plates, having been pasted, are dried in a chamber heated by fumes from the cauldron in the casting-room. As this room is only entered for the purpose of adding or taking out plates, the danger from inhalation of a lead-impregnated atmosphere is of short duration. (e) Forming:—The dry plates are immersed in weak sulphuric acid and charged with electric current. This process is carried out in a large well-ventilated room, so that a high concentration of fumes is not obtained. (f) Mounting:—The charged plates, or electrodes, and the electrolytes are now brought together to make the accumulator, the plates being placed vertically in the cells suspended by hooks and separated from each other by insulating-rods. They are then fixed to the cover and external connexion by lead soldering. During this process lead fumes are evolved from the solder.

Careful watch has been kept on the physical condition of the employees, and during two years' service no cases of lead poisoning have been detected. This is remarkable; for if, in the United Kingdom, men had worked under similar conditions there would have been many cases—some probably fatal. The only time when there has been any suggestion of symptoms due to lead was during Ramadan. At this time, for 28 days, no practising Moslem eats or drinks while the sun is up. Thus any inhalation or ingestion of lead dust is taken in a pure state, not being diluted by the presence of water or food in the stomach. During this time the number absent without leave rose, and the usual complaint was gastric upset from keeping Ramadan. Investigation revealed the following facts, which bear out the theory that this sickness was caused by mild degrees of plumbism.

Work	Average No. of Days Absence per Employee			
Pasting	..	..	..	3.2
Casting	..	..	..	1.0
Charging	..	..	..	0.6
Assembly	..	..	..	0.5
Stripping	..	..	..	0.5

This order corresponds with the danger from plumbism, except in the case of charging or formation, in which the inhalation of sulphuric acid fumes would tend to cause gastritis. Blood counts of workmen employed in the most hazardous processes for over a year revealed no abnormality excepting a 70% haemoglobin level, which is a figure considered well above the average among the Egyptian working-class.

### T.E.L. Hazard

In the summer of 1943 eleven natives in one civilian petrol installation died as a result of acute T.E.L. poisoning. All became maniacal at some stage of the brief illness. The factors leading to this situation were as follows:

1. The work of filling 4-gallon "jerricans" from a feed-pipe with taps opening off it was done in a small building with no ventilation whatsoever. Since this was done at night there was a complete black-out, and because of the danger of fire there was a blast-wall entirely covering each door and window.

2. This was the hottest summer in Egypt for the last 34 years.

3. T.E.L. concentration in the petrol had just been increased from 2.6 to 4.3 c.c.m. per imperial gallon.

4. In view of the Sielian campaign this plant was working 24 hours a day seven days a week, and because of the shortage of labour two 12-hour shifts were operated. Or, in other words, at one and the same time these natives were subjected to minimal ventilation, maximal heat volatilization of T.E.L., and maximal periods of exposure—with disastrous results.

Either 70- or 80-octane petrol was in general use at this time, both grades containing enough lead to need precautionary steps. An investigation had already been made into all W.D. petrol stores to ascertain the hazards and apply the appropriate precautionary measures. Three additional main sources of possible poisoning had been detected: (a) Washing of cans:—The cans are washed with petrol, and the washer gets his clothes saturated with petrol. (b) Storage in underground sheds:—Some of the tins leak, with the result that the sheds are filled with fumes. (c) Sealing of "leakers":—Leaking tins are filled with petrol and the leak is soldered.

Precautionary measures adopted included careful selection of personnel, regular medical examination, provision of overalls, showers, and daily milk to handlers, external storage of petrol, and substitution of 70-octane petrol for washing cans.

### Printing Presses

Most of the W.D. printing presses have been taken over from civilian owners. In none of the British or native employees at these presses have we ever noted anything even remotely suggestive of lead poisoning.

Over the last three years we have observed natives at risk from T.N.T., lead, T.E.L., Diesel oils, and other industrial toxic substances for long hours each day over long periods. In the T.E.L. incident quoted, toxic effects were almost entirely due to inhalation. In all other cases we were constantly impressed by the way in which the native epidermis seemed impervious to lead, T.N.T., and a variety of oils.

### Summary

A few of the difficulties and problems following the introduction of W.D. workshops and factories into the Middle East are reviewed.

Methods of recording sickness and accident rates are discussed, with some notes on the relation between fatigue and sickness.

Problems associated with special hazards are described.

## A CLASSIFICATION OF DEATHS OF MEDICO-LEGAL IMPORTANCE

BY

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For many years deaths of medico-legal importance have been classified into three groups according to the cause of death—viz., coma, syncope, or asphyxia. Three series of pathological changes have been described as characteristic of these types of death. In particular the post-mortem signs of asphyxia have always been regarded as forming a distinct pathological entity.

I have analysed the results of many hundreds of necropsies in order to determine whether asphyxial deaths can be differentiated from other deaths of medico-legal importance on the basis of a qualitative difference in the pathological changes. The conclusion I have drawn is that reliable differences cannot be detected on the basis of morbid anatomical observations alone.

In all forms of death of medico-legal importance the findings at necropsy may be divided into two groups. The first group comprises the basic pathological changes of circulatory failure such as visceral congestion and capillary haemorrhages. These non-specific changes are always present in greater or less degree in deaths from any cause. The second group consists of the pathological changes which are dependent on the type of death—e.g., the local injuries to the neck in throttling and strangulation, and the colour of the blood in acute carbon monoxide poisoning. Such changes are best described as special pathological changes. It would appear that a sufficiently clear

suggested that the spermatogenic cells may have some internal secretion, but all the evidence shows that testosterone comes from the interstitial cells; "a direct hernia never passes into the scrotum": this statement is definitely erroneous, although it has been copied from book to book since it was first made. Then what is the student to do about erysipelas, to which we could find no reference except that it is "indistinguishable from reticular lymphangitis"—a true statement but scarcely sufficient as an answer to an examination question? Perhaps, however, this is now regarded as a medical disease. We consider the index of a student's textbook to be one of its most important parts, yet these 700-odd pages are provided with but 6 of index, so that, to take the above quotations as examples, erysipelas, arsphenamine, testosterone, and reticular lymphangitis are looked for in vain.

There are a good number of line illustrations (unnumbered) of considerable merit. Unfortunately, owing to the printing of the book upon wartime paper, the skiagrams have had to be reproduced as black-and-white drawings, which detracts from their value and may mislead the student when he is confronted with the real article. The whole book gives the impression of having been hastily written, but it is very much to be hoped that future editions will conform more closely to the excellent ideals of the preface.

### SEX EDUCATION FOR THE YOUNG

*Sex Education. A Guide for Parents, Teachers and Youth Leaders.* By Cyril Bibby, M.A., M.Sc., F.L.S. (Pp. 291 7s 6d.) London: Macmillan and Co., 1944.

Sex education for the young is very much to the fore at present, and opposition to it from even the most repressed and hide-bound parents is fast disappearing. Not long ago the only education given to the curious youngster was, "When in doubt, don't," without explaining what exactly he was not to do. Any statement was backed by threats of the dire consequences of venereal disease to the body and eternal damnation to the soul. Such methods, however, in no way acted as deterrents and only degraded a subject which should be noble. The most enlightened sex education, on the other hand, will not eliminate all evil, but it will do something to improve the sexual standards of the race.

All facts are best inculcated before puberty—i.e., before 12 years old—in answer to the inevitable questions of the child, as and when they are put, not before or after. In this way he may receive them as he does other facts without emotional bias or prejudice. The author thinks that the teacher, being less emotionally involved, is the best person to give sex education, but others must do their part. In the early years of childhood it is very important that parents should adopt an unemotional attitude towards feeding, excretion, infantile masturbation, and nudity. The chapter on the school curriculum is good, for it shows how all subjects may contribute to sex education, provided a sense of proportion is maintained. The various sex problems which arise in schools are sensibly discussed, such as the emotional changes of adolescence and aggressiveness while menstruation, night emissions, and masturbation are adequately dealt with. The author notes that many sex-directed activities are not sex-motivated. He points out how theoretical is the idea of sex sublimation, and how seldom is it a really practical and efficient solution. There is a good selection of questions asked by children and young people, and a final chapter on educating the educators. Appendices include a tabulated scheme for sex education, specimen lectures, and a guide to further reading.

This is a practical, useful book, thoroughly to be recommended to all who are concerned with the future welfare of the race.

### Notes on Books

*Man and His Environment*, by SAMUEL LOWY, M.D., is published by Kegan Paul, Trench, Trubner and Co. The author is a psychoanalyst who has spent the war period in England. His work on neurones in several European countries has convinced him that the ills of society are analogous to the ills of his neurotic patients. The innate impulses of hate and aggression cannot be denied, but should be so far as possible controlled and directed into desirable channels. More understanding, more knowledge, will help, as will greater opportunities for the enjoyment of beauty and a wider satisfaction in life, with a freedom from anxiety over the

basic necessities for existence. The author does not think that these things can be left to individuals, but that the State must take the initiative in regulating human relationships. While some State regulation of the interactions of employers and workmen would be acceptable to most, many people would jib at the establishment of a Ministerial Department to regulate the inner life of families in the interests of health and happiness, however theoretically desirable this might seem to be in most cases. The chapter on sexuality in its cultural and social aspects is good, and the whole book is distinctly interesting, though, as the author himself admits, no specific concrete proposals are ventured upon.

*Salts and their Reactions*, by LEONARD DOBBIN and JOHN E. MACKENZIE (Edinburgh: E. and S. Livingstone; 8s. 6d.), is an introduction to chemistry presented in a form which at one time was more common than it is to-day. This form of presentation has the particular merit that the building of knowledge is begun on a foundation already familiar to the student in the facts of everyday life. This is not to say that the scheme of instruction is archaic; it is a scheme which leads in a direct ascent to the most modern considerations and treatment of chemical science. The book does not take the student far beyond the requirements of first examinations, but, providing as it does the directions for a well-selected series of practical experiments, it will prove to be a very useful accessory to the preparatory lectures for entrance examinations.

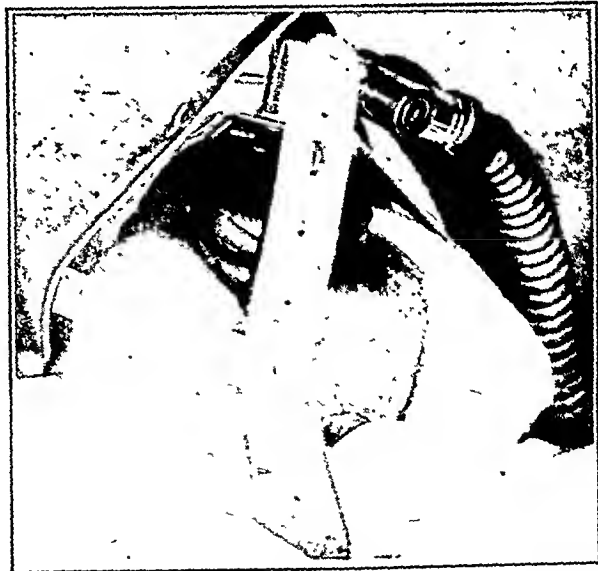
### Preparations and Appliances

#### A USEFUL ADDITION TO THE CLAUSEN HARNESS

Dr. J. MORLAND SMITH, D.A., writes from Stoke Mandeville Hospital, Aylesbury:

A great disadvantage of the Clausen harness is that it fails to support the jaw; in fact, if applied firmly, it often depresses the jaw, causing respiratory obstruction even in the presence of an oral airway. Descriptions of gadgets for elevating the mandible have appeared in the literature from time to time, but I have not yet noticed any mention of the very simple method I am about to describe.

After a three-strapped harness has been loosely applied, a wooden tongue-depressor is placed transversely under the chin, and the two lower straps are stretched to pass over the ends of this depressor (see photograph). If the harness is likely



to be on for any length of time, it is wise to pad the spatula by wrapping a gauze dressing round it, and perhaps to alter its position occasionally. Apart from raising the jaw, the spatula spreads the lower straps, preventing pressure on the facial nerves. If the corrugated tubes and connexion are arranged to lie over the forehead in the mid-line, they do not tend to pull the head to one side but to maintain it in extension.

I have used this device with the harness regularly since 1940, and have found it most helpful, especially for giving pentothal with nitrous oxide and oxygen. Unfortunately, patients are met with whose airway cannot be adequately maintained by this method, despite alteration in pillows and type of artificial airway. I assume that these odd cases would present equal difficulty with most of the other types of jaw support.

distinction has not always been made between these two groups of post-mortem findings. As a consequence general pathological changes such as visceral congestion and capillary haemorrhages have often been invested with the significance of special pathological changes. In this way asphyxia has come to be regarded as a pathological entity.

It is suggested that a classification of deaths of medico-legal importance based upon the concept that tissue anoxia, however induced, leads to circulatory failure and death would be more in keeping with current views in applied physiology and pathology.

### The Mechanism of Death

The cessation of the vital functions depends upon the production of tissue anoxia. This anoxia may be brought about in four different ways. It may be caused:

(A) By defective oxygenation of the blood in the lungs—*anoxic anoxia*.

(B) By a reduced oxygen-carrying capacity of the blood—*anaemic anoxia*.

(C) By a depression of the oxidative processes in the tissues—*histotoxic anoxia*.

(D) By an inefficient circulation of the blood through the tissues—*stagnant anoxia*.

All these types of anoxia produce circulatory failure, and this failure may lead to death.

The accompanying diagram, which has been adapted from the work of Moon (1938), shows clearly the method by which these conditions produce circulatory failure. It illustrates how the different types of anoxia give rise to the same vicious circle and how this circle operates to maintain the circulatory failure once it has been produced.

In all deaths the initial development of the tissue anoxia depends upon one or other of the mechanisms given under (A), (B), (C), or (D). The special position of haemorrhage—of importance in deaths from incised wounds and criminal abortion—has been indicated by Moon.

Deaths of medico-legal importance may be classified for practical purposes by the way in which the tissue anoxia is initiated.

### A Classification of Deaths of Medico-legal Importance

#### (A) Deaths from Anoxic Anoxia:

1. (a) From an obstruction to the passage of air into the respiratory tract—e.g., suffocation, smothering, and overlying; (b) from an obstruction to the passage of air down the respiratory tract—e.g., drowning, choking by foreign body impaction, throttling, strangulation, and hanging; (c) from an external compression on the chest and the abdominal walls—e.g., from falls of earth.

2. From a primary cessation of respiratory movements—respiratory failure—e.g., narcotic poisoning and rapid deaths from electrical injuries.

3. From breathing in vitiated atmospheres. These deaths are usually caused by the displacement of the atmospheric air by carbon dioxide or inert gases—e.g., they occur from exposure to "black-damp" or "fire-damp" in mines and from exposure to the fumes in wells and vats.

#### (B) Deaths from Anaemic Anoxia:

This form of death occurs characteristically in acute carbon monoxide poisoning. It is also seen in poisoning by nitrites, chlorates, and coal-tar derivatives (Van Liere, 1942).

#### (C) Deaths from Histotoxic Anoxia:

This form of death is seen in acute cyanide poisoning.

#### (D) Deaths from Stagnant Anoxia:

This form of death is seen in traumatic shock in which capillary atony leads directly to inefficient circulation of the blood through the tissues. Deaths from burns, heat-stroke, acute irritant or corrosive poisoning, venom poisoning, and delayed deaths from electrical injuries may all be classified in this group.

### The Basic Pathological Changes of Circulatory Failure

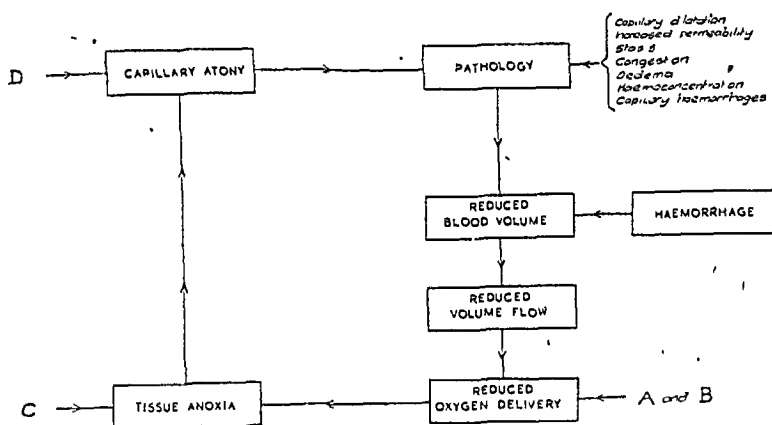
As tissue anoxia, however induced, leads to circulatory failure the pathological changes associated with this failure are fundamentally similar in all forms of death. According to Moon the basic pathological changes of circulatory failure are: (1) Diffuse congestion of all the viscera. (2) Diffuse congestion of the mucous and serous membranes of the body. (3) Capillary haemorrhages in the viscera and tissues, and in the mucous and serous membranes. (4) Oedema of the viscera and tissues, with effusions into the serous cavities. Oedema is most commonly found in those forms of death in which the circulatory failure develops slowly.

Capillary haemorrhages in the pleura (the so-called Tardieu spot) have been observed in all the forms of death which have been included in the classification. They have no significance as a specific pathological change.

The basic pathological changes of circulatory failure are present in varying degree in all forms of death.

It has been suggested by Moon that the intensity of the congestive changes of circulatory failure may depend upon the rapidity of the death. It is difficult to correlate the degree of visceral congestion with the rapidity of the death, as it is exceptional to obtain reliable clinical evidence of the mechanism of death.

In 1941 I attempted to study this problem in relation to the post-mortem findings in a series of 41 anaesthetic deaths, all the patients were under observation at the time of their collapse. Unfortunately, reliable clinical data relating to the mechanism of the collapse could not be obtained from many of the case records. Some data were available in some cases. The conclusion drawn from the limited series of cases studied was that the relative absence of visceral congestion in deaths arising from sudden primary cardiac failure supported the view that the degree of visceral congestion is relatively less in rapid deaths as compared with deaths occurring more slowly.



The relationship of the various forms of anoxia to circulatory failure—Adapted from Moon (1938)

### Asphyxia as a Pathological Entity

The term "asphyxia" is sometimes used synonymously with "anoxia." Etymologically the word means "pulselessness," and there is little reference to the term in modern works on applied physiology (Best and Taylor, 1943; Samson Wright, 1940). It would appear to be an undesirable term from the strict physiological point of view, but it is used extensively in the practice of forensic medicine because of its convenience. It has been shown, however, that there are no qualitative differences in the general pathological changes in all deaths of medico-legal importance, asphyxia cannot be regarded as a distinct pathological entity which is recognizable on the basis of morbid anatomy. It is never justifiable, therefore, to certify that a deceased person has died of asphyxia if this opinion is based only upon a finding of visceral congestion and capillary haemorrhages.

The records of certain criminal trials in South Africa have shown that penalties, including a death sentence, have been inflicted where medical testimony, based upon the view that asphyxia is a pathological entity, has been a major factor in securing the convictions. These cases have arisen specifically in instances of alleged suffocation, throttling, or strangulation where external evidence of injury could not be observed because of putrefactive changes or the burning of the body. It is felt, therefore, that a re-orientation of our approach to deaths of medico-legal importance, in accordance with

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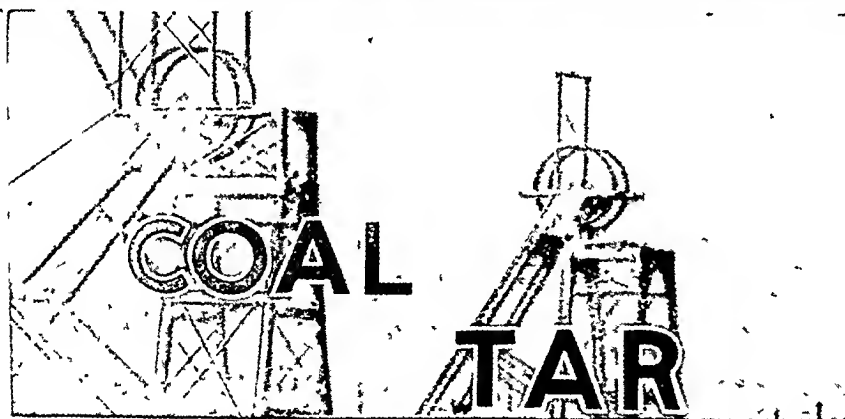
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current views on applied physiology and pathology, would be less likely to lead to any miscarriage of justice

### Summary

A classification of deaths of medico legal importance has been suggested. This classification is based upon the concept that tissue anoxia, however induced, leads to circulatory failure and death. Such a classification is considered to be more in keeping with current views in applied physiology and pathology.

It is emphasized that in the description of post mortem findings for medico-legal purposes a clear distinction should be drawn between the basic pathological changes of circulatory failure and the special pathological changes characteristic of the particular type of death under consideration. Attention is directed to the fact that there are no qualitative differences in the basic pathological changes found in the different types of death.

Because of its convenience the term "asphyxia" is used extensively in the practice of forensic medicine. It is pointed out, however, that as asphyxia does not constitute a pathological entity it cannot be clearly recognized on the basis of morbid anatomical observations alone.

This paper is published with the kind permission of Prof. W. F. Rhodes, of the University of Cape Town. I would also like to thank my colleague, Dr. H. A. Shapiro, for his helpful critical interest in this subject.

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## SPECIFIC SERUM THERAPY IN TYPHOID FEVER

BY

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In normal times typhoid fever is relatively a rare disease, thanks to the forward strides in public health and bacteriology which have been made in the past half century, and it is only when as a result of some unforeseen incident the disease assumes epidemic incidence that it attracts special attention. In the circumstances of war, however, opportunities for its appearance and spread are multiplied. Prophylactic measures go a long way in the protection of the individual and the mass in a modern army, and a supervised hygienic routine assists in averting the spread of infection. A very different state of affairs may be encountered when the present active warfare has ended and a continent in which for five years all the decencies and amenities of living have been disrupted presents itself, and infectious disease in the released peoples might constitute a major obstacle in the return to order. Among these infections the typhoid group of fevers may play an important part. Mass schemes must cater for housing, water, food, and the like, and inoculation will help in personal protection. "Inoculation," it must nevertheless be remembered, will not protect everyone to whom it is applied—a fact recognized by all who have studied and practised it. In our own forces, so splendidly "served" on the medical side, there have occurred a certain percentage of failures to confer complete immunity to the particular disease against which defensive steps have been taken. In an article entitled "Military Medicine in a Middle East," Lieut.-Col. (now Brigadier) E. Bulmer (1943), under the subheading "Enteric Group," says: "The 24 cases include typhoid, paratyphoid, and clinical typhoid fever, without laboratory confirmation. The low incidence is the result of the satisfactory state of the troops with respect to inoculation, but have been impressed with the severity of the cases due to *act. typhosum*, inoculation did not seem to have modified the course of the disease once it was contracted. The mortality rate of 25% would be much higher if only cases of typhoid fever were considered. The disease remains uninfluenced by treatment but good nursing, and the sulphonamide group ineffectual."

Realizing that this case incidence, indubitably low though it is, is met with in a body of men so efficiently inoculated as are our troops, the potential incidence which might be encountered in the circumstances of starvation and disorganization in the immediate post-war Europe presents vast possibilities.

Hitherto medical treatment in the typhoid group has been mainly "general" and in a sense fortuitous and empirical success resulting almost entirely from good nursing, as most clinicians will admit. In typhoid fever, but not in the paratyphoids, there is now at hand a potent therapeutic serum to which, in my view, too little general attention has been drawn. The work of Felix and his colleagues at the Lister Institute made possible the elaboration of his "Vi+O" anti-typhoid serum in which, put briefly, two antibodies are effectively combined, the "Vi" element conferring protection by suppressing the multiplication of virulent strains of *Bact. typhosum* and the "O" antibody by neutralizing the endotoxin of that organism. Clinical trials of the new anti-typhoid serum have been reported from Palestine (Felix, 1935), Ireland (McSweeney, 1935-1937), China (Robertson and Yu, 1936), England (Cookson and Facey, 1937), South Africa (Pijper and Crocker, 1939), Malaya (Landor, 1941), and the findings point definitely to its high therapeutic value in particular in toxic patients. This serum has been used in the City Hospital, Fazakerley, since the beginning of 1938, and in that period 57 cases of typhoid fever have been admitted. Seven of these patients died, four deaths occurring within 80 hours of arrival at hospital. Twenty of the patients (of whom 4 died) were seaborne. These cases disembarked at the port are in the main of severe type having been ill for varying periods at sea in circumstances in which except in the largest liners, medical and nursing facilities of a standard available in a modern hospital ashore are not readily to hand. Those patients who on admission showed toxic symptoms—undue general prostration, hyperpyrexia, threatened delirium, coma or typhoid state, or complications such as haemorrhage or pneumonia—numbering 25 in all received serum. Classified according to severity they were

Very severe	12 (4 deaths)
Severe	9 (2 )
Moderately severe	4

Seaborne patients contributed 14 of the 25 serum cases and four of the six deaths, these latter being due to pneumonia (3), haemorrhage (2) and toxæmia (1). The one death in the non-seaborne group was the result of old standing endocarditis in an elderly patient. The cases not receiving serum are, of course, not to be regarded as "controls," but rather as mild infections for which anxiety was not specially justified. All the patients were civilians who had not been inoculated with TAB vaccine, and the clinical diagnosis was in each instance confirmed by bacteriological or serological examinations.

Though the number of cases reviewed in the series is not large and does not permit of assertive conclusions, the effects of serum treatment were manifest in three ways:

(a) Conditions due to direct toxæmia, excluding hyperpyrexia, abated rapidly, obvious improvement appearing often within 48 hours and continuing to be sustained, with coincident decrease in signs and increase of relative strength and well being. Six of the very severe cases were of the type for which, in other times, but little hope of recovery could have been entertained, they responded with surprising and almost dramatic promptness.

(b) Hyperpyrexia was not affected in so quick a manner, a maintained fall in temperature taking some days and continuing as a moderately steep lysis.

(c) Incidental complications such as intestinal haemorrhage or pneumonia, already present when the patient came under treatment, did not seem to be influenced by the serum in any way. It was observed, however, that such conditions did not arise in the later course of the disease in those subjects to whom serum had been given in the initial and toxic phase.

The serum is issued in 33-cm phials (Lister Institute), and injection of the contents of one phial intramuscularly (buttock) on three successive days, beginning at the earliest available moment, was routine. In the very bad cases an initial dose of 66 ccm was given. This may seem a large amount for one intramuscular injection, but if the serum and the syringe have been previously warmed and kept in water at blood heat



calls it, "normal procedure," tends to take first place. I know of one hospital of nearly 1,000 beds, which comes under the Kent County Council. Their committee meets once a month; their "decisions" have to go to Maidstone, 40 miles away, for confirmation by a committee which meets once every three months.

In a hospital run by responsible people the sense of frustration caused by the delay in taking decisions has to be experienced to be believed. In a voluntary hospital, the medical officer in charge can and does give quick decisions over anything which may affect the welfare of the patient if the decision is a big one I understand that, in voluntary hospitals, the house committee meets once a week.

Directly a doctor becomes an administrator it is not, in the nature of things, possible for him to keep up to date to the same degree as a consultant.

And, forsooth, Dr. Ponder takes exception to my asking the advice of the tuberculosis officer on the spot, because he is—"tell it not in Gath"—a subordinate official and is not in a position to speak on the council's policy.

Of course no one realizes better than I the difficulties of wartime, but instances are still coming to me of persons suffering from tuberculosis who are compelled to live in their homes, and, in the opinion of one tuberculosis expert, one "free" case affects on the average eight or nine others. The vicious circle now being created will take ten or twelve years to break down. Of course this is a national problem, but it is my duty to bring to the notice of the authorities the sufferings and disabilities of my constituents, and I shall continue to do so, regardless of personalities. It is interesting to note that Dr. Ponder thought the matter sufficiently worth while to write to the *British Medical Journal*. *Qui s'excuse, s'accuse*.

Through the "Fighting Fund for Freedom" (1, Dover Street, W.1), of which I am chairman, we are doing all we can to educate the voters of this country against the mortal danger of State control, of which an outstanding example is the medical White Paper recently issued by the Government, and in this nation-wide movement we should welcome the help and co-operation, already strongly in evidence, of doctors and nurses.—I am, etc.,

Knockholt, Kent.

WALDRON SMITHERS.

### The Young Married Doctor

SIR.—Your correspondents Tom Barns and "Y.M.D." (Sept. 23 and Oct. 14) have stated admirably the case for the recently qualified man who wishes to marry, and it is not too soon. For such a man general practice offers a solution—hard work, a home, and a living wage for two, which is what a young man wants at the start of his career. Many men enter successfully and efficiently this branch of medicine, for the practice of which it has been truly said that "no doctor is too good." There are others, however, who feel that they must continue their hospital work, with a view either to broadening their general experience or to specializing. Marriage completely and effectively blocks this prospect in the majority of cases, and such a position is most unsatisfactory and quite unnecessary. All too often the attitude adopted by those in responsible positions is unreasonable. It is usually twofold: first, that, as in other professions, a man must wait and work until he can afford to marry; and, secondly, that for some indefinite reason it is more difficult for a young husband than a young bachelor to make a success of hospital work. Neither of these views, though they appear superficially sound, bears careful scrutiny. With regard to the first, at 25 many men have waited long enough and worked hard enough to entitle them to the privilege and responsibility of marriage by the standards of other professions. That resident's pay and hospital rules preclude this is not the resident's fault, and, as "Y.M.D." points out, the reform would be simple and comparatively inexpensive.

It is more difficult to understand the origin of the second fallacious view, but I think it probably springs from the assumption that the work of a married man, working in hospital, will inevitably suffer from his anxiety to "down tools" and get home at the earliest possible moment. This, of course, is an extremely ill-conceived idea; a married man keen enough to aim at the highest technical knowledge via long years of

study is no more likely to neglect his work than his bachelor colleague (whose leisure hours are not always, as many believe, spent with reference books, histological preparations, and case sheets).

The problem is probably not one which is exercising the minds of those shaping the future of the medical world, and this is partly understandable. It must, however, be recognized that it exists as a problem to many, whose numbers are increasing every year. It is encouraging that the subject has been raised, let us hope that it will not sink out of sight again before something constructive has been done about it.—I am, etc.

"MARRIED DOCTOR."

## Obituary

E. FRETSON SKINNER, M.A., M.D., F.R.C.P.

The life of Edward Fretson Skinner, senior physician to the Royal Hospital, Sheffield, ended abruptly on Nov. 28. An hour before his death, after the last ward round, he had a severe attack of angina. It passed off. Though advised to remain and rest he insisted on going to his consulting rooms to see a child. It was there he died.

Dr. Skinner was born in Sheffield 64 years ago. His ancestors have been doctors for several generations, his father and grandfather having been practitioners in Sheffield before him, and the former was for a number of years lecturer in osteology in the Sheffield Medical School. His uncle was also a doctor, and his brother, who died last year, conducted a very large general practice in the city for many years. He was educated at the Wesley College, Sheffield, and proceeded to Cambridge in 1899. He took up rowing with enthusiasm and rapidly became a marked man. He began to train with the Cambridge crew for the boat race, but had to drop out on account of illness. After graduating he studied medicine at the Sheffield Medical School and obtained the Conjoint Diploma in 1906. In 1907 he took the Cambridge M.B. and in 1909 the M.R.C.P. Lond. In 1922 he was elected to the Fellowship of the Royal College of Physicians and in 1935 he took his Doctorate in Medicine.

After doing various house appointments at the Sheffield Royal Hospital he was elected to the staff to take charge of the skin department in 1911. At this period he studied for a time in Paris under Sabouraud. In 1919 he was made assistant physician to the hospital, becoming full physician in 1931. He continued to serve the hospital with great distinction to the day he died. He served in the last war in France, and after being invalided home was attached to the Wharfedale War Hospital in Sheffield, the same hospital where, during the last five years, he has been director of the centre for psychoneuroses under the E.M.S. He lectured in psychological medicine in the University and presented to his students a clear outline of basic principles which he published in a useful little book, *An Introduction to Medical Psychology*. He possessed a profound knowledge of folk-lore and kindred subjects. He wrote a number of brilliant papers on totemism, witchcraft, etc., and he loved to delve into the habits and customs of ancient man.

His interests in medicine were wide. Dermatology had led him to the study of syphilis, syphilis to neurology, and then on to psychological medicine. It was here that his powers were to be fully extended. It was relatively late in life that he turned to this branch of medicine, and his signal success in it was due not only to the man with exceptional natural gifts meeting opportunity but also to the broad and secure foundation in general medicine that had been well and truly laid during many years of hospital and consulting practice. His greatest interest was the development of a psychiatric department as part of a general hospital service. In fact only a week before his untimely death he submitted to the medical staff plans for its furtherance. Already there were at work a neurologist and neurosurgeon and himself forming the nucleus of such a unit. His colleagues will endeavour to promote the fulfilment of his schemes.

Dr. Skinner was a man of great nobility of character. He was absolutely without any pretentiousness or ostentation of learning, yet he exerted an immense influence on all who were brought in close association with him. He was a psychologist whose success in dealing with the aberrations of the human mind and conduct was the outcome of a deep understanding and sympathy with human weakness and misfortune. His kindness and sympathy were felt by all who came in contact with him, and none could doubt his absolute

very little discomfort, and that of a transient sort only, is caused, and absorption quickly takes place. As experience in serotherapy in other diseases bears out, the generous dose of serum, especially if given early, brings a readier and more complete response than do smaller and repeated amounts.

All the patients except five in due time had an urticarial serum rash of variable intensity—a not unexpected event, as this serum is not of the "refined" type. In my personal view a simple serum rash alone is not a wholly ill-starred happening. Temporary and varying irritation is inevitable, but I have noticed in other diseases in which serum is used that, in certain patients who hitherto have seemed to be hanging fire, after the urticaria has come and gone improvement appears to be stimulated and accelerated, owing possibly, I have thought, to the ensuing leucocytosis and its added defensive mechanism—a condition to be desired in the leucopenic state of a typhoid fever patient.

I would add that while serum in typhoid fever seems to possess undoubtedly high value, its use does not in any sense minimize the prime importance of efficient nursing attention as an aid to the patient's recovery.

#### Summary

Clinical results following the use of Felix's "Vi+C" anti-typhoid serum are described. Its efficacy appears to be prompt and very satisfactory in those states due to pure toxæmia. Hyperpyrexia is diminished in time, but this change is not so rapidly brought about. Complications such as pneumonia and hæmorrhage, when present before the start of serum treatment, do not seem to be mitigated.

I am indebted to Dr. W. M. Frazer, Medical Officer of Health, City and Port of Liverpool, for permission to publish these notes.

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## Medical Memoranda

### Prophylactic Penicillin

After a recent "incident," many air-raid casualties were admitted to a hospital, including many with the usual grossly lacerated and contaminated wounds. As reports of the value of penicillin in preventing infection in battle casualties have been so favourable, five million units were speedily obtained by special messenger. Patients with more serious wounds were given 15,000 units (2 c.cm.) four-hourly by intramuscular injection, and, contrary to some reports, very few complained of the injections causing pain.\* Previous experience of similar wounds led one to expect that infection of many of them was inevitable, even with the help of sulphonamides, but the absence of an inflammation in cases under penicillin control was astonishing.

Careful and thorough excision of a recent wound is, of course, the ideal procedure, but many of these cases, despite blood and plasma infusions, were in no condition to stand a time-consuming operation. In any case, some of the wounds were too deep and extensive for efficient débridement. The following is a typical case.

#### ILLUSTRATIVE CASE

A man aged 63, severely shocked, with multiple injuries, the most serious being a deep lacerated wound of the left buttock, from which blood was still trickling. This wound was plugged with gauze, and three hours later, after he had received two pints of blood and a pint of plasma, he was taken to the theatre. Exploration of the wound revealed extensive laceration of the gluteal muscles and comminution of the innominate bone in the region of the sciatic notch. From beneath the bony fragments a steady stream of arterial blood was escaping, presumably from the gluteal artery. As the condition of the patient precluded an extensive dissection, to expose the torn vessel, efforts were made to seize it with forceps inserted beneath the bone, in the hope that diathermy applied to the forceps would thrombose the vessel. In any case, it was intended to leave the forceps *in situ* for a few days. However, efforts to seize the artery were unsuccessful, and, as the patient's condition was deteriorating, all that could be done was to plug the wound

\* When time and facilities permit, it is probably better to give penicillin by continuous intramuscular or sternal drip. One hundred thousands units a day sustains an adequate concentration of penicillin in the circulation.

with gauze moistened with flavine and to excise rapidly some of the damaged muscle. The first injection of penicillin was administered about four hours later, and subsequently at four-hourly intervals. It was anticipated that such an inadequately excised wound, in a very unfavourable situation, would become infected; therefore three days later the gauze was removed under general anaesthesia. To one's surprise and gratification there was no trace of infection—no redness of the skin, induration of deeper structures, or any discharge other than slight exudate of serum. Unfortunately, the arterial bleeding restarted on removal of the gauze, so replugging was necessary. Had it been realized that the wound was in a perfectly clean condition it would not have been interfered with. It is now proposed to leave the gauze plug *in situ* for several days, by which time the vessel should be occluded by natural means. If it is subsequently necessary to ligate the internal iliac artery the condition of the patient should have so improved that a major operation will cause little anxiety.

It appears that the bacteriostatic action of penicillin is so efficacious that in the near future, when supplies are available, its routine administration, time and circumstances permitting, will abolish the boggy of infection from traumatic surgery.

R. J. McNEILL LOVE, M.S., F.R.C.S.

### Severe Fracture-dislocation of the Spine

This case is of considerable interest, as it shows a severe degree of fracture-dislocation of the spine in which practically complete recovery from paraplegia has occurred. Furthermore, the value of early suprapubic drainage is shown, as the restoration of bladder function was complete. It is also of interest in demonstrating how the spinal cord can escape damage in the presence of severe injury to the spinal column.

#### CASE HISTORY

The patient, a W.A.A.F. 22 years of age, was admitted five hours after her injury. She had been riding in a transport vehicle on duty when it suddenly overturned and fell down a slope. She had immediate pain in the back, and felt weak. Also she had no power in her legs. She was taken to the nearest hospital, radiographed, and given morphine. She was then transferred.

On admission the patient was pale, with a pulse rate of 100 and blood pressure 116/75; she complained of pain in the upper back



and of pins-and-needles in both legs. She had no power in the legs and was unable to pass urine. General examination revealed the following abnormalities. The bladder was palpable 2 in. above the umbilicus. The knee-jerks, ankle-jerks, and plantar responses were absent. Abdominal reflexes were normal. There was no movement below the knees, and no movement of the left quadriceps. She could tighten her right quadriceps and slightly adduct both thighs.

Sensation was normal down to the level of the eleventh thoracic nerve supply. She was hyperaesthetic to pin-prick at the level of the twelfth thoracic nerve, and below it she had diminished sensation to pin-prick and touch on both sides; there was no sensation on the sole of the left foot and left calf. Radiographs showed a severe fracture-dislocation of the twelfth thoracic vertebra (see Fig.).

**Treatment.**—The patient was first treated on a sorbo mattress, which was discarded on the fifth day for a plaster bed, in which she was more comfortable in every way, as small movements on the mattress caused considerable pain. Suprapubic cystostomy was

Dr Rankin joined the Sudan Medical Service in 1927, and served in Kordofan, Blue Nile, and Northern Provinces, and as a Kamakan in the Medical Corps, Sudan Defence Force. He received the Fourth Order of the Nile in 1941. He will be remembered by all with whom he came into contact for his untiring good nature, sound judgment, and the attention he so willingly gave to every aspect of his work. His patients will recall him as a painstaking and sympathetic doctor in whom they could at all times trust. He was exceptionally well fitted to the needs of the country at the present time, and his death will be most widely and deeply felt. Dr Rankin during his service did much to further the progress of medical work in the Sudan. His sympathy and human virtues endeared him to all of every nationality who came for his help, and he will long be remembered with respect and affection in all parts of the Sudan.

The funeral took place at his farm, Amajuba, Mount Prospect, Newcastle District, Natal, on Sept. 16 of Dr JOHN EDWARD BRISCOE, DSO, MC. He was born on March 29, 1866, at Austwick, Yorkshire, and was educated at Giggleswick School, and qualified MRCS, LRCP from the Leeds Medical School. He went to South Africa in 1898 and practised in Christown and Volksrust Districts, Natal, until he retired in 1926 to his farm near Mjuba. Dr Briscoe took part in the Boer War, the Zulu Rebellion, the campaign in German South West Africa, where he gained the VC, and in German West Africa, where he was twice wounded and was awarded the DSO for gallantry in the field. In 1917-18 he served in France, where he was present at the death of his only son who served with the RFC in 1914-18. He is survived by his daughter, Capt. Hylda Briscoe, SA MC, and two grandsons.

Dr JOHN FREDERICK HALLS DALLY, formerly physician to the Mount Vernon Hospital when it was a chest hospital in Hampstead, and senior physician to the St. Marylebone and Western General Dispensary, died at his house in Harley Street on Nov. 4. He was educated at Wolverhampton School, St. John's College, Cambridge, and St. Bartholomew's Hospital, taking the Conjoint diplomas in 1901 and the MA, MB, MCh degrees at Cambridge in 1903. He proceeded MD in 1907 and obtained the MRCP two years later. Before settling in practice he held a number of resident posts, including that of medical superintendent of the Royal National Hospital for Consumption, Ventnor. He was assistant physician to the National Hospital for Diseases of the Heart from 1909 to 1913 and then for three years consulting tuberculosis officer for the borough of Hampstead, and after the last war he served as chairman of a special neurological board of the Ministry of Pensions. Dr Halls Dally took an active part in the work of several medical societies in London; he had been president of the West London Medical-Chirurgical Society and edited its journal. He made a particular study of arterial pressure in man, and wrote on this and other subjects in various medical journals. His book on *High Blood Pressure and its Management* reached a third edition in 1934, and he published in 1928 *Low Blood Pressure: Its Causes and Significance*, he also contributed the section on those subjects to the *British Encyclopaedia of Medical Practice*.

Dr SCOTT PURVES died suddenly at Alnwick on Nov. 18 in his 83rd year. He studied medicine at Edinburgh University, graduating MB, CM in 1883, and he obtained his MD in 1887. He went to the Alnwick Infirmary as house-surgeon in 1885 and was closely associated with that institution for a period of nearly 60 years. The welfare of the Alnwick Infirmary was his chief concern, and no one did more than he to further its interests. He was a life-long member of the British Medical Association (past chairman of the North Northumberland Division), a member of the Northumberland Insurance Committee, and a member of the local Medical War Emergency Committee. He was a conscientious and painstaking practitioner and inspired patients with confidence and assurance. To young and old he was a dearly loved friend as well as physician, and his passing leaves a gap which cannot be filled. He is survived by his widow.

Dr JULIUS LOWY, honorary chairman of the Czechoslovak Medical Association in Great Britain, and professor of occupational diseases and industrial hygiene at the University of Prague, died in London on Nov. 15 after a short illness, aged 59. After taking his MD at Prague in 1909 Lowy continued post-graduate training at St. Bartholomew's Hospital. In 1917 he was appointed lecturer at Prague University. Later he specialised in occupational diseases and industrial hygiene, publishing nearly 300 papers on the subject, including a volume entitled

*The Clinic for Occupational Diseases*. He was expert adviser to a number of departments of the Czechoslovak Government, a member of the Council of Social Insurance, of the State Council of Health, and representative of Czechoslovakia to the Section of Social Medicine of the International Labour Office in Geneva. An anti-Nazi, Lowy left Czechoslovakia for London after Munich, and became co-founder of the Czechoslovak Medical Association in Great Britain and of the Health Charter Movement. As a member of several committees of the Czechoslovak Government he helped to deal with problems of medical relief and health reconstruction. His modesty and devotion to his work and to his country gained him a large number of friends in Great Britain.

Dr S. B. KULKARNI, assistant medical officer, Zanzibar Government Service, died on May 3, 1944, after a short illness. He received his medical education at Sir Gopal Das Sundersar Medical College, Bombay, and qualified in 1930. He was appointed to the post in Zanzibar in 1931. Keenly interested in his profession he endeared himself not only to his colleagues and patients, but to all who knew him, by his charm and kindness. He joined the British Medical Association in 1936 and was honorary secretary of the Zanzibar Branch at the time of his death.

## The Services

Col J. S. K. Boyd, OBE, and Major-Gen. T. O. Thompson, CBE, late R.A.M.C., have been appointed Honorary Physicians to the King in succession to Major-Gen. Sir P. S. Tomlinson, KBE, CB, DSO, and J. A. Mansfield, CB, DSO, late R.A.M.C. (ret.), respectively, and Major-Gen. W. C. Hartgill, OBE, MC, late R.A.M.C., has been appointed Honorary Surgeon to the King in succession to Major-Gen. O. W. McSheehy, CB, DSO, OBE, late R.A.M.C. (ret.).

Col (late Major-Gen.) J. Walker, CBE, MC, late R.A.M.C., is to be a D.D.M.S., and to be Acting Major-Gen.

Col (Temp. Brig.) (Acting Major-Gen.) E. Phillips, CBE, DSO, MC, late R.A.M.C., is to be a D.M.S., and to be Major-Gen.

Capt. J. Cowan, G. B. Hirst, E. W. Moore, D. W. Moynagh, Lieut. W. A. Smurliwaite and H. Thompson, R.A.M.C., and Lieut. M. Nagi, I.A.M.C., have been awarded the MC in recognition of gallant and distinguished services in Italy.

Temp. Surg. Lieut. P. N. Holmes, R.N.V.R., has been mentioned in dispatches for good services to survivors from a merchant vessel which was sunk by enemy action.

### CASUALTIES IN THE MEDICAL SERVICES

*Killed*—War Subs. Capt. Frederick Murray Wainman, R.A.M.C. *Killed in action in Burma*—Capt. Allan Dalgleish Gould, R.A.M.C.

*Accidentally killed on active service*—Major Philip McLean Gunn, R.A.M.C.

*Wounded*—Lieut. W. N. Coombes, War Subs. Capt. A. N. MacPhail, I. Morris, and A. B. Unwin, R.A.M.C.

*Missing presumed killed*—Surg. Lieut. James Robertson, R.N. *Previously reported missing now known to be a prisoner of war*—Capt. J. H. Keesey, R.A.M.C.

### DEATHS IN THE SERVICES

Major-Gen. Sir MENES WILLIAM O'KEEFE, KCMG, CB, MD, Colonel Commandant of the R.A.M.C., died on Nov. 29 at Camberley at the advanced age of 85. His father was a medical man and he was born at Mount Keefe, Newmarket, County Cork, in 1859. He was educated privately and at Queen's University, Ireland, where he took the LM in 1880 and the M.D. and the MCh in 1881. He joined the A.M.S., as it then was, in time to see active service in the Egyptian campaign of 1882, and was present at the battle of Tel-el-Kebir. He next saw service on the North-West Frontier of India in the Tirah Expeditionary Force in 1897-8 and with the Mohmand campaign in 1905. In 1910 he was promoted colonel, and from 1911 to 1914 held the important post of Inspector of Medical Services, War Office, after having served for five years at the Royal Herbert Hospital, Woolwich. He was thus marked out for responsible duties during the war of 1914-18, when he went to France with the Expeditionary Force and served throughout as Deputy Director of Medical Services, Rawlinson's Fourth Army, and was mentioned in dispatches seven times. Here he did fine work in the evacuation and treatment of the sick and wounded throughout the battle of the Somme, and the improvements he made in the speedy collection and evacuation of the wounded saved many valuable lives. For these conspicuous services he was awarded the CB in 1915 and the KCMG in 1918. He also received the

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Mr. Amery circulated a list of the members of the committee, the medical members of which are: Rai Bahadur Dr. A. C. Banerjee, Director of Public Health, United Provinces; K.B. Dr. Abdul Hamid Butt, Director of Public Health, Punjab; Dr. R. B. Chandrachud, Chief Medical Officer, Baroda State; Lieut.-Col. E. Cotter, Public Health Commissioner with the Government of India; Dr. D. Y. B. Dadhaboy, President of the All-India Association of Medical Women, Bombay; Dr. J. B. Grant, Director, All-India Institute of Hygiene and Public Health, Calcutta; Dr. Mohammad Abdul Hamid, Professor of Pathology, Lucknow University; Col. J. B. Hance, Director-General, Indian Medical Service; Sir Henry Holland, C.M.S. Hospital, Quetta; Dr. H. M. Lazarus, Women's Medical Service; Diwan Bahadur Dr. A. Lakshmanaswami Mudaliar, Vice-Chancellor, University of Madras; Dr. U. B. Narayanrao, President, All-India Medical Licentiate Association; Dr. B. Vishva Nath, Member of the Medical Council of India; Major-Gen. W. C. Paton, Surgeon-General, Bengal; Dr. B. C. Roy, President, Medical Council of India; Lieut.-Col. B. Z. Shah, I.M.S. (ret.), Superintendent, Mental Hospital, Poona, formerly Director of Medical Services, Sind; Dr. Hemandas R. Wadhvani, Secretary of the Committee, Rao Bahadur Dr. K. C. K. E. Raja, I.M.S.

Mr. Amery also told Mr. Gallacher on the same day that the Director General of the Indian Medical Service had just completed a visit to this country and the United States of America, in which he explored means of promoting medical research in India and liaison between Indian research workers and those elsewhere. The Government of India looked forward to receiving recommendations on these subjects from the Health Survey and Development Committee under Sir Joseph Shore (of which the Director-General was a member) and had already before them valuable proposals made by the honourable Member for Cambridge University. The Famine Inquiry Commission under Sir John Woodhead had within its scope the effects of the Bengal famine in respect of malnutrition and deficiency diseases. Dr. Arkroyd, Director of the Nutritional Laboratory at Coonoor, was a member of the Commission.

#### Refresher Courses for Service M.O.s

Sir E. Graham-Little was informed by Mr. WILLIAMS on Dec. 6 that proposals have been under discussion with representatives of universities and others with the object of enabling medical officers released from the Forces who had not, before serving, become established in practice to obtain three or six months' clinical experience in hospitals under expert guidance before going into practice and also of providing short refresher courses for those who were previously general practitioners. It is intended to circulate particulars of the scheme, as soon as it has been settled, among serving medical officers.

#### Domestic Staff of Hospitals

In answer to Wing Cmdr James, Mr. ERNEST BEVIN said on Dec. 7 that no women domestic workers had been withdrawn from hospitals. Throughout the war hospital domestic work had been regarded as work of national importance carrying the appropriate priority. Following the report in November, 1943, of the Hetherington Committee special priority was accorded to domestic needs of hospitals. Between the granting of the special priority and Nov. 8, 1944, 38,000 women and 3,000 men had been placed as domestic workers in hospitals, sanatoria, mental institutions, and nursing homes. Wastage had continued to be heavy, with the result that, despite this large number of placements the number of domestic workers employed in hospitals during the period January to September, 1944, increased by fewer than 5,000. The special priority for hospital domestic work was being continued, and his Department would continue to make every effort to fill outstanding vacancies.

#### Ministry's Pamphlet on Smallpox

Mr. ALFRED EDWARDS inquired on Dec. 8 why "an out-of-date pamphlet with regard to the diagnosis of smallpox" had been circulated by the Ministry of Health. He asserted that this pamphlet did not solve difficulties which had recently arisen in regard to the diagnosis of smallpox. Mr. WILLIAMS replied that the pamphlet was written by an authoritative and highly competent author. Its value to those concerned in the diagnosis of smallpox was as great to-day as when it was written. He had set up a panel of consultants with special experience of smallpox whose services were available to practitioners when required.

#### Relief for Channel Islands

In the House of Commons on Dec. 12 Mr. HERBERT MORRISON announced that the British Government had decided to supplement the rations of the civil population of the Channel Islands by sending medicine, soap, and food parcels on the basis of those supplied to prisoners of war. The German

Government had now agreed to this procedure, and had granted a safe conduct to the ship which would convey the supplies to the islands. Final arrangements for the departure of the ship had not yet been completed, but the Government had every reason to believe she would be ready to sail within the next few days. Sir RALPH GLAN asked if a representative of the Red Cross would accompany the ship to see what arrangements would be necessary in future for medical stores. Mr. MORRISON said he would take note of that point, but he did not want to go further into detail at the moment. He had reasonable belief that the satisfactory distribution of the stores would be taken care of.

#### Inspection of Japanese P.O.W. Camps

On Dec. 12 Mr. R. MORRISON asked the Secretary of State for War whether the Japanese Government have recently indicated any willingness to widen the scope of inspection of prisoners' camps by the International Red Cross.

Sir JAMES GRIGG replied. The Swiss Minister at Tokyo was informed, in a discussion with the Japanese Minister for Foreign Affairs at the beginning of November, that he had secured permission for camps in occupied territory to be visited by representatives of the International Red Cross Committee. The Japanese Minister for Foreign Affairs agreed to confirm this statement in writing. From a later telegram it is learned that the Japanese Foreign Office had written that the question was still being examined, but that it was thought that authorization might be given to visit camps in Singapore and Siam.

**Milk for Expectant Mothers after the War**—On Nov. 14 Major MARKHAM asked the Minister of Food whether, in connexion with social insurance, it proposed to continue in the post-war years the existing arrangements by which pregnant women, nursing mothers, and children up to school age could obtain essential supplies of milk and vitamins, which had contributed so effectively to their maintaining their health during the war. Mr. MARSHALL said no change was contemplated in the welfare foods scheme as at present administered so long as food shortages continued and consumption of liquid milk by the general public was restricted. Consideration was being given to the best means of ensuring that the special needs of children and pregnant and nursing mothers would be met when liquid milk and other essential foods were again in ample supply.

**Supply of Teats for Babies**—On Nov. 7 Mrs. TATE asked the President of the Board of Trade when the promised increased supplies of teats were going to be available, and whether he was aware of the serious situation in which mothers and children were placed because of the continued shortage.

Mr. DALTON said that the weekly production of teats had now been doubled compared with the average for July and August, and was still increasing. Larger supplies were now reaching the shops. He had taken steps, in consultation with the manufacturers and distributors, to ensure that supplies were evenly distributed over the country.

**Proposed New Chest Hospital at Swansea**—On Nov. 14 Sir W. JENKINS asked the Minister of Health if he was aware of the appeal made by the King Edward VII Welsh National Memorial Association to be supplied with a modern chest hospital at Swansea, covering the requirements of thoracic surgery to serve the whole of South-West Wales, and what action he was taking to meet this overdue need. Mr. WILLIAMS replied that he was aware that the King Edward VII Welsh National Memorial Association had under consideration the question of a new hospital at Swansea. He would be prepared to consider, in the light of prevailing conditions, any proposals which might be submitted to him by the association.

**Hospital Accommodation for Repatriated P.O.W.**—On Nov. 28 Lieut.-Col. THORNTON-KENSLEY asked the Secretary of State for Scotland if he was aware that repatriated British prisoners of war who arrived in England this autumn had to be detained in hospitals in the South for many weeks because suitable hospital accommodation was not available in Scotland, and how he proposed to ensure that this would not happen in future cases. Mr. JOHNSTON said that there had not been any general difficulty about transferring to Scottish hospitals repatriated prisoners whose homes were in Scotland, though he understood that four repatriated patients suffering from tuberculosis and sent to hospitals in England could not be quickly transferred because there was a waiting-list for admission to hospital of tuberculous patients in Scotland. The particular cases which the hon. Member had in mind had not been transferred to Scotland.

**High frequency Apparatus**—On Dec. 5 Mr. R. MORRISON asked the Postmaster-General if he was now able to release medical radio apparatus surrendered by private persons at the outbreak of war and to permit its use by medical men. Capt. CROOKSHANK said that since July, 1942, as was announced in the Press at the time, owners of high-frequency apparatus taken into Post Office custody might apply to his Department for a permit to have it returned. It was a condition of granting a permit that a suitable screen and filter must be installed for use with the apparatus so as to limit radiation.

#### Notes in Brief

The rate of admissions to hospital for dysentery and kindred diseases from the British Army in India was less than 7½% of troops serving in 1943-4, compared with the pre-war annual rate of 5½%.



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### ANY QUESTIONS?

#### Displacement Treatment of Sinusitis

Q.—I once saw a demonstration of the "epidural displacement" technique for a heavy cold and sinusitis. Can you tell me the easiest method of carrying out this procedure? What are the indications for its use, and how efficient is it?

A.—The introduction of fluid into the nose and the production of suction can both be learned out by a simple hand apparatus. The success of this method depends upon a number of technical details, too lengthy for inclusion here. A modern textbook or Proetz's original articles should be consulted. As a method of treatment, displacement, acts by diluting masses of secretion too heavy for the cilia to move. Such cases occur mainly in the subacute stage of sinusitis, where the method is well worthy of trial. If carried out efficiently and applied only to suitable cases, a high percentage of good results can be expected.

#### Intolerance to Iodides

Q.—I wish to give iodides to a patient with intermittent claudication who informs me that he is unable to tolerate them. Can iodism be abolished by adding *liq. arsenicalis* to the mixture?

A.—The addition of liquor arsenicalis to a mixture of iodide will have no effect in preventing iodism. Arsenic seems to be of some value in preventing the skin manifestation of bromism, but even in this respect is by no means dependable.

#### Prolonged Use of Mercurial Diuretic

Q.—A man aged 35 diagnosed as suffering from adhesive pericarditis (Pick's disease) has been treated for 5 years with a mercurial diuretic to reduce the dropsy. Are there ill effects likely to be caused by such prolonged use?

A.—There has now been sufficient experience to show that mercurial diuretics can be injected once a week for 5 years or more without any harm except the rare occurrence of sensitization to the drug. There has been less experience of the ingestion of these mercurial compounds by mouth but no ill effects have been reported. The present inquiry does, however, raise one question—that is, Has operative treatment been considered for this patient, for the disease process appears to be relatively static and he might therefore be permanently relieved by surgery?

#### Relative Infertility

Q.—A man and wife aged 46 and 41 respectively, after 8 years of married life had a child 10 months ago which, although healthy at birth, died shortly after from infantile diarrhoea. As this is the first successful fertilization in 8 years and as the wife is 41 and most anxious to have a baby, what could be done to ensure fertilization in a couple whose past experience is not encouraging? The husband, I understand, can achieve only partial erection. Would any treatment be of help to the wife, and would, for example, the taking by her of vitamin E and progesterone heighten a possibly lowered fertility?

A.—It seems unlikely that the death of the child from infantile diarrhoea had anything to do with the alleged subfertility of the parents, especially as the child was healthy at birth. The fact that the husband can achieve only partial erection and that he was nevertheless able to effect fertilization of an ovum suggests that he is relatively impotent and that the cause of this is psychological. One would like to know whether, in support of this view, coitus occurs only infrequently, if so, attention should be directed to the husband rather than the wife, and in any case an examination of the seminal fluid should be made, as in all cases of sterility or subfertility where the wife is not obviously involved. The suggested treatment of the wife with vitamin E and progesterone is one often

applied to subfertility in the female where there is no obvious cause, and perhaps is clinically justified. Nevertheless, the administration of hormones is most successful when specific and based upon definite evidence of their complete absence or of their secretion in sub-normal quantities. Confirmation of this possibility in the case of progesterone can be obtained by diagnostic curettage in the latter half of the cycle, and by pregnandiol assay, a procedure which will come into more general use as soon as sufficient technical experience and personnel are available.

#### An Infant-feeding Problem

Q.—While breast-feeding my daughter, now aged 5 months, I have taken Ministry of Food orange juice regularly as the infant herself refuses it. For the first few months she had a slight erythematous rash, sometimes becoming pustular mainly over the area covered by the nappies. The pustules would clear up rapidly on application of a zinc, kaolin and boric powder. Care is taken over frequent changing of nappies and over rinsing out soap used in washing. When the orange juice was discontinued the rash was absent. When it was recommenced the rash reappeared. No pustules have so far developed. Glucose is added to the orange juice to counteract acidity. The diapers rarely become soiled, as she is "potted" before and after feeds and are usually only damp with urine. The stools are occasionally slightly frothy. I have experienced no reaction while taking the orange juice during pregnancy (without glucose) or after parturition. The rash seems to be caused by a product of the fruit juice excreted in the urine. Are there any precautions that might be taken?

A.—It is not quite clear what is meant by the phrase "to counteract acidity," for the net effect of orange juice in metabolism is towards increasing the alkali intake. If what is meant is sourness of the juice, then it may be that in this particular instance some ingredient of the juice is passing out through the mother's milk and causing both the occasional frothy stools and the irritant urine. It is well known that with some nursing mothers their infants may be upset if the maternal diet contains sour fruit, but it is not always the case nor is it common with orange juice. On the other hand, if what is meant is mild indigestion in the mother, it is recognized that for reasons which are obscure, indigestion in the nursing mother may be associated with a similar disturbance in the infant. The simplest solution—and the answer to the final question of the query—is to change the source of vitamin C, using some other active fruit juice or pure, or tablets of ascorbic acid. Whatever the term "acidity" is meant to indicate, it is difficult to see how glucose could have any effect upon it.

#### Stimulating Lactation

Q.—For every patient who needs to have lactation curtailed there are a dozen whose milk supply needs to be increased. Can this be accomplished at reasonable cost by hormone therapy?

A.—There is a hormone of the anterior pituitary—prolactin—which is believed to initiate lactation. A commercial preparation of this hormone is available. Kenny and King (*Lancet*, 1939, 2, 828) claimed good results from the use of this preparation for stimulating lactation and increasing a deficient milk supply. Stewart and Pratt (*Eudocrinol*, 1939, 25, 347) were unable to confirm these results, and concluded that the preparation was ineffective for stimulating lactation in woman. It seems doubtful whether hormone treatment is likely to benefit cases where milk secretion is deficient.

Four measures for increasing a deficient milk supply can be recommended: first, a large fluid intake, at least six pints daily; secondly, a good diet, and some of the extra fluid can be taken as milk or soup; thirdly, bathing the breasts alternately with very hot and with ice-cold water half an hour before each feed; and, fourthly, massage to the breasts and exercises for the pectoralis major muscles. These last measures undoubtedly act by increasing the blood flow through the mammary tissue. Preparations of cotton seed oil have also been recommended, but their value is empirical.

#### Effects on Libido of Certain Operations

Q.—What are the effects on the libido of (a) oophorectomy, (b) partial salpingectomy, (c) x-ray or radium therapy?

A.—Although the ovaries, through their production of oestrogen, are primarily responsible for sex drive in female lower animals, the same is not true for women, in whom sex desire and allied emotions are largely governed by mental processes, and the ovaries play a minor part. (a) To some extent the effect depends on the age of the patient and whether she is already experienced in physical love. If we can assume the latter, then bilateral oophorectomy does not as a rule reduce libido, providing that coitus is practised regularly and contracture of the vagina, which would cause dyspareunia, is prevented. Unilateral oophorectomy does not have any effect on libido. (b) The answer to this is, none. (c) X-ray therapy and the intra uterine application of radium, both adversely affect ovarian function, the extent and duration of the effect depending

performed by Mr. Broster, under local anaesthesia, 29 hours after the injury. On the third day suction was improving, but there was no motor recovery. She had a slight haemoptysis and pyrexia due to injury of the lung, associated with fracture of the twelfth rib. On the fifth day open reduction was attempted, but was abandoned on account of her very poor condition, due to her injured lung. A plaster bed was made and mounted at once in the theatre. After six weeks she was moving all the muscles of her right leg and also the left toes. Up to this time attempts at open reduction were still contraindicated by her poor general condition. At the seventh week I inserted a graft, 3 in. by 1/2 in., from the tibia on to the right side of the three spinous processes above the injury and to the left side of the lower three spinous processes. She was nursed for twelve weeks in a plaster bed on her face. At the eighth and ninth weeks root pains were severe and were not controlled by morphine. They have not recurred since.

Exactly six months from the injury she was able to walk unaided and without any instrument. On the same day the suprapubic catheter was finally removed as bladder function was normal. The bladder had remained uninfected throughout.

I should like to thank Mr. R. L. Broster for performing the suprapubic cystostomy and also Dr. Arthur Sunderland, Mr. Curran and Mr. Beer for their great help in this case. Finally the patient is greatly indebted to all the nursing and physiotherapeutic staff, especially to Sister Hoppey for her help and for the nursing which this difficult case required.

E. H. HAMBLY, M.B., B.S., FRCS

Surgeon E.M.S., Royal National Orthopaedic Hospital, Stanmore

## Thrombocytopenic Purpura and Tooth Extraction

The following case of dental extraction in a patient with thrombocytopenic purpura may be found of interest.

### CASE HISTORY

The patient, a married woman aged 27, had been treated for profuse menorrhagia when 15 years old. Several blood transfusions did not improve the girl's condition, and finally in 1933 a subtotal hysterectomy was performed to prevent her dying from blood loss.

She was first seen in the Dental Department of St. Nicholas' Hospital, Plumstead, on June 26, 1944, with a note from an outside doctor requesting dental extraction and saying that the patient was a haemophilic. She had complained of severe toothache for the last four weeks, the tooth involved being 3. There was a definite history of bleeding tendency—i.e., bruises appear after insignificant trauma, and small cuts bleed for days.

**Haematological Findings**—June 26, 1944. RBC 4,150,000 per c.mm., Hb 36%, C.I. 1.04, WBC 8,000 per c.mm.—polymorph neutrophils 80%, basophils 2%, lymphocytes 15%, monocytes 1%, Turk cells 2%. Stained film, normal. Platelets, too few for accurate counting, but about 4,000 per c.mm. Hess's capillary resistance test, positive, a good crop of petechiae. Coagulation time, 2½ minutes (within normal limits), bleeding time, 1½ minutes (normal 2 minutes), Prothrombin time, 19.4 seconds (within normal limits). The patient belongs to Group O, and was found to be Wassermann- and Kahn-negative.

In view of the above findings a condition of essential thrombocytopenic purpura was diagnosed.

**Management of Case**—The woman was admitted to hospital on July 6. The next day, at 10 a.m., blood was collected from two Group O blood donors, to supply lacking platelets; normal blood transfusion was given. Immediately afterwards, at about 10.15 a.m., a slow intravenous drip transfusion was started with the fresh blood found to be compatible. At 1 p.m. premedication, consisting of morphine gr 1/3 and scopolamine gr 1/150, was administered. At 2.15 p.m. the patient was ready in the operating theatre; the intravenous blood drip being continued. 5 c.cm. of pentothal sodium (0.25 g.) injected into the rubber tubing of the blood-transfusion apparatus was sufficient to induce satisfactory anaesthesia. The tooth was extracted; it was carious and septic. The tooth socket was then lightly plugged with gauze impregnated in freshly prepared 1 c.cm. syzyphen solution. A clot in the socket was seen to form about 5 minutes after extraction. No further bleeding from the gum occurred. At 4.30 p.m. the blood transfusion was stopped. The total quantity given was 800 c.cm.

On the morning of July 8 the red cells numbered 3,140,000 per c.mm., and the haemoglobin was 100%. Stained film, normal; platelets, 82,000 per c.mm. Hess's capillary resistance test, positive but far less marked; coagulation test, 1 minute 40 seconds, bleeding time, 3 minutes.

The patient was discharged on July 9 after making a successful recovery without further blood loss. When I examined her on July 14 her condition was still satisfactory.

### COMMENT

Dental extraction in a patient suffering from thrombocytopenic purpura should be considered a major medical and surgical problem. Admission to hospital or similar institution is essential, because it affords facilities for blood transfusion, general anaesthesia, and collaboration of dental surgeon, physician, and pathologist if necessary.

All haematological examinations were performed by Dr. Holman, assistant pathologist to the Lewisham Group Laboratory. Dr. S. J. Jones, assistant as the physician in charge was invaluable in connection with this case.

JAMES W. WHITE, L.D.S.Eng.

## Reviews

### ANAESTHETIC PRACTICE

*Fundamentals of Anaesthesia: An Outline*. Second edition (Pp 231 illustrated. No p.l.c. given.) Chicago: American Medical Association Press 1944.

The authors form the Subcommittee on Anaesthesia of the National Research Council of the U.S.A. Their names are already well known and respected in British anaesthetic circles, and this book confirms that they are men of wide clinical experience. Throughout emphasis is laid on those fundamentals of anaesthetic practice that make for safety. Barely a page but contains a pithy gem of wisdom worthy of hanging as a text in anaesthetic rooms. Two typical examples are: "The good anaesthetist observes the whole patient not just the head", and "Noisy breathing is obstructed breathing, but obstructed breathing may not be noisy". The illustrations though comparatively few for an instructional book, are all helpful; the diagrammatic ones in particular drive home their lessons with force. In the section on general anaesthesia the choice of a particular agent is rightly given second place to principles and method—a point of view as yet not fully appreciated in this country. In the section on local anaesthesia, techniques of doubtful practical value, such as trans-sacral and sciatic nerve block, are included. These are hardly "fundamental," and by their exclusion more space could have been devoted to procedures which are of accepted utility, like regional anaesthesia for abdominal operations. Here and there geographical bias is suspected, outstanding examples occur in the description of spinal anaesthesia. Heavy nupercaine popular in this country, does not receive mention, and exception must be taken to the statement that the dosage of a spinal anaesthetic drug should be based on the weight of the patient.

The style is didactic and dogmatic—all to the good in a book of this kind. The predilection for tabulation—reminiscent of the "synopsis" style of writing in this country—makes the reading a little difficult but does not detract from its value. Doctors who without special training, are likely to be called on to give anaesthetics will find this book a friend, the advice it gives is sound and can be followed with confidence. To the teacher of anaesthesia it should have no less an appeal, he will find in it many an aphorism that will delight and benefit his pupils. In addition it provides a concise and pithy summary of current American views on anaesthetics.

### MEDICAL DISEASES OF WAR

*Medical Diseases of the War*. By Sir Arthur Hurst, D.M., F.R.C.P. Fourth edition (Pp 511 illustrated. 21s.) London: Edward Arnold and Co.

A book which attains four editions during the war has thereby proved its value and stands in little need of commendation from us. Having reviewed the third edition comparatively recently (1943 I, 321) we will confine our remarks to certain new features. Infective hepatitis is now the most important infection in the British Army, presumably due to a virus conveyed by droplet infection, sometimes by those suffering from subclinical attacks. Biopsy proves that it is a true hepatitis, the extensive necrosis found post mortem being due to subsequent autolysis. A curious feature is the ravenous appetite which may follow the initial anorexia. Stress is laid on the sensitivity of the liver to alcohol after an attack, and total abstinence for at least a year is urged, for even moderate amounts are liable to cause cirrhosis. Readers of this *Journal* are aware that Sir Arthur Hurst had very definite views on sciatica, and will not be surprised that the chapter on this subject has been written in his best controversial style. The introduction of sulphaguanidine has changed the treatment of bacillary dysentery, and attention is called to the fact that the intestinal lesions are not caused by the local action of the bacilli but by their toxins absorbed by the colon. Therefore the former treatment was to wash these out by salines as quickly as possible, and to neutralize them after absorption by antidiarrhetic serum. Now, however, as one can prevent the formation of toxins by destruction of the bacilli by chemotherapy, salines are unnecessary, though serum is still useful.

on sex and desire. Again any reduction in sex desire is absent or minimal.

The above comments apply only to the direct effects of the operations in question, but, in view of the dominant part played by the central nervous system and the woman's outlook, it should be kept in mind that the suppression of ovarian function and the cessation of menstruation may, by a psychological rather than an endocrinological mechanism, result in diminished libido. This is because so many women wrongly believe that a surgical or even a natural menopause inevitably means a loss of interest in sex. If they expect such, then it is likely to occur. If, however, this idea is refuted, and a woman is assured that she can expect to continue a normal sex life, then it is exceptional for a loss of libido to occur. Indeed, there are cases in which sex desire appears to be increased by oophorectomy, but, again, the basis for this is a psychological one. The continuance of menstruation and the absence of climacteric symptoms make it rare for bilateral partial salpingectomy to have psychological effects. Nevertheless it must be conceded that in some women the consciousness of their sterility might affect libido—either increasing it or decreasing it, according to their point of view.

#### Penicillin and Arsenic

Q.—In Legge's "Handbook on Industrial Medicine" (1934 p. 80) it is stated that certain moulds, notably *Penicillium brevicaulis*, can split up arsenic compounds in the form of a gas and so cause arsenical poisoning in persons living in rooms the wallpaper of which contains arsenic. Is it possible that a person with arsenic in the body might be adversely affected by penicillin and if so, should not this question be worked out?

A.—It is presumably meant that penicillin may conceivably react with an organic arsenical compound administered, for instance, for the treatment of syphilis, and so liberate arsenic in a more toxic form. If so, the short answer to this question is that penicillin and mapharsen have been administered together in the treatment of syphilis (J. E. Moore *et al.*, *J. Amer. med. Ass.* 1944, 126, 67) with no untoward effects. In any case it is a far cry from the liberation of volatile arsenic from an inorganic compound by a living penicillium of different species from *P. notatum* to the reaction of penicillin with an organic compound of arsenic. The former effect is presumably due to enzyme action, and it is scarcely conceivable that anything but the living mould could bring it about.

### INCOME TAX

#### Employment of Wife

W. D. inquires how much salary is payable to a wife without her having to pay income tax thereon?

\*. £89. A wife receiving that amount for 1944-5 is entitled to £9 earned income relief and £80 wife's special earned income allowance, leaving a net liability of £89-£89, i.e., nil.

#### Share of Fees Payable to Executrix

R. R. Is the half-share payable to the executrix for twelve months from the date of death liable to tax?

\*. Yes. It is part of the total profits assessable on the firm. It does not carry earned income relief as it is not earned immediately from the carrying on by an active partner of his share of the professional work.

#### Employment: Home Expenses

J. C. has been working as a whole-time assistant. She has a child aged 2 years, and in order to be free to perform whole-time duty has to employ someone to look after the child. That expense has been refused by the inspector of taxes, with the result that the tax payable on net earnings is excessive.

\*. The inspector's contention is presumably founded on an old judicial decision. The case dealt with a claim by a married schoolmistress for part of the expense of keeping a domestic servant. In effect the court held that whether the expense was "necessary" or not, it was not incurred "in the performance of the duties" of the employment. The application of this decision to the facts in J. C.'s case seems justifiable in law, though the result certainly creates a hardship in present conditions.

#### Damage by Bombs

A. R. was bombed in 1940 and (in another house) also in 1944. What claims can he make for income-tax deductions?

\*. No claim can be made for damage to private belongings, but claims can be made in respect of professional equipment in so far as the expense is not covered by insurance or War Damage Compensation. The claims will be based on the cost of removing and/or replacing items of professional furniture and equipment, including the car if that is being dealt with by replacement cost allowance and not by depreciation allowance. Costs of removal, including agents' fees, etc., are also allowable.

### LETTERS, NOTES, ETC.

#### Rocking Movements in Sleep

S. R. D. writes. The question in the *Journal* of Dec. 2, 1944, of the boy of 3 who rocks in the knee-elbow position when half asleep attracted my attention, and the following personal observation may interest the inquirer. I have three children, all boys and aged 1½, 4½, and 5½; they each developed this characteristic habit about the age of 1 year, and the youngest still practises it regularly. They rock on knees and hands rather than elbows, and in so doing put their head on the cot so forcibly that the noise can be heard throughout the house. Yet the impact does not appear to wake them to full consciousness. The rhythmical movement, always in the same position, occurs when they are in process of going to sleep, and in that it appears to help rather than hinder. They do particularly when sleep is disturbed either by noise, a full bladder, or by the child getting uncovered and cold. The habit appeared unusual that I have inquired among friends and relatives, but have not previously heard of any other child who had it, except my eldest brother's two boys, who apparently exhibited the same manners in childhood. There can hardly be any question of one child imitating another because the cousins have never met, and, as regards my own boys, the youngest at any rate has never slept in the same room as the other two. Another of my brothers has two children, both girls, and neither has been subject to this rocking movement; neither have my sister's children (1 boy and 2 girls). However, I sometimes wonder if it is a familial trait, and also whether it appears in boys rather than in girls. As regards treatment we have done nothing except to see so far as possible that the child is kept warm and to prevent bruising of the head by padding the cot end. We have never drawn the child's attention to the habit, and have waited in the expectation that it would "grow out of it." So far our attitude appears to have been justified. Already the two eldest boys have almost ceased the practice. But I should add that one of my nephews continued it until about 13 years of age. For fear of ridicule he made himself give it up on going to a boarding school, but even then, during holidays, would occasionally indulge, and he described it as giving rise to a pleasurable and soothing sensation—conducive to sleep. In none of the instances quoted does there appear to have been any question of masturbation. All five boys are normally developed and are physically and mentally healthy, and, we flatter ourselves, are at least of average intelligence. I hope you will not mind if I sign this very personal note with a pseudonym.

#### Skin Protection for Fractured Lower Limbs

Dr. E. W. BEDFORD-TURNER writes from Southlands Hospital, Shoreham-by-Sea. In view of the increased use of skin extension in fractures of the lower limbs perhaps the following hint might be of use. A "viscopaste" bandage (Unna's paste type) is applied to the whole of the fractured limb from the foot to nearly the top of the thigh. The extension strapping is then applied directly on to the viscopaste bandage and is kept in place by another "viscopaste" bandage applied from just above the ankle to the upper level of the extension strapping. I have used this method with great success in old patients and in those whose skins are sensitive to extension strapping. It can also be used where the skin is already damaged or where the fracture is complicated by varicose veins.

#### Mental Hospital Doctors' Pay

"X. Y. Z." writes. "A. M. O." in his letter (Oct. 28, p. 5) refers to the salary scales of A. M. O.'s in mental hospitals antiquated. I agree that immediate revision of the scales is indicated. Medical superintendents are generously paid, provided with palatial residences, and receive emoluments that defy evaluation. The poor A. M. O. is forgotten. It is he who actually administers the complicated modern psychiatric methods of treatment, and it is expected of him to supplement his qualifications with a DPM. Surely his remuneration sadly needs readjustment on lines comparable to those of the admirable Rushcliffe awards.

#### Horticultural Mishap

Dr. A. M. MORRICE (Southampton) writes. The following case may be considered worthy of recording owing to its unusual features. On Sept. 23 an old lady of 76 came to see me with the history that she had been gardening that afternoon and had noticed a number of garden snails about. When she was having her tea later on she experienced an irritation about the vulva and could herself feel an object in the vagina. Although sceptical about her statement that "a snail had crept up her inside" I decided to investigate, and eventually removed a garden snail from the posterior fornix with a swab-holding forceps.

#### Corrigendum

The number of Mantoux-negative nurses referred to in line 12 of Dr. Snell's letter (Dec. 9, p. 768) should read 452, not 42. While the printer's error is large, Dr. Snell's argument is unaffected.

if toxæmia is established or even in a mild case which persists more than three days. The fourth article to be rewritten is a valuable one on dermatophytosis, which replaces the one on seborrhoeic conditions. Like its predecessor, it is from the pen of Dr. H. W. Barber. Particularly important is the recognition of this condition between the toes, often caught by walking with bare feet on the floor of swimming-baths and changing-rooms. It may be responsible for two complications, the source of which may be overlooked. These are recurrent lymphangitis, which if unchecked may go on to a form of elephantiasis, and an allergic reaction, which may express itself in a vesicular eruption on the lateral aspects of the fingers.

### RADIOLOGICAL LITERATURE OF 1943

*The 1943 Year Book of Radiology.* Diagnosis: edited by Charles A. Waters, M.D.; associate editor, Whitmer B. Firor, M.D. Therapeutics: edited by Ira I. Kaplan, M.D. (Pp. 456; illustrated. \$5.00.) Chicago: The Year Book Publishers, Inc.

Once again a review copy of the *Year Book of Radiology* comes to hand, with its wealth of information about the radiological literature of 1943. Because of the restrictions imposed by the war, the references are almost exclusively from American, South American, and British journals. As before, the book is in two sections; the diagnostic, occupying 272 pages, and the therapeutic 175.

In the chapter on the osseous system there are accounts of a number of papers of interest, including cases of osteopetrosis diagnosed *in utero*, chondro-osseous dystrophy with punctate epiphyseal dysplasia, Maffucci's syndrome, and Cooley's anaemia. Note is taken of Hartley's work on fatigue fractures, and cases are reported of Jungling's multiple cystic tuberculosis, and coccidioidal infection of bone. In the respiratory tract two items of technique are described. Shapiro and Bell stress the importance of vertical radiography in infants, to differentiate pathological widening of the mediastinal shadow from postural. An apparatus for this is described. The other is an account of Farina's work on "mucosography" of the larynx, trachea, and bronchi, his method being to introduce a vaporized spray of neotodipin into the laryngeal vestibule. Further items of topical interest in this section are accounts of atypical pneumonia and blast injuries of the lungs. In the heart section there are two articles of interest on cardiography and four on venography. In the gastro-intestinal section there are accounts of many unusual cases, and a valuable study of the small intestine in infants and children by Zwerling and Nelson. The important work of Pendergrass and his collaborators, on hypersensitivity to contrast media for intravenous pyelography, receives due mention.

Again in this edition we find a comprehensive survey of the year's publications on radiotherapy. As in past years the annual is indispensable to those who wish to keep themselves *au fait* with current radiological work. Would that copies were obtainable in this country; but H. K. Lewis and Co. have been notified that it is already out of print.

### Notes on Books

We have received the fifth edition of *Recent Advances in Anaesthesia and Analgesia*, by Dr. C. LANGTON HEWER (J. and A. Churchill: 18s.). That this book satisfies a need is shown by the fact that it is only a year since the last edition was published. It is all the more remarkable that in spite of this short interval of time so much new work has appeared. Included are such interesting developments as a laryngoscope based on a new conception of laryngoscopy, the production of general analgesia by the inhalation of ethyl chloride or by the intravenous injection of dilute procaine, the new improved absorber for controlled respiration, pethidine, and continuous caudal analgesia. Trichlorethylene seems to be given a disproportionately large amount of space. This is possibly due to the author's personal interest in this agent. As heretofore, the book is well produced and illustrated, and should without question be read and consulted by every anaesthetist.

*The Substance of Mental Health*, by Dr. GEORGE H. PRESTON (Jarrolds, Ltd.: 3s. 6d.), is an excellent little book designed for the layman, especially those concerned with the upbringing of children. Its great merit is that it is almost exclusively concerned with health and not with illness; in fact, mental disease is scarcely mentioned except, curiously enough, in the chapter entitled "What is Mental

Health?" The author is well versed in modern psychological theory, but refreshingly avoids the reduction of everything to terms of sex. Yet sex and sex difficulties are given their proper importance, and the chapter on sex education is eminently sane. He holds that the essential qualities making for mental health are: affection in the sense of trust, faith, and respect; praise, which of course should be deserved, though he rightly remarks that undeserved withholding of praise and encouragement does more harm than giving praise where it is undeserved; and consistency in the sense of freedom from rapid frequent unpredictable change. His final paragraph is worth quoting: These are the simple rules which seem to offer the basis for a setting in which mental health can grow. (1) Give, do not barter, affection, so that the child may feel "we" more often than "me." (2) Avoid the use of belittling, shame, or ridicule, so that the child may believe that he is worth while and capable of becoming a useful and desired adult. Do not be afraid to use praise. (3) Teach values and meanings which relate to the actual world in which the child lives. Be consistent; stick to a method which is yours, and do not try to be an omniscient saint. (4) Encourage independence and responsibility rather than obedience. (5) Remember that if you train a child properly you should lose him. Then your job is done and done well.

A pamphlet headed *Problems of Scientific and Industrial Research* has been published for Nuffield College by the Oxford University Press at 2s. This statement, which runs to about 60 pages, is the outcome of two private conferences held under the auspices of Nuffield College in January and April, 1944, and embodies the broad conclusions reached. It bears 92 signatures, including those of Sir Henry Dale, Dr. Charles S. Myers, Sir John Orr, and Profs. J. H. Burn, Arthur W. M. Ellis, J. H. Gaddum, R. A. Peters, and John A. Ryle. The signatories do not hold themselves committed to every particular, but they support strongly the general tenor of the recommendations in this statement and associate themselves with its underlying attitude as a contribution to current discussions of post-war economic and educational policy.

The seventh edition of *A Synopsis of Hygiene*, familiarly known as "Jameson and Parkinson," appeared in 1942 with Col. G. S. PARKINSON as sole author. An eighth edition (J. and A. Churchill: 25s.) has become necessary by reason of the large amount of information gathered and sifted under the stimulus of wartime conditions. Dr. G. P. Crowden is named on the title-page as author of the section on personal hygiene, and Col. Parkinson in his preface acknowledges the very active part taken by Miss K. M. Shaw in preparing the new edition. The opening section, on public health administration and the collection of vital statistics, is preceded by a brief summary of the Government's proposals for a National Health Service. The section which has needed most revision is that on prevention and control of disease. This book has now been before the medical public for 24 years and it has by no means outstayed its welcome.

Many facts not generally known or understood concerning contemporary religious history are summarized in *Man Power in the Twentieth-century Church*, by Canon J. McLEOD CAMPBELL, general secretary of the Missionary Council of the Church Assembly, which is published from 2, Great Peter Street, Westminster, S.W.1, price 2s. 6d. The book officially continues the series of *Unified Statements of the Needs of the Church Overseas*, and includes a chapter on medical ministries.

### Preparations and Appliances

#### HOLLOW NEEDLE FOR REPAIR OF PERINEUM

Dr. J. S. LAURIE (Kinsley, nr. Pontefract, Yorks) writes:

Recent correspondence has prompted me to give a brief description of a method I have used for some years in repairing the perineum in general practice. In spite of what is said by the few, the fact remains that the vast majority of small, perineal tears are repaired very efficiently and satisfactorily without an anaesthetic and half the equipment of a hospital.

I had made for me by Messrs. Thackray of Leeds a full curved hollow needle with a flat finger-grip at one end. This is sharp and the needle has been passed through both edges of the tear it is threaded from the base and the end seized as it emerges from the point; the needle is then withdrawn and the stitch tied off. There is no tugging of the double gut through the needle puncture, and patients who have suffered the old method are loud in its praise for painlessness.

The use of hollow needles for suture is not new, but its application in this respect does not seem to have occurred to many, and I commend it.

## BRITISH MEDICAL JOURNAL

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## RATIONAL PHARMACOLOGY

The study of chemotherapeutic agents has passed through three stages. The first was purely empirical, with the discovery of the antimalarial action of quinine as its main achievement. The next stage may be called semi-empirical: the German method initiated by Ehrlich was to take a compound, which owing to its staining properties or for some other reason might be supposed to have a lethal affinity for the microbic cell, and to vary its structure through hundreds of permutations until the desired therapeutic effect was obtained. Hence the use of numbers—which have had many successors since 606—by which the position of a successful drug in a laboratory series is translated into a name. It was thus that protosil was discovered, and the same method, involving the synthesis and rejection of thousands of other compounds, has produced the other sulphonamides in use to-day. During this time, and in connexion with many other antimicrobial agents than the sulphonamides, as well as with substances having altogether different biological effects, a constant aim has been to define relationships between chemical structure and biological activity. In so far as this is possible it defines and limits the field of further exploration by this method, and at best may point to the mechanism by which the desired effect is obtained. Ideally it would be far preferable to work in the reverse direction, arguing that a particular metabolic process essential to the life of the microbic cell should be arrested by a compound with a certain chemical structure; it should then be necessary only to synthesize that one compound to verify its effect experimentally. This has in fact now been done in several instances, and is the type of achievement to be expected in the third of the stages referred to, upon which we now appear to be well embarked.

The essential difference between the methods of 1908–40 and those which are possible to-day is that in the earlier period the mode of action of the drug was unknown, whereas we now recognize that chemotherapeutic agents arrest specific metabolic processes in the microbic cell. This concept of throwing a spanner in the works of intracellular metabolism—or, conversely, of oiling the machinery and so improving its work—has much wider applications than those involved in bacterial metabolism and hence in chemotherapy, but so far as this one aspect of it is concerned the door was opened by the studies of Fildes and Woods on the antimicrobial action of mercury perchloride and sulphanilamide respectively. Fildes proved that mercury salts arrest bacterial activity by combining with –SH compounds, which are essential metabolites for all bacteria, and that their effects can be neutralized by furnishing

such a compound in excess. Woods at the same time found that the effect of sulphanilamide on streptococci was due to competitive inhibition of an enzyme reaction in which *p*-aminobenzoic acid is utilized; this previously unrecognized factor is essential for the growth of certain bacteria, and these, of course, are the bacteria upon which sulphanilamide exerts its action. The effect of these discoveries on the theory of chemotherapy has been far-reaching; it is now accepted that all drugs having an antimicrobial action *in vivo* must act by some such mechanism, although in many cases it has yet to be identified. The best example of the deductive method it offers for arriving at new therapeutic agents is to be found in the work of McIlwain and Hawking,<sup>1</sup> in which pantooytaurine was postulated on entirely theoretical grounds as an antagonist to pantothenic acid, which is an essential growth factor for many pathogenic bacteria, and found both *in vitro* and *in vivo* to have the expected action.

These are some of the matters involved in a discussion on modes of drug action which occupied the Faraday Society at a remarkable meeting, of which it is fortunate that a full report has been published.<sup>2</sup> A recent number of the *British Medical Bulletin*,<sup>3</sup> the purpose of which is to carry news of British achievements in medicine to many distant parts of the world, also contains admirable summaries of the main papers at this discussion. The new attitude to antimicrobial agents is reflected in the approach to antimalarial and trypanocidal drugs, and inquiry into the intimate mechanism of biological effect is carried into the sphere of narcotics and cerebral stimulants, and even insecticides and carcinogens. The outstanding new conception in this symposium, which is also the main subject of a more recent paper by McIlwain,<sup>4</sup> is the dependence of biological effect on interference with vital enzyme systems. McIlwain defines five modes of such action, in connexion with all of which various substances either maintain normal function or disturb it; these substances vary from sulphonamides and alkaloids to vitamins and hormones. Anyone who reads this series of papers may justifiably take some pride in the fact that their contributors could be found in a single country which has been nearly five years at war.

## EARLY DAYS AT JOHNS HOPKINS

The well-known Sargent portrait "Four Doctors"—Osler, Welch, Halsted, and Howard Kelly—serves as a reminder of the great good fortune of Johns Hopkins Hospital in obtaining such remarkable men for its original staff. Indeed the very brilliance of the quartette has tended to cast into the shade the careful and prolonged planning on which that institution was founded at Baltimore. This is corrected by the *Chronicle of the Johns Hopkins Hospital and University School of Medicine*,<sup>5</sup> of which the first volume has now appeared. The founder's unusual Christian name was the surname of his great-grandmother. Johns Hopkins was a Quaker, and, the Society of Friends having strong objection to the marriage of first cousins,

<sup>1</sup> *Lancet*, 1943, 1, 449.<sup>2</sup> *Trans. Faraday Soc.*, 1943, 39, 319.<sup>3</sup> 1944, 2, Nos. 3–4.<sup>4</sup> *Nature*, 1944, 153, 300.<sup>5</sup> Oxford University Press. (15s. 6d.)



he was unable to marry his only love, and so remained a bachelor all his days. He amassed wealth and, having no one to whom to leave it, decided to devote his money to the foundation of a university and hospital. In August, 1857, charters were granted and twelve trustees appointed, chiefly personal friends and Quakers. Throughout he was insistent that the two institutions were to be closely linked, a policy to which the trustees have strictly adhered.

Beyond clearing the site for the buildings little could be done until the death of the founder in 1873, when funds became available. There was much discussion about the type of building, and Dr. J. S. Billings strongly advised the "pavilion" pattern, then a novel idea. He became chief adviser to the trustees, and, in addition to his work in the Surgeon-General's office, where he initiated the *Index Medicus*, he helped greatly at every step of the project. Daniel Gilman proved to be a happy choice for the first President of the University, which was opened in 1876 by T. H. Huxley, who in his inaugural address insisted on the importance of a grounding in the preliminary sciences before the student entered on specifically medical studies. This is an attitude which has been faithfully maintained, together with the study of modern languages and philosophy—admirable adjuncts. The standard set was avowedly high. From the first Billings had in view the training of researchers and a school for nurses. Unfortunately, due for the most part to financial setbacks, twelve years were to elapse before the hospital could be opened, but the school for preliminary studies started before that. Remsen was appointed professor of chemistry, while Newell Martin, who had been Michael Foster's assistant at Cambridge, took charge of the biological sciences, and quickly attracted a number of research workers who were destined to leave their mark on American medicine. But his health failed early in life and he had to retire in 1893, just as the scheme was approaching completion. In 1884 W. H. Welch was appointed professor of pathology, to the great benefit both of the school and of that science. It is interesting to read that unsuccessful attempts were made to attract first Lauder Brunton and then Matthew Hay to the chair of pharmacology. Owing to the delay in opening the hospital, members of the clinical staff were not appointed till

1888, when Osler became chief physician and professor of medicine. No happier choice was ever made, and the suggestion came from Welch. Five months later Halsted was made acting surgeon, but was soon promoted to substantive rank with a professorship. He was a fine scientific investigator rather than an attractive teacher. The quartet was completed by the appointment, at Osler's recommendation, of Howard Kelly as gynaecologist. In 1889 postgraduate classes were started despite some opposition.

The curiously piecemeal stages in the evolution of Johns Hopkins were due to the fluctuating income from the trust fund, and even by 1890 there seemed little prospect of a complete undergraduate medical school. Then a group of Baltimore ladies came forward with an offer of \$100,000, on the condition that women should be admitted on equal terms. The most generous donor was Miss Mary Garrett, who altogether gave rather over \$350,000. But she laid down her terms in no uncertain manner, being insistent

that a high standard should be exacted from entrants; much so that Osler said: "Welch, it is lucky that we are in as professors; we could never enter as students." However, finally all was settled harmoniously, and the school was completed by the addition of J. J. Abel in charge of pharmacology, F. P. Mall anatomy, and W. H. Howell physiology. All was set fair for the complete university medical school, and hospital by 1893, which brings to a first volume of this history to a conclusion.

It is indeed a remarkable story, which needed telling and Dr. Alan Chesney has told it attractively, even if his loyalty has perhaps sometimes made him rather too discreet. If Johns Hopkins has not retained its initial pre-eminence this is as much due to the rise of other institutions as to any decline in itself. Many distinguished men have added to its lustre—too many to mention individually. We are left with a vivid impression of the far-sighted munificence of the founder and Miss Garrett, of the skillful planning of J. S. Billings, and the diplomacy of Daniel Gilman. But the success of their plans was dependent on the two great creators of the prestige of the medical school—W. H. Welch and William Osler.

#### CONTROL OF OEDEMA IN BURNS

The exudation of fluid into burnt tissues is significant for two reasons: first, it is an important cause of shock; and secondly, its persistence delays healing and return of function. Much can be done by intravenous replacement to counteract the effects of fluid loss, but measures to prevent it have been disappointing. Experimental evidence of the value of such measures is welcome, even if their use in clinical work is difficult. Sellers and Willard<sup>1</sup> found it possible to prevent swelling by the application of plaster-of-Paris immediately after burning. Their experiments were done on dogs burnt on the legs by immersion in hot water. The legs were at once encased in plaster bandages without pressure. If the casts were removed at 24 hours the legs looked normal, but soon swelled like the controls. At 48 hours they swelled less, and at 72 hours hardly at all. The most striking effect of this treatment was the reduction of mortality, 20 of 38 controls dying, but only 2 of 36 treated dogs. That the reduction in mortality was due to inhibition of fluid loss was suggested by studies of haemoconcentration, which was fully controlled when the extent of the burn allowed complete covering with plaster and slight only in more extensive burns. In other experiments the authors studied the effects of cooling combined with external pressure by fitting double rubber sleeves to the burnt legs through which cold water was circulated at measured pressures; the purpose of the cooling was to reduce metabolism and local toxin formation. As in the "plastered" animals, mortality and haemoconcentration were reduced, but apparently not so effectively. Although plastering fully controlled the swelling, bloody diarrhoea and haematuria were observed in both treated and control animals, being, however, more severe in the latter. In both groups, too, haemolysis appeared in blood samples within an hour of burning. These findings were taken as evidence for the existence of other factors in burn shock than fluid loss, although the results of their experiments point to the predominant importance of this factor. The fact that no better results were obtained by combining cooling with pressure might suggest that toxin formation

<sup>1</sup> *Canad. med. Ass. J.*, 1943, 49, 461.

was not important, but it is not clear that the rubber sleeves controlled fluid loss as efficiently as plaster.

In all these experiments treatment was started immediately after burning, and it is known that the fluid loss is very rapid, about 50% occurring in the first 30 minutes. Herein lies the difficulty of the clinical application of such methods. Bearing on this point is the work of Rossiter, who has also devised experiments to show that oedema can be controlled by pressure. He has applied his methods in small animals both immediately after burning and at an interval of three hours, and although, as is to be expected, the immediate application is the more efficient, his animals treated at three hours showed much less oedema than controls. His experiments were not concerned with mortality, most of the animals being killed after short intervals. We cannot say to what extent the results obtained by Sellers and Willard were dependent on the time factor. Although external pressure is not easily applicable to human burns, it would seem to be more rational than plaster for cases in which treatment is delayed until oedema has formed. There are few parts of the body to which pressure is easily applied except the limbs, and it must be noted that in the experiments described the authors were able to adapt the burns to the apparatus devised for their treatment. The application of controlled pressure to human burns is likely to require much supervision and can have little place in the treatment of war burns. At present the fear of embarrassing the circulation rules out the use of plaster, at least until the patient is under continuous observation in hospital, and by that time it will be too late to prevent oedema. There seems no doubt, however, that the control of oedema is desirable, and that if a safe and practicable method could be devised it would mark a great advance in treatment.

### COMMUNAL HEALTH

If a medical man expressed the opinion that the wisest of our authors have been those who had received a medical training, to cite Locke, Arbuthnot, Holmes, William James, and Bridges might not be a sufficient defence of an "old school tie" partiality. We recall, however, a remark of James Payn that he found the conversation of doctors broader minded than that of other professional men; Prof. E. P. Cathcart's pamphlet *Communal Health*<sup>1</sup> illustrates what Payn meant. Prof. Cathcart first describes *sine ira et studio* the sanitary conditions of great cities in England and Scotland a hundred years ago. He does not, as some historians do, leave it to be inferred that the unspeakable filth and squalor recorded in the quotations were universal, but carefully indicates that many working-class people lived tolerable, even happy, lives. He does, however, make it quite clear how great a mass of preventable evil existed, and that a toll was taken of human life, in comparison with which the sufferings of these evil times, though far from trivial, are small in point of numbers of deaths and death rates. Next he describes the change effected when, at long last, the views of social pioneers—the Chadwicks, Simons, and Shaftesburys—became public opinion. Finally he turns to the future. Prof. Cathcart writes at some length on two major uncertainties—the future of the birth rate and the use of leisure; on each what he has to say is wise. If, as he holds, refusal to produce children is due to malaise of the spirit, these two questions are interrelated. Why should any human being with Macbeth's view of life bring into the world others to listen to a tale told by an idiot? One's work is monotonous; the only joy in it is to bave work at all, and that is haunted by a fear of unemployment; one's leisure

becomes monotonous too—the pictures, the dogs, football arenas, and not much else. Such was probably the view of a great many young married men between 1920 and 1939. Much can be done to remedy the fear of unemployment and improve the conditions of work no longer precarious so that they will command the unanimous approval of the population concerned. But to make leisure less monotonous, to free millions from dependence on professional entertainers, to enable them to amuse themselves, is a matter of education, and (as Prof. Cathcart points out) we cannot force people to learn the best use of leisure: our people are not German sheep. "But we can see to it that every means is employed to discover the causes and to restrict the opportunities for misspent leisure." This pamphlet deserves wide circulation.

### CAROTINAEMIA AND HYPERVITAMINOSIS A

Clinical carotinaemia, due to excessive consumption of foods rich in carotene, the precursor of vitamin A, is well known.<sup>1</sup> It is characterized by xanthosis of the skin, sometimes by yellow cutaneous nodules rich in carotene, and by a raised serum carotene. It occurs in patients suffering from diseases associated with hyperlipaemia, such as diabetes, nephrosis, and hypothyroidism. Generally speaking, this carotinaemia is symptomless, although loss of weight, asthenia, and hypotension have been reported.<sup>2</sup> Such symptoms may be due not to carotinaemia *per se* but to associated conditions or even to inadequate diet, since foods rich in carotene are mainly vegetables. On the other hand, information on hypervitaminosis A, a condition resulting from excessive intake of vitamin A, is scanty. Josephs<sup>3</sup> has now published a report on a case of hypervitaminosis A in a boy of 3 who was given a teaspoonful of halibut-liver oil (containing about 240,000 i.u. of vitamin A) daily from the age of 2 months. The child developed an abnormal liking for the oil, so much so that on occasion he drank it from a bottle in almost unlimited amounts. The hypervitaminosis A that ensued was characterized by hepatomegaly, splenomegaly, hypoplastic anaemia, leucopenia, increased serum vitamin A and lipids, advanced skeletal development, clubbing of the fingers, and sparse coarse hair. Most of the symptoms cleared promptly on discontinuing the halibut-liver oil. It has long been known by explorers that bear's liver has toxic properties if eaten by human beings, the symptoms being vomiting, drowsiness, irritability, severe headache, and exfoliation of the skin. Tests on rats by Moore and Rodahl<sup>4</sup> suggest that this may be due to its high vitamin A content.

Why should an abnormal intake of carotene be relatively harmless, yet the vitamin itself give rise to toxic symptoms? Increasing the dietary intake of vitamin A beyond a certain optimum increases the amount stored, but it is usually not possible to push the level of the vitamin in the blood above a normal maximal value except for a few hours. There is probably a mechanism for the maintenance of the level of vitamin A in the blood within certain limits. It may be significant that this mechanism exists in the case of vitamin A, which can have toxic effects, and not in the case of its precursor, carotene, which is relatively harmless. Another protective mechanism is the storage of vitamin A in the liver, where it seems to be harmless. It is not the total amount of vitamin A stored in the body that determines the onset of toxic symptoms but the presence of quantities large enough to overwhelm the

<sup>1</sup> Almond, S., and Logan, R. F. L. *British Medical Journal*, 1942, 2, 239.

<sup>2</sup> Siqueira, J. H. *Brit. J. Derm. Syph.*, 1937, 49, 69.

<sup>3</sup> Amer. J. Dis. Child. 1944, 67, 33.

<sup>4</sup> *Biochem. J.*, 1943, 37, 166.

capacity of the liver to remove it from the blood.<sup>5</sup> It is apparently possible to raise the storage in the liver to high levels, and no symptoms of intoxication follow unless the daily consumption is raised above the "toxic" level. In the removal of vitamin A the cells of the reticulo-endothelial system play a primary part, particularly the Kupffer cells of the liver.<sup>6,7</sup> There is no danger of clinical hypervitaminosis A if vitamin A, or concentrates containing it, are prescribed in therapeutic doses. Joseph's patient received 240,000 i.u. daily—a truly excessive dose—for about three years. The optimum daily requirements are from 1,500 i.u. daily for the infant to 8,000 i.u. for the nursing mother.

### SOME CAUSES OF STERILITY

Interest in human sterility and infertility has been much intensified in recent years, and is by no means confined to the medical profession. Alarm is felt by many at the decline in the birth rate, and, although much infertility is undoubtedly voluntary, there are many marriages in which the desire for a child remains unfulfilled. The problem is complicated by the many factors, involving both partners, which may be responsible. Sharman<sup>8</sup> has recently published a careful study of 500 cases of primary sterility, and, though he does not claim that this is in any way a comprehensive survey, he presents much new material and some contrary to orthodox teaching. In describing the results of tubal insufflation with gas, he stresses the value of the kymographic tracing, which, he has found, is relatively constant for the same patient even over several months and at different times in the menstrual cycle. An increase in tubal peristalsis is observed at about the time of ovulation. Anaesthesia has little effect on the tracing. An isolated tracing indicating apparent non-patency is not necessarily evidence of tubal occlusion. Hystero-salpingography with lipiodol only occasionally reveals the patency of tubes thought to be occluded on the evidence of gas insufflation. Interpretation of x-ray films obtained by lipiodol hystero-salpingography is often difficult; the main advantage of the method is that where tubal occlusion is found the film may indicate the site of blockage.

Histological examination of the endometrium in patients in the premenstrual phase revealed anovular menstruation in 6.4% of 358 patients so examined. A further and more striking finding was the presence of unsuspected tuberculosis of the endometrium: in the first series of 392 patients tuberculosis was found in 5.1%, and in a later series in 5.3% of 883 cases. Tuberculosis of the endometrium, without involvement of the tubes, is probably commoner than is generally realized. This is certainly the opinion of Sutherland,<sup>9</sup> who published the results of the histological examination of over 5,000 samples of endometrium and of 864 uteri. He found tuberculosis of the endometrium in 1.1% of endometria removed by curettage and in 1.4% of the uteri examined. Twenty-four of the patients with this form of tuberculosis complained of sterility, and in 20 the tubes were occluded. Bacteriological confirmation was obtained by guinea-pig inoculation: 10 out of 16 inoculations were positive. All this suggests that sub-clinical tuberculosis of the female genital organs is a not uncommon cause of sterility. The finding of anovular menstruation and unsuspected tuberculosis in cases of sterility—the two accounting for over 11% of the patients in Sharman's series—makes it clear that endometrial biopsy is an essential part of the investigation of these patients. Congenital occlusion of the tubes is, in his opinion, un-

common—a view based on the examination of unmarried women and on tests for tubal patency carried out post mortem in female infants and young children. Sharman believes it is unusual for the gonococcus to reach the Fallopian tubes, and that occlusion from this cause is unlikely in the absence of palpable thickening of the tubes. But subclinical tuberculosis he considers a common cause of occlusion.

Out of 409 patients treated for sterility 28.3% became pregnant. Of the remaining 293 sterile marriages there was some factor which made pregnancy unlikely or impossible in 52%. In no case of tuberculosis or of azoospermia did pregnancy result, and in the cases of anovular menstruation only two women who had received treatment became pregnant. In 141 cases, or 48% of the 293 sterile marriages, no cause for infertility could be found. Sharman comments that opportunities for coitus, restricted by separation of the partners owing to the war, may arise at an infertile period in the menstrual cycle and so in some cases result in a physiological infertility.

Sharman's paper is an important contribution to the problem of sterility. The high incidence of uterine tuberculosis is probably the most striking finding, and it will be interesting to know if this is a purely local phenomenon, limited to the Glasgow area, from which presumably most of the patients in this series were drawn.

### HEPATIC INJURY

Lipotropic substances prevent or control the deposition of fat in the liver. This group of biologically active agents has been extensively studied since Hershey's<sup>1</sup> description in 1930 of the prevention of fatty livers in depancreatized dogs by feeding with lecithin. Hershey, Best, and Huntsman<sup>2</sup> later showed that lecithin could be replaced by choline. In 1935 Channon and Wilkinson<sup>3</sup> described the lipotropic action of casein, and the anti-lipotropic effect of cystine. Two years later Tucker and Eckstein<sup>4</sup> demonstrated that the effect of casein was due to its contained methionine. More recently du Vigneau<sup>5</sup> and his associates have demonstrated the importance of methionine in the biosynthesis of choline by transmethylation. It seems probable that this group of lipotropes are linked together and that all are intimately concerned with the supply of choline for phospholipin synthesis. Other lipotropic substances have been described, such as lipocaine by Dragstedt<sup>6</sup> and inositol by Gavin and McHenry.<sup>7</sup> The lipotropic action of these substances can be distinguished in various ways from the choline group, but their mode of action is at present unknown. McHenry<sup>8</sup> has shown that thiamin and other members of the vitamin-B complex have a marked effect on fat deposition in the liver. Extensive fatty deposition in the liver did not occur in rats fed a choline-free diet if the thiamin in the diet was also deficient.

This extensive investigation of lipotropic substances has obvious importance in the study of fat metabolism, but György and Goldblatt<sup>9</sup> have shown that it may have an even wider significance. These workers found that hepatic injury superimposed upon fatty infiltration could be irregularly produced by dietary means. György,<sup>10</sup> in a recent publication, has described further experiments on rats, in which he was able regularly to produce hepatic injury

<sup>5</sup> Davies, A. W. and Moore, T. *Biochem. J.* 1934, 21, 288.

<sup>6</sup> Popper, H. and Brenner, S. *J. Nutrit.* 1942, 23, 431.

<sup>7</sup> Lash, F. and Roller, D. *Klin. Wschr.* 1936, 15, 1636.

<sup>8</sup> *J. Obstet. Gynec. Brit. Emp.* 1944, 51, 85.

<sup>9</sup> *Ib. d.*, 1943, 50, 161.

<sup>1</sup> *Amer. J. Physiol.*, 1930, 92, 657.

<sup>2</sup> *Ibid.*, 1932, 101, 7.

<sup>3</sup> *Biochem. J.*, 1935, 29, 350.

<sup>4</sup> *J. Biol. Chem.*, 1937, 121, 479.

<sup>5</sup> *Ibid.*, 1940, 134, 787.

<sup>6</sup> *Amer. J. Physiol.*, 1936, 117, 175.

<sup>7</sup> *J. Biol. Chem.*, 1941, 139, 485.

<sup>8</sup> *J. Physiol.*, 1937, 89, 287.

<sup>9</sup> *J. exp. Med.*, 1939, 70, 185.

<sup>10</sup> *Amer. J. clin. Path.*, 1944, 14, 67.

with a diet deficient in lipotropic factors. The hepatic injury was prevented by the introduction of lipotropes into the diet, and investigations are proceeding into the therapeutic use of lipotropes once hepatic injury has been established. Preliminary studies of this aspect of the work are encouraging. The changes in the rat livers consist of fatty infiltration (and sometimes fatty degeneration), a diffuse or focal necrosis, and varying degrees of cirrhosis. These changes resemble those seen in many types of liver poisoning, such as that due to carbon tetrachloride, but in dietary hepatic injury the distribution is not so uniform, haemorrhage is greater, and fatty degeneration usually less marked. The necrosis is as a rule central or mid-zonal, but the cirrhosis is periportal, and the final picture is similar to that seen in Laennec's cirrhosis in man. The only real distinguishing point is the presence of pigment globules of light yellow or greenish-yellow colour in the "dietary" cirrhotic livers. The nature of this material has not been determined, but it is probably a lipo-protein substance and has been termed 'ceroid' by Lillie.<sup>11</sup>

Gvory draws attention to the similarity of the changes in these experimental animals to pathological changes in man. While there is obvious danger in drawing a direct analogy between dietary cirrhosis in the rat and hepatic injury in the human subject, the mass of evidence on the physiological side demands investigation in the clinical field. The case is strengthened by the fact that many rats with hepatic injury produced by dietary means also have renal damage. This combination may be analogous to the hepato-renal syndrome in man or such conditions as eclampsia, in which hepatic and renal injury frequently occur together. Gvory suggests for human cases certain preventive and therapeutic measures based upon his experimental work. He advises a diet containing a high level of protein and restricted fat. The protein should have a high methionine content, and the fat should be rich in unsaturated fatty acids and low in cholesterol. The diet should contain all the members of the vitamin B complex carefully balanced. In addition to the dietary supply it is suggested that methionine should be administered in doses of 2 to 4 grammes daily, or, alternatively, cystine plus choline in similar doses could be used, but this is probably not so effective.

It seems likely that at least some cases of hepatic injury and subsequent cirrhosis do not present irreversible changes due to direct toxic action, which has been the general view for many years, but that these lesions may be both preventable and reversible. This new conception affords an opportunity for full co-operation between physiologists and clinicians in carefully controlled clinical trials.

#### MEASURES AGAINST PNEUMOKONIOSIS

The Ministry of Fuel and Power has now issued through H.M. Stationery Office<sup>1</sup> the report of the Advisory Committee on the Treatment and Rehabilitation of Miners in the Wales Region suffering from Pneumoconiosis, the term applied to pulmonary abnormalities found in colliery workers underground and on screens, and in coal trimmers at docks described as due to the inhalation of dust. Already measures are being taken to prevent the contraction of the disease by the suppression of harmful dusts at working places in mines but further attention needs to be given to the treatment of affected persons and to their restoration to a state of health and fitness for appropriate employment. The committee was set up primarily to consider this aspect of the problem. It finds that present knowledge of the disease is insufficient to enable it to advise

the introduction of large-scale measures of treatment, including rehabilitation, and that further research is necessary. Accordingly it recommends the establishment of a research unit with accommodation for about thirty patients, equipped with facilities for clinical study and investigation, the work of this research unit to be linked, through a central authority, with that proceeding on other phases of the problem—e.g., to acquire more precise knowledge of the causes and of the diagnosis of the disease, to develop and apply in the pits better methods of suppressing the dangerous dust, and to retrain and resettle partly disabled miners who are fit to take up other more suitable employment. It also recommends the initial and periodical clinical and x-ray examination of miners and the correlation of the findings of such examinations with the results of pathological research into early changes in lung condition, the progression of those changes, and the part played by tuberculosis and other infections. The establishment of a co-ordinating Pneumoconiosis Bureau is advised. The medical members of the committee were Drs E. A. Aslett, T. H. Jenkins, N. Keating, Prof. C. Bruce Perry, and Dr. T. W. Wade.

#### SANDFLY FEVER

Fourteen American soldiers who volunteered to submit to experiments which increased the knowledge of sandfly fever, encountered by American fighting men in tropical and semi-tropical regions, have been awarded the Legion of Merit, the U.S. War Department announced on August 3. The soldiers were infected with the disease, the fever being produced in some by small injections of blood from individuals who already had it, and in others by exposure to repeated bites of infected sandflies. Sandfly fever, or "phlebotomus fever," is caused by bites of sandflies carrying the infective agent, a filterable virus. The fly is about an eighth of an inch long, and only the female bites. The puncture of the skin is usually painful. The fever is not contagious, but is transmitted by the bite of a sandfly that has bitten an infected person. The onset of the sickness begins two or three days afterwards and results in symptoms not unlike influenza. The patient is incapacitated for one or two weeks, although his temperature, going as high as 102° or 104° F, usually subsides in about three days. Experiments showed that the virus causing the fever in the Middle East was the same as that infecting soldiers in Sicily. The active virus obtained from Sicily was injected into healthy individuals. They fell ill with sandfly fever. After recovery they were injected with the virus from Egypt but did not contract fever, proving that Sicilian sandfly fever attacks confer immunity against the Egyptian virus. The studies, started in April, 1943, in the Middle Eastern theatre, were directed by Dr. John R. Paul, Consultant to the Secretary of War and Director of the Surgeon-General's Commission on Neurotropic Virus Diseases, who flew into the area with Major A. B. Sabin, Army virus expert, and Major C. B. Philip, entomologist.

In a field laboratory six kinds of monkeys and other animals were tested before the experiments on the soldiers. None of the animals was found susceptible to the disease. The soldiers volunteered for a second series of experiments, resulting in finding two chemical insect repellents, dimethyl phthalate and pyrethrum-containing vanishing cream, which successfully prevent sandfly bites. The material was applied to exposed body areas and found effective for eight hours. In making the test infected sandflies were released in the volunteers' sleeping quarters. Only those who had not applied the repellents were victims of the fever.

<sup>11</sup> *Path. Hist. J.* 1942, 57, 602.  
<sup>12</sup> 1943. Price 2d.

## TECHNIQUE OF BLOOD EXAMINATION FOR MALARIA PARASITES

BY

T. CRAWFORD, M.D., B.Sc., F.R.F.P.S.

Major, R.A.M.C.

Many practitioners, medical officers, ship surgeons, and laboratory workers formerly not familiar with malaria are now being confronted with its diagnostic problems. The technique involved in the blood examinations is simple enough, but it is not widely realized that a staining technique giving the best results for blood cells does not do so for malaria parasites. Faulty methods often lead to a failure to detect parasites present in small numbers, so the following brief notes may guide workers inexperienced in this field.

### Materials and Reagents

A sharp cutting skin needle, gauze or wool swabs, and some spirit or ether are required for the skin puncture.

**Slides.**—Thin half-white slides, clean and free from grease, are best for this work; scratched or frosted slides should be avoided. In an emergency, slides as supplied by the makers, if held by the edges, breathed on, and polished with a clean cloth, will usually give satisfactory results. Whenever possible, however, the slides should be cleaned chemically by boiling for five minutes in a solution containing 6% each of potassium bichromate and sulphuric acid, and then washing in running tap-water for 10 minutes; the slides are then stored in spirit and polished before use. Chemical cleaning is essential in certain tropical regions to prevent the growth of moulds.

**Leishman's Stain.**—Sold as a powder or in tablets of known weight, the staining solution is prepared as follows:

Place 0.15 g. of the stain in a small mortar and measure out 100 c.c.m. of pure methyl alcohol (acetone-free). Grind the dry powder and then add about 20 c.c.m. of the methyl alcohol. Grind again for a few minutes and decant into a clean dry bottle with a well-fitting ground-glass stopper. Repeat with successive small quantities of the alcohol; the last two portions should be only faintly tinged with the stain. If pestle and mortar are not available satisfactory results may be obtained by placing the stain in the bottle, adding the methyl alcohol, and shaking vigorously for five minutes on three occasions.

Freshly prepared solution does not give the best results, so the stain should be kept in a dark cupboard for 10 days, shaking vigorously every day, and then placed on a shelf in ordinary daylight (avoiding direct sunlight) for seven days before being used. The stain should not be filtered, and no attempt be made to hasten its solution by heat. The bottle should be kept carefully stoppered, as contact with the air speeds deterioration. When required for use the stain should be removed from the bottle with a pipette; the last half-inch of solution is best discarded, as it always contains some granular deposit which may cause troublesome artefacts in a stained blood-film. If correctly made and stored, Leishman's stain keeps indefinitely in a temperate zone, but deterioration may be rapid when temperature and humidity are high.

**Giemsa's Stain.**—This is supplied in solution, and has only to be diluted for use. It is thus more suitable than Leishman's stain for occasional use away from a laboratory. The undiluted stain keeps clear and is not affected by heat and humidity.

**Distilled Water.**—This is a most important reagent, and consistently good results cannot be obtained unless it has the correct pH concentration. The best staining of blood cells is obtained when the water used for dilution and washing has a pH value of 6.8 to 7.0. For malaria parasites, however, the best results are obtained at a pH of 7.2. At this pH value the red blood corpuscles give a slightly bluish staining, against which the bright red and deep blue of the parasites stand out boldly. In addition the weakly basic reaction accentuates the earliest changes in the parasite-containing corpuscles, which are an important feature in species diagnosis. As taken from the still, distilled water is almost always slightly acid owing to the absorption of carbon dioxide from the air in cooling. One of the following methods ensures that a diluent of the desired reaction (pH 7.2) is employed.

(1) 9 g. of anhydrous disodium hydrogen phosphate and 1.8 g. of anhydrous potassium dihydrogen phosphate are dissolved in 3 litres of distilled water. This buffer salt solution is recommended for use wherever frequent examinations are carried out.

(2) About 4 c.c.m. of bromothymol blue indicator solution is added to a litre of distilled water. This gives a yellow colour owing to the acid reaction. A 0.5% solution of sodium carbonate is now added drop by drop, with vigorous shaking, until the water attains and retains a bluish-green colour. This indicates a

pH of about 7.2, but is less accurate than the use of buffer salts described above.

(3) In emergency, if distilled water or filtered rain-water is boiled vigorously for 5 to 10 minutes it usually attains a pH of 7 to 7.2 and allows fairly satisfactory staining. The acid reaction returns on standing.

### Spreading the Blood Films

(a) **Thin Films.**—The slides are placed flat on a bench or bedside table and one with a perfectly smooth edge is chosen as a "spreader." Shorten the spreading edge by about 1/4 in. by chipping off one corner: both edges of the resulting smears can be readily examined. The patient's finger and the needle are cleaned and dried and a slight incision is made above the base of the nail. A small drop of blood is allowed to collect, and this is lifted with the under surface of the edge of the spreader, held by the edges in the right hand. The blood is now touched down on the slide to be spread, about an inch from the right end, and allowed to run across the width of the spreader. The free end of the spreader is lowered to make an angle of 20 to 25° with the horizontal, and is then pushed smoothly and firmly to the left end of the slide. A really thin film, with the red cells lying separated, is essential for the accurate diagnosis of malaria parasites. The two factors which control the thickness are the amount of blood and the angle at which the spreader is held—the less the amount of blood and the lower the angle, the thinner the resulting smear. The films are allowed to dry at room temperature, and should not be heated.

(b) **Thick Films.**—The advantages of the thick film technique may be entirely lost if attention is not paid to technical details. In particular, the beginner should eschew certain ultra-rapid methods that have recently become fashionable. The term "thick" is purely relative, and a common mistake is to make the smears too thick. A drop of blood similar to that used for a thin smear should be lifted on the centre of a slide and spread out with the blade of the needle until a page of print can be clearly seen through it. The film is allowed to dry horizontally, protected from dust and insects. Drying may be hastened by placing the slide for a few minutes in an incubator at 37° C.; but more vigorous heating interferes with subsequent dehaemoglobinization.

### Staining

(a) **Leishman's Stain for Thin Films.**—The slide is supported in a horizontal position and 10 to 12 drops of the stain are placed on the film, using a clean dry pipette. The stain is spread out with the barrel of the pipette to cover the entire area of the film, and is allowed to act undiluted for about 30 seconds, thus fixing the blood. Double the quantity (20 to 24 drops) of pH-adjusted distilled water is then added, and is mixed with the stain by drawing up and expelling two or three times with the water pipette. The precise time the diluted stain should be allowed to act varies with different batches of stain. The period is usually between 10 and 20 minutes, and the best results are obtained by somewhat longer staining than for blood cells. At the end of the staining period the stain should not be poured from the slide but gently flushed off in a stream of distilled or tap water for a few seconds only. This prevents the scum which forms on the surface of the stain from settling on the film and showing as a granular deposit, but more prolonged washing will rapidly decolorize the parasites. The film should be allowed to dry in a semi-vertical position without heat or blotting.

(b) **Leishman's Stain for Thick Films.**—Haemoglobin is removed from the preparation by placing the dry unfixed film in an upright position in a jar of distilled water. When the film is uniformly white—in about 10 minutes with a fresh film—it is gently withdrawn and allowed to dry. The dehaemoglobinized film is then stained as the thin films, except for a rather shorter staining time (5 to 15 minutes).

(c) **Giemsa's Stain for Thin Films.**—As this is a watery solution the films must be treated with a fixing reagent before staining. The surface of the slide is flooded with absolute methyl alcohol, which is allowed to act for one or two minutes. The slide is then washed gently in a stream of tap-water and placed vertically or face downward in a staining jar or dish containing Giemsa's stain diluted in the proportion of two drops of the stain to each c.c.m. of pH-adjusted distilled water. The staining is complete in 20 to 30 minutes; the slide is then quickly rinsed and allowed to dry in a semi-vertical position.

(d) **Giemsa's Stain for Thick Films.**—Without previous fixation the films are placed vertically or face downward in a staining jar or dish containing the diluted stain—one drop of stain to each c.c.m. of distilled water. The vessel is gently agitated from time to time, and dehaemoglobinization and staining are complete in 20 to 30 minutes. The slides are then gently transferred to a dish of water for a few seconds only and finally allowed to dry in a semi-vertical position. Vigorous handling or washing in running water may cause the film to leave the slide. Dilutions of Giemsa's stain remain active for about 12 hours, during which time they may be used repeatedly.

## KENNY TREATMENT OF POLIOMYELITIS

## REPORT BY AMERICAN COMMITTEE

A committee to study and evaluate the Kenny treatment of infantile paralysis was set up in June, 1942 comprising members of the American Orthopedic Association, the American Academy of Orthopedic Surgeons, and the Section on Orthopaedic Surgery of the American Medical Association. The report of the committee was presented at the annual meeting of the American Orthopedic Association and at the annual meeting of the American Medical Association held in June, 1944. This has now been published under the names of Drs. Ralph K. Ghormley, Edward L. Compere, James A. Dickson, Robert V. Funsten, J. Albert Key, H. R. McCarroll, and Herman C. Schumm.<sup>1</sup>

The committee in the course of its study visited six cities and sixteen clinics, some of them two or more times. A total of approximately 740 patients were examined, of whom about 650 had been treated by the method advocated by Miss Elizabeth Kenny. Some of these patients represented examples of cases from earlier epidemics, while the majority came from epidemics occurring since 1940. Early in the investigation questionnaires were sent to over 900 orthopaedic surgeons, but no definite conclusions could be drawn from the reports they submitted. The committee notes that one of the things Miss Kenny has stressed is the difference of her treatment from what she calls "orthodox" treatment, but it finds difficulty in understanding what she means by this epithet. In the United States several different plans of treatment have been followed in the work with poliomyelitis. As long ago as 1917 R. W. Lovett outlined a method of treatment which was pursued successfully for many years, and is still the basis of most modern therapy in that country. For many years the use of pools has had a prominent place in the treatment of anterior poliomyelitis.

The report discusses Miss Kenny's concept of the disease, in which the four major points stressed by her are muscle 'spasm', mental alienation (functional dissociation), incoordination of muscle action, and paralysis (or 'denervation'), and criticizes each in turn. It next describes the Kenny treatment under ten categories and follows this with the analysis and discussion reproduced below.

## The Treatment Analysed

1 The institution of treatment directed toward the involved muscles as early as possible is desirable, but the general condition of the patient during the acute febrile stage may be such that the handling necessitated by the Kenny treatment can be detrimental.

2 Proper positioning in bed by one means or another has been a standard practice among physicians for over thirty years to our knowledge. It is still a recommended procedure.

3 Heat in some form, including hot fomentations, has been used by physicians for many years to combat pain in infantile paralysis. In most instances the pain can be relieved by the use of hot fomentations. We have seen a few cases, however, in which relief was not afforded by their use. It is the impression of this committee that pain is not an important feature of the disease in most instances, and, when present, can be relieved also by other measures. Recovery from spasm in most instances takes place spontaneously. Hot packs may relieve this "spasm," but so will adequate rest. Therapy directed at pain and "spasm" should be discontinued as soon as these symptoms subside. We have seen instances in which hot packs seem to increase and prolong the "spasm." In some, "spasm" was relieved after the packs were discontinued. In others, "spasm" which had been relieved recurred when the packs were discontinued and was again relieved by their reapplication. The use of hot fomentations therefore cannot be considered as a panacea in this disease, and their use must be guided by good medical judgement. The rigid technique insisted on by Miss Kenny in the application of these packs is neither important nor essential.

4 So long as active and passive movement of these extremities is carried out within the range of comfort, this point is acceptable. This procedure has been recommended by many physicians in the past, but again we stress the point that this movement should not be forced beyond the point of pain.

5 Jones and Lovett described and used a method of muscle re-education which in principle is similar to the method taught by Miss Kenny. This has served as the basis for orthopaedic treatment for many years.

6 Cases have been seen under Kenny treatment in which early contractures were developing, and by application of plaster splints these contractures were controlled after their correction. This committee believes that splints are beneficial for some patients. Braces should form an important part of the treatment during the later stages of this disease. We have seen Kenny treated patients walking with two English style crutches who could be so benefited by braces that the crutches could be discarded, thus liberating the hands for other use.

7 Respirators have saved many lives and should be used for patients with sufficient paralysis to embarrass respirations.

8 There is no evidence that the Kenny treatment prevents or decreases the amount of paralysis. We criticize severely the oft-repeated statement of Miss Kenny to patients who have come to her after treatment elsewhere that had this case come to her early the disability would have been prevented. Such statements are not founded on facts.

9 Spontaneous recovery in poliomyelitis occurs in many cases. Reports in the medical literature indicate that this varies in different epidemics from 50 to 80%. We have seen many patients receiving Kenny treatment who showed no muscle involvement at any time, yet she assumes the credit for their satisfactory results and does not take into account the factor of spontaneous recovery.

10 Pools and baths have long been used in the treatment of poliomyelitis.

## The Committee's Commentary

In its general comment the report condemns Miss Kenny's objection to muscle examinations, and hence the lack of accurate records. With regard to her repeated statement that under "orthodox" treatment only 13% of patients recovered without paralysis while under her treatment over 80% recover, the committee believes this to be a misrepresentation of the facts of treatment by other methods, which it attributes to her over zealous desire to promote further the adoption of the Kenny treatment. In refutation of the belief of some people that paralysis can be prevented when treatment is started before the onset of paralysis it says, 'We have seen enough cases in which the Kenny treatment was instituted very early to be convinced that this does not prevent or even minimize the degree of permanent paralysis. Further, in several cases seen by its members the paralysis progressed after the Kenny treatment was instituted.' It emphasizes that the prevention of early contractures is the primary means by which medical care is able to minimize the effects of the disease. In its opinion, after observation of 740 cases, the continuous employment of hot packs for all patients with minimal evidence of "spasm" is of questionable value, and a waste of man-power and hospital beds. Good medical judgment is required in determining the cases in which hospital treatment should be instituted or continued.

With regard to Miss Kenny's claim to a new and revolutionary discovery by means of which she can diagnose the disease and determine the involved extremities before the onset of the usually recognized diagnostic clinical signs, and her claim that the institution of her treatment at this time will control pain and prevent paralysis, the committee says that the preparalytic diagnosis of poliomyelitis was described by Draper (1931) and by Aycock and Luther (1928), and that no satisfactory evidence has been presented to it that the institution of early local treatment will alter the course or the extent of the paralysis in any case. Commenting on the claim that all paralytic scoliosis can be prevented by Miss Kenny's programme of care the committee says that several more years must elapse before any final conclusion can be reached with regard to the amelioration or prevention of paralytic scoliosis by means of the Kenny treatment. Lastly, while it condemns the wide publicity which has misled the public and many members of the medical profession, it acknowledges that this has stimulated the medical profession to re-evaluate known methods of treatment of infantile paralysis and to treat it more effectively.

J. Chasnoff and J. J. Vorzmer (*Ann. intern. Med.* 1944, 20, 327) state that temporal arteritis is a disease of unknown aetiology which is seen in elderly patients and is more frequent in females. The outstanding subjective symptoms are headache, malaise, and weakness. In most cases there is a low grade fever. Marked secondary fever is constant and slight leucocytosis common. The disease runs a protracted course of 4 to 12 months, but relapses are frequent. Complete recovery occurs in most cases.



## MASS RADIOGRAPHY

## A Cautionary Notice

*The following communication has been issued to the medical press by the Ministry of Health:*

Wartime difficulties of production and wartime claims on skilled professional staff have made it impossible rapidly to develop schemes for the general use of mass radiography throughout the country. It is possible that employers or other persons may be considering whether they should not make their own arrangements for the examination of their employees or patients by mass miniature radiography. There are, however, complications and dangers, perhaps not immediately obvious, involved in any departure at present from the standard methods of the official scheme. These difficulties ought to be generally recognized.

The primary purpose of mass radiography is not diagnosis in the ordinary sense. Its true function is to discover in a group of ostensibly healthy persons those who have signs indicating the possibility of incipient disease, which should therefore be further investigated by more intensive means of diagnosis. Persons who have no ground to suspect that they are in any risk of illness must be ready to be examined. Anything that might weaken public confidence in mass radiography would therefore impair its usefulness. Equally anything that would lead the public to expect too much from the new development must be avoided.

The Medical Research Council's Committee on Tuberculosis in Wartime advocated in its report (Sept., 1942) that the use of mass radiography apparatus should be under the general direction of the Ministry of Health and Department of Health for Scotland. That committee's technical subcommittee said further: "Mass miniature radiography should not be lightly undertaken. A very high standard of quality of miniature radiography is necessary for correct interpretation, and the latter requires the highest radiological skill. The making-up of compromise apparatus cannot be too strongly condemned and would bring the method into disrepute."

The Mass Radiography Subcommittee of the Minister of Health's Standing Advisory Committee on Tuberculosis, in its report on the working of a mass radiography unit, said: "When mass miniature radiography is to be undertaken on a large scale, trustworthy and comparable results can be secured only with the use of a carefully designed standard apparatus."

In accordance with these authoritative views the Government has made certain that the standard apparatus which it has arranged to be manufactured, and supplied to selected local authorities, is of the highest standard and able to meet the much greater stresses to which such a unit is subject compared with ordinary x-ray machines, and so far as possible immune from mechanical breakdowns. Some breakdowns must occasionally occur, but those can be speedily dealt with by the operational teams specially trained by the Ministry of Health. This minimizes delay and consequent disturbance of production or routine when the unit is working in factories or offices.

Present experience has confirmed the soundness of the expert advice quoted. Any departure from the system by which the civilian population is examined by the standard apparatus and the methods laid down in the Advisory Committee's report on the working of a mass radiography unit must be strongly deprecated.

It is important to realize that mass radiography has not made the diagnosis of pulmonary tuberculosis easier; on the contrary, the method is bringing to light many symptomless minimal cases. Numbers of these recover spontaneously without treatment, and the prognosis in any given case can only be assessed by most careful clinical investigation and periodical supervision.

As a diagnosis of tuberculosis may involve change or loss of work for the individual, and may also prejudice his prospect in pension or life assurance schemes, it is essential that such a diagnosis, especially in minimal cases, should be undertaken only by those fully expert in tuberculosis, and with all the resources of up-to-date diagnostic procedures at their disposal. Full provision for this is made in the national scheme operated by the larger local health authorities as part of their tuberculosis service on the standardized lines recognized and recommended by the Ministry of Health and the Department of Health for Scotland.

There is another important consideration. The Government's mass radiography scheme includes arrangements for collecting far more information on the incidence of tuberculosis than has ever been available before. This will be of the greatest value in the campaign against this disease. The collection of this new evidence in the fullest measure can only be assured through a uniform scheme and a standardized system of records. Mass radiography activities carried out independently of the national scheme, and by other than standard apparatus and methods, cannot help this object and might, indeed, seriously prejudice it.

Ministry of Health,

Aug. 24, 1944.

## Correspondence

## Wound Fractures in Plaster-of-Paris

SIR.—As regional surgical adviser of a Ministry of Health Region I have been very much struck, when going round the surgical wards of E.M.S. hospitals to see the casualties arriving from Normandy, by an anxiety which is universal among surgeons in charge of cases of limb compound fractures sealed up in plaster-of-Paris. Most of these patients retain their original plaster covering on admission. The surgeon often hesitates to disturb a plaster, even when there is a suspicion that a wound may be going wrong, for it is felt that if the plaster is removed, the bone ends may not be replaced in such a good position, and a local removal of a plaster casing is not practicable. The surgeons have expressed to me their feeling that, if only they had free access to the wound, local medication with ? penicillin could be applied should events prove that it was indicated. Several have indicated, "If only I could get down to the wound, put in a tube, and perhaps introduce penicillin I would feel happier."

To obviate this anxiety could I commend to the notice of surgeons in our forward and base hospitals my routine practice in applying plaster-of-Paris bandages to any limb where there is a wound? Before the plaster is put on I fix a large pad of wool over the wound to indicate the exact site and the limits of the wound: the applied plaster hardens and a "blister" or "protuberance" is formed. If necessary this plaster blister can be removed in order to expose the wound area without disturbing the continuity of the plaster. The wound can then be dressed as required or have any form of local treatment.

Without reasonable facilities it may not be an easy matter to remove a plaster casing; to remove the "blister" or "protuberance" when indicated during transit of the patient on landing craft, hospital ship, ambulance, hospital train, etc., is an easy matter, for the blister can be removed by any form of saw. Such indications may be haemorrhage, gas gangrene, or other infective agencies.—I am, etc.,

Newcastle-upon-Tyne.

R. J. WILLAN.

## War Malaria and its Treatment

SIR.—Malaria is an invariable companion of war, though to many medical officers in the Forces, E.M.S. doctors, and civilian practitioners it constitutes a new problem, and one for which they are not prepared either by experience or by study. Hence there is at the present time some confusion, which has manifested in a spate of papers and a number of letters in your correspondence columns. As in the last great war, there is a tendency to regard it almost as a new disease.

Subtertian (or malignant) and benign tertian malaria are really two entirely different entities, distinguished from one another not only by the morphological peculiarities of the parasites, but by their life-history, pathological and biochemical changes, clinical course, and reactions to treatments.

The subtertian (*Plasmodium falciparum*) is more a tropical and subtropical parasite, requiring a higher degree of temperature to complete its development, in the mosquito. The clinical pictures which it may evoke are extremely varied, and depend in their severity on the immunity of the patient to the infection. In the immune African, for instance, an attack of subtertian malaria is usually a trivial affair, but in the non-immune and therefore susceptible British and American soldiers and sailors it may be extremely severe. Cerebral cases are by no means infrequent, and the many complications include blackwater fever. In subtertian malaria the typical "ague fit" of the textbooks is usually absent, so that this fever may mimic many other diseases, thereby providing a trap for the unwary. There are other characteristics, such as the tendency to spontaneous recovery, more rapid development of immunity and therefore a lessened tendency to relapse, especially in temperate climates, and the more immediate effectiveness of quinine and mepacrine. The life-span of the parasites of any individual infection is comparatively short, lasting from nine months to one year. Enlargement of the spleen is not usually demonstrable in primary infections. Benign tertian malaria, on the other hand, is found throughout the Tropics and subtropics, and has an extensive range in temperate zones. It is therefore the predominant form of infection in the Mediterranean area and N. Africa, and is especially common in S. Italy and Sicily; and, as has been abundantly proved in this war, it is by no

years exceptional in the Congo and in W. Africa, where it was formerly thought to be rare.

*P. vivax* seldom, if ever, produces alarming symptoms or causes death. From the military point of view its importance lies in its nuisance value, apparent resistance in wartime to textbook treatment, and its great liability to relapse again and again. In those primary infections which are now occurring in soldiers returning from the Mediterranean the latent period may be prolonged to three months, or even as long as one year, till the malaria declares itself. The degree of anaemia produced is slight, but the splenic enlargement is usually more marked than in the subtertian, while the general health between relapses is good. In civil life relapses are regarded merely as a temporary inconvenience and hardly any justification for prolonged stay in hospital. Benign tertian certainly possesses a tendency to seasonal recurrence, and European infections are liable to relapse in spring, early summer, and autumn. This parasite is particularly persistent, and may survive in the body and produce relapses (outside the endemic area) for two to three years. Cerebral and other severe syndromes are unknown, and although the parasites disappear from the peripheral blood with quinine treatment, this drug does not entirely extirpate them, so that in heavily infected individuals these disappointing relapses are apt to occur. I have for more than ten years thought and taught that mepacrine (mepron) possesses little of the virtue in the treatment of benign tertian which it undoubtedly has in subtertian.

As the treatment of malaria is again, as under similar circumstances a quarter of a century ago, being severely criticized, what, then, is the best course to pursue? We can dismiss subtertian malaria, as it presents no real therapeutic problem, being amenable to quinine and mepacrine. Indeed, the latter may be considered specific for *P. falciparum*. Pamaquin (plasmoquine) to my mind has no place in the treatment of the average subtertian case.

In benign tertian malaria the parasites disappear from the blood using quinine treatment if the drug is being absorbed. But when parasitic relapses occur during adequate quinine therapy I feel convinced either that the patient is not taking his quinine or that it is being given in an insoluble form, which has been shown to occur in the case of hard sugar-coated tablets. In these instances the Tangier reaction should be employed to prove that this is so.

From the clinical angle the therapeutic action of quinine is more effective by injection, and this method certainly puts an end to the ever for the time being. At present there exists some prejudice against intramuscular quinine. It is argued that the injections are painful, cause muscular necrosis, and may even be dangerous. It may well be that some of the bad results which occurred in the last war were due to abuse of this method and the acidity of the quinine preparation. When in a neutral isotonic solution of pH 7.2, 5 in solvachin, the injections are practically painless and not followed by ascertainable local reaction. A daily course of injections (6 or more) serves to control otherwise refractory infections, and to some extent to prevent relapses. It is necessary to continue with small doses of quinine by the mouth—10 to 15 gr. daily—for three weeks or longer. I certainly believe that small doses of pamaquin—0.04 g. daily—in addition to quinine, also aid in preventing relapses. This line of treatment is effective in most peacetime cases in this country. The official course of quinine (30 gr. daily) for two days, mepacrine (0.3 g.) for five days, followed by pamaquin (0.03 g. daily) for a similar period, appears to be inadequate. In addition to drug treatment there is the general nutrition to be attended to. Exertion, exposure, and fatigue undoubtedly predispose to relapse. Though this is well known, these three factors cannot be avoided, but as the malaria-infected Mediterranean is left behind it is safe to predict that less will be heard of benign tertian malaria or of relapses in soldiers returning to this country.

Your columns have recently contained much information about cerebral malaria. The well-documented case of I. B. Sneddon (1943) provided a basis for discussion. There the correct diagnosis was made and the case treated primarily on approved lines; but death was probably due, as had been frequently described, to subcortical haemorrhages. It may well be that retinal haemorrhages as disclosed by ophthalmoscopy may prove to be an indication of what is taking place inside the brain. There is also inadequate information on the cerebrospinal fluid in cerebral malaria, which may afford but little indication of the extent of the cerebral lesion. Usually it is found to be under pressure, and a pleocytosis has been noted.

J. M. Rogan (1944) has done a distinct service in formulating precise instructions for intravenous quinine, as regards both initial dosage and subsequent therapy. In the dozen cases of cerebral malaria that I have treated in this country during the last three years not more than 20 gr. of quinine dihydrochloride was necessary to restore the patients to full consciousness; but during the last war I saw fatal results from more massive initial doses of intravenous quinine (i.e., 30 gr.), and I feel

certain that it is sound to lay stress on the importance of the speed factor (2–4 minutes per grain). Intravenous pentothal, as advised by J. A. Gillett (1944), is certainly good treatment in cases which exhibit signs of cerebral irritation. Prof. W. I. Gerrard (1944) praises intramuscular atabrin (mepacrine) in pernicious malaria; but there is some reason to believe that in cerebral malaria it does not act as quickly on the parasites as does quinine, for I have had experience of one case of malarial coma from W. Africa which was quite unaffected by injection of atabrin musonate (0.3 gr.) but responded instantly to intravenous quinine dihydrochloride. Again, intramuscular atabrin may occasionally produce abscesses, and F. Hawking (1944) has recently shown that injection of therapeutic doses produces necrosis of the tissues, as with quinine, around the site.

It is surprising to read of Dr. Fenton-Russell's dread of psychological disturbances and the need for psychological treatment in all cases of cerebral malaria. It is true that abnormal mental states may ensue as the result of all forms of malaria, but it still remains a surprising fact how little cerebral disturbance is produced on recovery from cerebral malaria. Usually recovery, mental and physical, is complete. His memory does not serve him aright in suggesting that the quartan parasite may be responsible for cerebral complications. This misconception may have been based on the morphology of the parasite, as developing trophozoites of *P. falciparum* closely resemble those of *P. malariae*.—I am, etc.,

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#### Haemolytic Streptococci and Scarlet Fever

SIR,—Describing an "explosive" outbreak of tonsillitis due to *Str. pyogenes* in your issue of Aug. 26 (p. 275), Fl. L. eut. Wilson "suggests that haemolytic streptococci belonging to subtype 9 play no part in the causation of scarlet fever." This generalization is based on rather thin premises. I can assure Fl. Lieut. Wilson that, while *Str. pyogenes* Type 9 is not one of the types commonly associated with scarlet fever in this country at present, it can give rise to the complete clinical picture of the disease. I have isolated from the throats of scarlet fever patients in London in the acute stage of illness haemolytic streptococci belonging to every one of the Griffith Types 1 to 30 except Type 18 and those not belonging to Group A (Types 7, 16, 20, and 21). Some of the types, such as Type 10 (Dochez) and Type 26, are extremely rarely met with in this country as a cause of either scarlet fever or tonsillitis, while others, such as Types 5, 13, 19, 23, 24, and 26, are uncommon. A table of the distribution of serological types among haemolytic streptococci from cases of scarlet fever in various countries of the world, including England up to 1938, is given by F. F. Schwenker *et al.* (*Amer. J. Hyg.*, 1943, 38, 27), and this shows clearly that all the Griffith types belonging to Group A Lancefield have been isolated from cases of scarlet fever.

The clinical picture of scarlet fever is in the main the resultant of two opposite and variable factors—the ability of the infecting strain to produce erythrogenic toxin and the presence of antitoxin in the system of the person attacked. *Str. pyogenes* Type 1 is one of the types most commonly found in this country as a cause of scarlet fever, and is not infrequently associated with local epidemic prevalence; it usually produces a potent erythrogenic toxin, but my late colleague, Dr. F. Griffith, and I have isolated from the throats of cases of acute tonsillitis strains of Type 1 which were incapable of producing erythrogenic toxin, and therefore unable to produce the rash of scarlet fever in susceptible subjects. The other factors, apart from erythrogenic toxin and antitoxin, influencing infection with *Str. pyogenes* are what, for lack of better knowledge, we call the invasive power of the organism and the resistance of the individual. The permutations and combinations of these factors, together with the portal of entry of infection, afford a rational explanation of the protean manifestations of infection with *Str. pyogenes*.

There is a school of thought which believes that the erythrogenic toxins produced by different types of *Str. pyogenes* differ qualitatively as well as quantitatively, but that they may show a considerable degree of antigenic overlap. Some support for this view has been adduced, and some years ago Julia Coffey in the U.S.A. claimed to have obtained erythrogenic toxins from four types of *Str. pyogenes*, which when combined covered the whole known gamut of toxin antigenicity; the Dochez strain (Type 10) and the Dick strain (Type 3) of *Str. pyogenes*, in common use for the production of Dick test toxin, are believed to possess a wide antigenic range.

I wonder why Fl. Lieut. Wilson uses the term "subtype" as distinct from "type." We know now that certain strains may possess specific antigens in common, such as Types 4 and 24, and Types 8 and 25, but we do not yet call them subtypes. *Str. pyogenes* Type 9 is a Group A (Lancefield) Type 9 (Griffith) haemolytic streptococcus. The differentiation of the antigens of Group A haemolytic streptococci is still in the melting-pot, and it is wise at present to keep the nomenclature as simple as possible.—I am, etc.,

London, S.W.1.

V. D. ALLISON.

### Surgery in the Field

SIR.—General Mitchiner in his "Thoughts on Four Years of War Surgery" (July 8, p. 37) says that he "cannot help feeling that . . . progress is not so great as one would like to believe; especially in the prevention and control of sepsis; for the number of limbless patients landing from the Middle East and North Africa is by no means negligible." I would like to point out that sepsis is by no means the main reason for amputation. A number of amputations have been done for the specialized infection of gas gangrene, and a few for pyogenic infections of the knee-joint and the joints of the foot and ankle which were endangering the life of the patient. The main indications for amputation are gross lesions of main nerves and blood vessels, and in many instances shattering of the feet and legs from mine injuries.

Having seen surgery in France (1939-40), North Africa, Sicily, and Italy, I can say that I have never met the suggestions of "halting or feeling complacent" to which General Mitchiner refers. On the other hand, the surgeons in the field have been most enthusiastic in investigating and trying out new methods, new drugs, or new combinations of drugs. Research and investigation have been and are being carried out under the most difficult conditions. Also the question of early and adequate treatment for the lightly wounded has received much attention. Thousands of secondary and delayed primary sutures have been carried out, and this is a matter which is receiving special attention at the present time.

The investigations of the penicillin team, the shock team, the establishment of centres for vascular injuries, and the work done by the M.R.C. teams on burns and casualties in armoured vehicles, are all proofs of the continued efforts for the improvement of the condition of the wounded.—I am, etc.,

London, S.W.1

J. M. WEDDELL.

### Riboflavin and Allied Deficiencies

SIR.—I have read with interest the abridged Lumleian Lectures in the *Journal* of July 22 and 29. Dr. Stannus describes a syndrome of epithelial and nervous lesions, referring to his early observations on pellagra in Nyasaland. He considers his observations important, saying it was the first time attention had been drawn to this syndrome, due to a dietetic deficiency dissociated from pellagra. Strachan (1897) did not mention pellagra and described a similar syndrome. He treated his patients for malaria, but found they all required a liberal diet. Stannus (1913) showed that maize was not a causative factor of the syndrome but gave no treatment. Scott (1918) described the syndrome but found contraindications to its being a new deficiency disease.

Stannus, in his lectures, gives credit to Fitzgerald Moore for "recognizing that the disease which was rendering thousands of natives nearly blind was due to a dietetic deficiency." I published a paper (1928) entitled "Diseases due to A and B Avitaminosis in Sierra Leone" in which I described the

epithelial and nervous lesions of the syndrome, and while dealing with defective vision recorded that "in the case of school children it is usually failure of vision that causes the child to be brought for treatment, a symptom which is so amenable to treatment if detected early enough," and went on to say "The essential treatment of the disease is to supply the vitamin deficiency . . . cod-liver oil and marmite were used to supplement the diet . . . marmite was used as a source of vitamin B." Fitzgerald Moore (1934), who so far had only described the epithelial lesions of the syndrome while paying particular attention to the defective vision, wrote: "Wright introduced in Sierra Leone a treatment for his cases before I did the same in Nigeria."

Stannus, in these published Lumleian Lectures, gives a table showing "Manifestations of the syndrome according to various authors": in this he omits my record of 'ulval affection and conjunctivitis. In the manifestations of his own description of the syndrome he includes visual defect, which is a most important symptom. A perusal of Stannus's (1913) paper shows only five patients with vision defect out of 131—surely insufficient to warrant its inclusion in his syndrome. On the other hand he describes in his early work a skin condition complicating the syndrome 19 times among the 131 cases. His description of this skin complication, given in 1911 when he saw it 10 times among 40 cases, is a perfect picture of dermal evidence of vitamin A lack. This skin condition should be recorded as a part of the syndrome he described. It seems likely, in view of the diet these prisoner patients received, that Stannus was dealing with a deficiency state due to lack of both vitamins A and B. Although red palm oil (rich in carotene) and ground nuts (rich in riboflavin) are found in abundance in some tropical areas, their distribution is limited, and they are not necessarily prepared properly or eaten in adequate quantities. It is noteworthy that riboflavin, although widely distributed in food, is found abundantly in protective foods—milk, cheese, eggs, and green vegetables. It follows that in some areas the double deficiency is liable to arise. It should further be noted that both vitamin A and riboflavin are concerned with the maintenance of healthy epithelium; a lack of either may result in keratinization, but the tendency to inflammation and ulceration is less marked in vitamin A lack.

Stannus (1930), in a paper which was a lengthy criticism of my article (1928), wrote that he had very little hesitation in calling the disease I described pellagra. I have never agreed that it is pellagra, and defined the condition (1930) as "a disease distinct from pellagra and beriberi, characterized by lesions of the mucous membranes, and skin especially evident at the mucocutaneous junctions, associated with or followed by disorders of the nervous system and curable by the addition of cod-liver oil and yeast to the diet."—I am, etc.,

E. JENNER WRIGHT.

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### Scurvy

SIR.—In their comprehensive survey of 53 cases of scurvy seen in Edinburgh between 1937 and 1944 McMillan and Inglis (Aug. 19, p. 233) found a peak incidence in 1941-2. My own experience of the incidence of scurvy in London differs. Working in L.C.C. hospitals and looking out for scurvy I saw only one case of frank scurvy a year from 1938 to 1942. But in 1943 I saw 7 personal cases (at one hospital), and in 1944 so far I have seen 9 cases. All the recent patients have been old-age pensioners. Difficulties in shopping and worry over the fate of relations have led to self-neglect, and made it easier for the pensioners to become scorbutic. None the less, most pensioners seen here show no evidence of scurvy, either clinically or on investigation of ascorbic acid levels. Prunty and Vass (*Lancet*, 1944, 1, 180) found no increase in the incidence of scurvy in London up to spring, 1943. It might be of interest and value to find the reason for the differing peak incidence.—I am, etc.,

London, E.3.

ELI DAVIS.

### Bleeding Gums and Scurvy

SIR.—The clinical observations and arguments of Drs. Stamm, Macrae, and Yudkin (Aug. 19, p. 239) are doubtless of the greatest value, but they do not appear to be able to understand plain English. Thus on page 104 of *A Treatise of the Scurvy* Lind writes: "The first remark to make upon this disease is that whatever former complaint the patient has had, whatever present disorder he labours under, upon being afflicted with the scurvy his old complaints are renewed and his present rendered worse." On page 101, writing of the symptoms, Lind says, "but a diversity is sometimes observed in the order of their appearance, thus when a person has had preceding fever or tedious fit of sickness by which he has been much exhausted, the gums for the most part are first affected." On page 275, describing scurvy in Hampshire, Lind says, "The gums of several bled, being sore and spongy, without their having any other symptom of the scurvy. One person was greatly alarmed with a spitting of the blood for three days, which I found to be no more than scurvy affecting his gums." On page 242 Mr. Poupert describes the post-mortem examinations of scorbutic bodies. "We have seen several who without pain dropped down dead. They had no apparent sickness, only their gums were ulcerated, without any spots or hardness on their skin: yet we found their muscles were mortified and stuffed with a black corrupted blood."

Besides misquoting Lind, Drs. Stamm, Macrae, and Yudkin mention my name. I wish they would read a little more carefully the paper to which they refer. The term "bleeding gums" can hardly be applied to the condition described therein, and Roff and I made no inferences regarding "bleeding gums." Moreover, the subjects consisted of boys drawn from the depressed industrial areas of 1937. Their meagre vitamin C intake of 10 to 15 mg. per boy daily was rendered even more precarious by the fact that they were overcrowded together in a damp, cold climate and exposed to a virulent streptococcal infection. This is a state of affairs not comparable to the conditions of Drs. Stamm, Macrae, and Yudkin's experiment, and they should consider these differences before indulging in theories as to the explanation of the "apparent success of ascorbic acid."

There are many causes of gingivitis, and vitamin C will not help this condition unless the dietetic intake has been insufficient, when it acts by accelerating healing. I should say that an intake varying from 16.8 mg. to 26.8 mg. per day was probably sufficient for a healthy adult male not living in exposed conditions. Unfortunately some individuals in this country get less. In assessing the adequacy of a diet it must also be considered that individuals vary greatly in their requirements of vitamin C, and that differing conditions alter the requirements of any one individual. Thus all interested in vitamin C should first of all study Lind's classic work. They will gain more from it than from the consideration of Crandon's experiment.

The survey of scurvy by Drs. McMillan and Inglis (Aug. 19, p. 233) is valuable and timely, drawing attention as it does to the usefulness of the Ministry of Food's propaganda. I hope they will forgive me if I recommend them to read Lind, too. They will find that pain in the back is not such an unusual symptom of scurvy as they believe.—I am, etc.,

A. J. GLAZEBROOK.

Edinburgh

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### Episiotomy

SIR.—I think it is a great pity that Dr. H. S. Gaskell was not told by the lecturer at the postgraduate course which he attended in 1939 of the method and usefulness of suturing a torn perineum (or episiotomy) under local anaesthesia. It is obvious that when the patient is under a general anaesthetic there should be no hesitation in inserting the necessary sutures while she is still anaesthetized and before the placenta is expelled. Presumably Dr. Gaskell has on occasions been called by the district nurse to repair a torn perineum, and because he would never dream of giving a woman chloroform after the birth for the sole purpose of stitching her perineum,

he relies on a skilled hand and a sharp needle as his anaesthetics. My sympathies are with the unfortunate woman, who has just completed several hours of labour, a condition hardly to be compared with the insertion of three deep sutures in a cut wrist of a "he-man."

I see no objection to giving a little chloroform—I and many others have given it hundreds of times—but in the last few years I have used a local anaesthetic. The technique is easy, and it can be performed in the dirtiest and darkest cottage, even with the light of a candle, and the patient's gratitude is the answer to its painless completion.

I have not had forty years of practice yet, but have attended a few thousand confinements both in practice and in hospital during the past twenty-odd years, and I still use chloroform as my anaesthetic of choice in private houses and nursing homes because it is useful and convenient, though dangerous.

Like Dr. Gaskell, many of the pundits (but not the majority) give pitocin in certain cases of uterine inertia. I don't like it, won't do it, and won't allow it to be done, even in hospital. I note also that Dr. Gaskell gives ergometrine sometimes before expulsion and sometimes after expulsion of the placenta. He says by so doing he has abolished the boggy of the post-partum haemorrhage. I wish I could believe this, even though I strongly disagree with the practice of giving pitocin or ergometrine before the placenta is expelled.

An episiotomy is indicated in many first confinements, particularly when forceps are applied, but to advise episiotomy in all primiparae is nonsense.—I am, etc.,

D. J. P. O'MEARA,

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### Cause and Treatment of Sinusitis

SIR.—In the *Journal* of March 25 (p. 431) is a report of a discussion at the Royal Society of Medicine on sinus trouble in children. To me, as a specialist in diseases of the ear, nose, and throat, the subject of "sinus disease" is an increasing enigma. In my early days as a specialist I accepted the term "sinusitis" and the theories of infection, lack of ventilation, etc., as being the cause thereof. I regarded the disease as a local condition with secondary effects upon the health of the patient, and surgical treatment appeared to be the rational procedure.

Experience over the years, observation of my own patients and the patients of others, and particularly the study of cases at a public hospital for sick children and at military hospitals, have developed a firm conviction that sinus disease is not a disease *sui generis*, it is a local manifestation of a general biochemical abnormality. Bronchiectasis is another manifestation or result of the same biochemical disorder. In the majority of cases of sinus disease and bronchial disease early symptoms are not observed, and possibly many cases resolve without being recognized and, of course, without special treatment. On the other hand, many become the subject of subsequent infection, and we have obvious bronchiectasis and genuine sinusitis. Many cases of sinus disease progress to an extreme degree without the obvious presence of pus. Polypi usually develop without the previous appearance of pus—that is to say, in the absence of frank infection. There are probably other manifestations of this constitutional disorder—such, perhaps, as migraine, vertigo—and my observations have led me to the conclusion that many psychological conditions, etc., are, in fact, the outcome of it. It is responsible for the phenomena of allergy. I do not know whether it is as common in Europe and other countries as it is in Australia.

In the discussion referred to Mr. S. E. Birdsall is reported as stating that "cure of sinusitis in children depended only on recognition of the disease. Ephedrine was very often successful." I am afraid he is a superoptimist. In all my years I have never seen a cure effected by ephedrine; I have seen temporary alleviation of symptoms, especially in the acute exacerbations, but never a cure of the chronic sinus disease by ephedrine or any similar preparation. Patience and perseverance in advice and guidance as to hygiene, food, etc., and appropriate surgical measures are, of course, sometimes followed by satisfactory results; proof of the satisfactory end-results is the acceptance of some of these former patients as members of air-crew in the R.A.A.F. and R.A.F.

At present I am inclined to the view that this class of disease is essentially dietary in origin. The dietary deficiency is not simple and goes back for generations. There is a definite familial character about these complaints. It would appear likely that our vaunted civilization is responsible for the destruction of food values. It is often stated that sinus disease seen in Australia differs much from that met with in the British Isles and is much more prevalent. One colleague suggests as a contributing cause of this difference the fact that a fish diet is much commoner in the British Isles than in Australia.

This brings me a step further. As honorary E.N.T. specialist to a hospital for sick children I have been faced with the great prevalence of "sinus disease" in young children. I have seen so frequently the hopeless results after ephedrine, etc., and surgical measures, the common disappointment following the surgically perfect removal of tonsils and adenoids, but my attention has been drawn to the fact that the parents of some children who had been kept on cod-liver oil and iron for a year or more were very pleased with the children's improvement. For many years cod-liver oil has had a reputation in "chests and colds."

I developed the idea that this "sinus disease" was connected with a deficiency of vitamin A, and for years have had an impression that it was somehow related to faulty calcium metabolism. For some nine months now I have been using an Australian preparation of vitamins A and D in comparatively large doses from 50,000 to 100,000 international units of A and 6,000 to 15,000 international units of D daily. When infection is obviously present I have used an aqueous solution of acriflavine (1 in 1,500) for nasal instillation. In addition to its strong antiseptic action acriflavine appears to have a mild and prolonged astringent action on the "sodden" mucosa. Occasional antral lavages are done in special cases, and very rarely have I been reduced to more radical surgery. In spite of some unsatisfactory results the general impression I have gained is that this treatment is a distinct advance; some of the results have been so remarkable that I can hardly believe the evidence actually before me. Two such cases I have recently reported to the *Medical Journal of Australia*, otherwise they would have been included in this statement. In patients in whom this vitamin therapy appears to do good locally there is also a marked general improvement, cough is diminished, the patient's colour is improved, and there is general subjective and objective evidence of well-being.—I am, etc.,

Brisbane.

ERNEST CULPIN.

### Observation in the Student's Training

SIR,—Even in times of paper shortage it may be permissible to give thanks. Dr. Ff. Roberts deserves our thanks. For many years I have taught postgraduate medical students the elements of statistical methods—namely, the calculation of death rates, standard deviations, coefficients of correlation, etc.—and at the end of the course there is a practical examination. It is quite common for a student to produce an answer which is arithmetically impossible—for instance, a coefficient of correlation greater than unity; or factually impossible—for instance, a death rate surpassing Goebbels's estimate of the effects of bombing London, or one wildly optimistic. His common sense is paralysed. He thinks, usually rightly, that he has applied the correct process and does not check his arithmetic, not being moved by the absurdity of the result.

Dr. Roberts's remedy is, he thinks, revolutionary; I should go further. I believe that if a young man or woman can prove that he or she is a trained and accurate observer in *any* field of natural knowledge he or she could be safely admitted to study medicine without any preclinical teaching at all. The technical knowledge such a student would not have can be acquired easily enough if he is a trained observer. That great naturalist, Arthur William Bacot, had never attended a course in biology or even possessed a modern microscope before, in middle life, he came to the Lister Institute. He was paid and deserved this compliment by an expert: "Bacot never sees what isn't there." Not many young people are Bacots, but there are a good many who *are* trained, self-trained, observers, who do not identify a flying bird or a moth on a tree either by

guessing or by inaccurate reminiscence of a description in book. These are the salt of the earth; I think they would make good statisticians and even better clinicians.—I am, etc

Loughton.

MAJOR GREENWOOD.

SIR,—The article by Dr. Ff. Roberts (Aug. 26, p. 284) on observation in the student's training I found to be quite entertaining as an instance of the popular fallacy "seeing is believing." His remark about "minds unclouded by erudition" making "shrewd observations" is an example of what one may term the positive side of the fallacy. Its negative aspect is illustrated by his reference to the "mental costiveness" of civilized youth exterminating his "rudimentary powers of observation." The conclusion which Dr. Roberts appears to invite us to make is that the untutored mind sees things as they are, while the vision of the erudite person tends to be blurred and confused.

Dr. Roberts entertains us with the story of a young practitioner who sent him a case of fractured scaphoid which he had mistaken for a Colles's fracture—thinking it had some resemblance to a dinner-fork. Truly shocking, but one wonders what "the highly developed powers of observation possessed by the primitive man" of Dr. Roberts's imagination would have made of it! It may be presumed that he at any rate would have no obsession about "dinner-fork" deformities.

Yet with all his drawbacks I should prefer to rely on the judgment of the civilized youth, and what he wants is more not less, civilizing to improve his thinking powers, and more erudition to clear his mind of its primitive fog. Unaided vision however acute or painstaking, is not enough. There were many observant naturalists before Darwin, but they observed their facts with less reflection. The accumulation of undigested fact is our present curse, which, it seems to me, would be only intensified by turning medical education, as Dr. Roberts suggests, into "a naturalistic study." Not more facts, however, but better theorizing; a little less stress on the importance of observation and more on sound reasoning appears to me our chief need in education. Believing without seeing may indeed lead us into error, but seeing without some rational belief lead us nowhere.

In the excellent quotation with which Dr. Roberts closes his communication it is significant to note that Dickens, when describing a "fine fellow," gives two points to reflection and erudition and one only to observation.—I am, etc.,

Kingswood, Bristol.

P. T. MACDONALD.

### Psychological Medicine and the Family Doctor

SIR,—Air Cdre. Gillespie's lecture (Aug. 26, p. 263) is full of the balanced judgment and shrewd common sense which all who know him have come to expect. I was, however, a little disappointed to find the balance rather unfairly weighted in one particular, although I know from many conversations that this must have been accidental. I refer to his remarks about operations performed in the mistaken belief that an organic cause exists when the condition is really psychogenic. These such cases occur none would deny, although, as Air Cdre. Gillespie states, the number is smaller than is sometimes supposed.

But what of the cases where an organic condition really is present and where absence of adequate physical examination or mistaken psychological enthusiasm leads to neglect of a perform what may be a life-saving operation? Patients with "broken hearts, angry fathers, sexual guilt, or depression of spirits" may still develop an appendicular abscess or carcinoma of the colon! Air Cdre. Gillespie's memory of the patient whose innocent appendix was removed is lived by the fact that he survived to "flaunt his gawdy dressing-gown before his nurses." My memory of a patient who underwent psychotherapy until the third day of faecal vomiting from a carcinoma coli has the less colourful but more final background of a coffin.

By all means let us recognize the importance of psychogenic manifestations, but at the same time let us preserve a balance, and remember not only the importance of the organic lesion but also the need to recognize it even when camouflaged among psychopathic foliage.—I am, etc.,

London, W.1.

E. G. SLESINGER.



### The Coroner's Post-mortem

SIR—The epidemic of "planning" is spreading rapidly now the coroners, who have not shown any signs of desiring a change, are to be prevented with a plan. But the suggestions contained in the letter of Dr H B May and his colleagues (Aug 26, p 288) reveal no indication of any real comprehension of the scope of medico-legal work. There is no reason for assuming that the novelty of a proposal, even of one made in the year 1944, is any guarantee of its value. *Vivere fortes ante Agamemnona*.

The writers of the letter say, "We consider that coroners' post mortems should be carried out by the hospital pathologist in the area and not by general practitioners, but such pathologists should have had adequate experience and training in morbid anatomy and medico-legal work. Where a pathologist is carrying out coroner's work for a large area it will often be preferable for him to be wholly employed on this work." We are thus left to suppose that the choice lies between the hospital pathologist and the general practitioner, whereas, in fact, the coroner can call on any medical practitioner he thinks fit. This has many advantages of which the most obvious is that he can call on an independent pathologist to perform the necropsy in any case in which the relatives make a complaint against the hospital.

Most of the work done for coroners involves the simplest kind of morbid anatomy. Only in a very small proportion of cases is there any difficulty in determining the cause of death, and in a number at least equally small is the work related to the complexities of the criminal law. But many cases with which the coroner deals are of a kind to lead to litigation later, usually under the Workmen's Compensation Acts. Are we to believe, as Dr May and his friends imply, that the morbid anatomist even if he has a considerable experience of medico-legal work, is the best adviser in such matters? If I may be permitted to be as dogmatic as the writers of the letter (and *Quod gratis asseritur gratis negatur*), I would say that he is obviously not.

A physician with a sound knowledge of pathology and experience of medico-legal work is commonly admitted to be the best person to elucidate the relationship between injury or disease and subsequent disability. And if the subsequent disability leads to death, there is no reason for supposing that the pure morbid anatomist would be the person most competent to investigate the chain of events leading to this termination. The Act of 1926 gave the coroners all the powers needed for employing the man they think most suitable, and to suggest that they are incapable of choosing aright without coercion is a baseless aspersion on their integrity or sense or on both. Or is it perhaps possible that the new suggestions are really intended to diminish the freedom of coroners in a world in which liberty is becoming *demode*?

I know that some coroners, misled by the fashion for specialism, employ only pathologists who devote their whole time to coroners' work, but that they are ill advised in doing so is surely patent. And coercion is not needed to make them see the error of their ways: they are as capable or seeing the point of an argument as are morbid anatomists. If, then, they come to agree with the view that the best plan is to employ a man with a rather wider outlook than that of many morbid anatomists they will doubtless do so.

I shall presumably suffer the same fate as Drs Heaney, Turner and Haler because it will be said that my remarks are "purely destructive criticism." I plead guilty, but would say that when proposals have nothing to commend them, criticism of them ought to be destructive—I am, etc.

London W 1

A PINEY

### Specialism

SIR—We learn that when Herodotus visited Egypt 300 years B.C. he found that country full of physicians, all specialists. If the public had its way that would soon be true of the medical profession here. The public, convinced of its own wisdom and inclined to ignore the teaching of the medical profession, might be advised to consider what bearing on the subject have the words of St Paul in his first epistle to the Corinthians. For as the body is one and hath many members,

and all the members of that one body, being members, are one body . . . If the foot shall say, because I am not the hand I am not of the body, is it not therefore of the body? And the eye cannot say unto the hand, I have no need of thee."

In the memorandum on national health service issued by King Edward's Hospital Fund for London—a most concise and admirable memorandum—it is stated (p 5, para 8) "The present tendency to divide medicine into a number of isolated departments must be critically considered. The various parts and systems of the body are connected with one another; they are not separate entities, and symptoms arising in one part may be due to or associated with disease in another. Medicine, like the individual, must be considered as a whole, and undue systematic segregation of patients according to their various diseases and conditions is to be avoided."

This point of view is probably accepted by the majority of thoughtful doctors, but nevertheless many excellent highly respected medical men and women are pressing for more specialization in their own particular fields of work—a very human failing of the expert apt to lay too much stress on the uncommon of which he sees far more than the average. The maternity service, industrial medicine, administration of anaesthetics—all these and an increasing number of other departments are to be staffed by specialists.

Undoubtedly in each of these departments specialists are necessary, but if medicine is to progress satisfactorily they should with the exception of the anaesthetist, act as consultants, and even in the case of anaesthetics more harm than good would come from restricting their administration to specialists. Obviously the medical curriculum is at fault if it cannot produce general practitioners competent to deal satisfactorily with all the common forms of disease and such other conditions as call for the presence of a doctor—such as childbirth. But it is essential that the general practitioner should recognize the limitations of his knowledge in the many fields his work necessarily ranges over and be ready to call in the consultant as soon as those limitations are neared. To produce a competent general practitioner the curriculum needs drastically pruning, so that important branches may develop satisfactorily and produce this much needed fruit. The desired result would be more quickly attained if students would bear in mind the saying of Sir Robert Hutchison "No one is too good to be a general practitioner."

One weakness of the White Paper on a National Health Service is that it envisages the general practitioner as subordinate to the consultant and specialist. Such a position is not satisfactory to either doctor or patient. Consultants and specialists are doing essential work, but the first line of defence is held by the general practitioners. If the general practitioner service is at present unsatisfactory it must be improved, but this will not be done by making the best, represented by the specialist, the enemy of the good, the general practitioner—I am, etc.

London W 8

HAROLD H SANGUINETTI

### Service Medicine

SIR—As one who has been in addition to looking after my own private practice a "civilian medical practitioner" under contract in charge of an R.A.F. station since its inception over four years ago and also more of an administrator than a clinician in the last war perhaps my experience may be helpful.

I am in charge of two wards—five beds in one for R.A.F., three beds in the other for W.A.A.F. personnel with one corporal medical orderly (R.A.F.) and two W.A.A.F. medical orderlies. Officially patients are not allowed to remain in the wards for longer than 24 hours but unofficially one allows this when and where necessary. I take sick parade every morning inspect cookhouse etc. and advise the C.O. when necessary on hygiene. Further I have given lectures on first aid and V.D. and am on tap for any emergencies. It will be appreciated then that I am, to all intents and purposes an M.O. without uniform. I serve of course under the immediate supervision of the Wing M.O., but in some matters I am directly responsible to the S.M.O. (Group).

In my opinion the advantages of the R.A.F. Medical Service far outweigh those of civilian practice, and I am writing more from the point of view of the patient. (a) There is a complete



history sheet kept up to date since enlistment. (b) There is a plentiful supply of drugs; if there are any drugs which are neither held in stock nor at Wing H.Q. and for which one has a *penchant*, authority is given to obtain them by local purchase. (c) There are wards into which patients can be admitted for observation, investigation, and treatment. (d) Specialists are always available for any type of case, and, if urgent, appointments are expedited. (e) Paper work, to my mind the most irksome but very necessary part of the routine, is done by the medical orderlies, although this does not absolve one from ignorance of "orders." Here I think is the crux of the matter; the medical orderlies must know and do their part, and if they are efficient the medical branch of the station is efficient, and hence the medical service as a whole is efficient; it is up to the M.O. or C.M.P. to see that they are *au fait* with the regulations.

Maybe, under State insurance, if we doctors have someone to take off our shoulders the tedious writing, etc., which we have to do now in civil practice, we shall have more time to devote to the clinical aspect of medicine, as is definitely the case in Service medicine.—I am, etc.,

Norwich

P. B. CORBETT.

### Social Background of the Future Doctor

SIR,—The recent medical questionnaires provide some interesting social information. They permit an estimate of how far the various strata of our society contribute their sons and daughters to the profession of medicine; and these relative contributions can be compared with the proportions of these strata in the general population (as judged from the census returns). In the following table the grouped percentages show the social origins of medical students and of doctors, on the basis of the occupations of their fathers. For comparison the estimated percentage distribution of approximately the same occupational groups in the general male population is given.

Occupation	Fathers of Students <sup>1</sup>	Fathers of Doctors <sup>2</sup>	General Male Pop. (approx.) <sup>3</sup>	R.-G.'s Social Classes
Medicine Company director, higher professions, Civil Service higher grades, independent Salaried—clerical, salaried manager, teacher, proprietor, retail business, farmer	87	86	20	I and II
Skilled artisan, clerical—weekly wages, shop assistant, Civil Service lower grades Others—weekly wages, factory, transport, mining, etc.	6	5	80	III, IV and V
No reply	7	9	—	
	100%	100%	100%	

<sup>1</sup> B.M.S.A. inquiry, *Supplement*, Aug. 19, p. 40.

<sup>2</sup> B.M.S.A. inquiry, provisional figures, by courtesy of B.I.P.O.

<sup>3</sup> Registrar-General's Decennial Suppt., 1931, Pt. IIa. The figures are similar whether all males or husbands of married women are used.

Two conclusions emerge from this table. First, that roughly 20% of all families (the so-called upper and middle strata, including the professional classes) contribute between 80 and 90% of our doctors, while the remaining 80% or so of families (constituting what is often termed the working class and including most weekly wage-earners) contribute no more than about 5 or 6% of the profession. Secondly, that the proportional contribution of these two broad social groups in the present body of students is not materially different from that in the previous generations. Evidently we are very far from a position where we are recruiting into medicine all sections of the community proportionately. The Planning Committee of the Royal College of Physicians and the Goodenough Committee both stress the discriminating effects of financial disability in a long technical training. The former recommends free university education and the latter adequate grants throughout training, including maintenance provision. The Goodenough Committee considers that unsuitability should be the sole barrier to a medical career, and suggests that the newer scientific aptitude tests might assist in the selection. These are important and wise suggestions. In the post-war world surely no nation will be able to afford to neglect its intellectual resources by drawing

its doctors from a narrow and economically favoured section. On the contrary it will be necessary to develop the talent of every boy and girl, and give to each an equal opportunity, whether the father be professional man, manager, or manual worker.—I am, etc.,

London, W.1.

P. D'ARCY HART.

### Freedom to Publish

SIR,—In your note under the above heading in the *Journal* of Aug. 12 (p. 219) you speak of appealing to the large employing authority in the country to treat its medical staff reasonably, and you call upon practitioners to bring pressure to bear at all points to protect their freedom to publish. I think this moderate and apologetic tone, now so frequently employed by the profession over medico-political questions, greatly to be deprecated. Is it not time that we became very much more truculent and, in some directions, stated clearly what we will accept and what we will not accept from governing bodies and outside authorities generally, and by standing together get exactly what we want, becoming the hammer instead of the malleable metal for a change?—I am, etc.,

Cyril G. Eastwood,

Medical Officer of Health

Weston-super-Mare.

### Wooden German Bullets

SIR,—In the *Journal* of Feb. 6, 1943 (p. 170), I recorded the x-ray appearances of five types of bullets the German air force were loading in their machine-gun belts. By the courtesy of a Naval friend recently back from the fighting at Cherbourg I am able to show the x-ray appearances of a round of rifle ammunition with a wooden bullet instead of the customary metal variety. I am told that the Germans became harassed for ammunition at Cherbourg and resorted to the wooden bullet type of ammunition, which was found to be



effective up to about 100 yards. The present reproduction of a radiograph was made with the complete cartridge and bullet placed between a patient's leg and the film. The wooden bullet is practically invisible to x-rays. At a short range of 100 yards the wood breaks up on striking solid structures such as bone and the scattered fragments are not likely to be localized by radiological methods.—I am, etc.,

London, W.1.

NORMAN P. HENDERSON.

According to Raetig (*Dtsch. Militärarzt*, 1944, 9, 5) the erythrocyte sedimentation rate is remarkably low in typhus. In the first week of the disease it remains at the higher limits of normal and there after slowly rises. The low sedimentation rate is an important help for early diagnosis of typhus before the outbreak of the exanthem because in those diseases from which it should be differentiated the rate is high.

## Obituary

### SIR ARTHUR HURST

fellow pilgrim writes:

Although it was not my good fortune to know Arthur Hurst in e days of his greatest activity, I have had the privilege of his iendship now for a number of years. His was a rare and delight- l personality. His gifts, which were truly remarkable, he used sparingly and with unflagging energy in the advancement of medi- l knowledge, in teaching and inspiring others in "the research id study of the secrets of Nature by way of experiment," and, ain following the precepts of Harvey, in pronoting "mutual love id affection among physicians." Hurst had the internationalism f medicine much at heart, and in 1925 led a small company of ysicians on the first of a long series of annual pilgrimages to reign medical schools. On these occasions he was seen at his ist and happiest. An excellent linguist, he was familiar with the est Continental literature and the work of the best men. He was armily welcomed wherever he went and gave many lectures on his wn subject, using French or German with equal felicity. His llow pilgrims will long treasure the memory of these delightful sits under his leadership.

Hurst was no specialist, and his interests and many contributions o medical literature covered a wide range of subjects. Of gastro- ntology he was an acknowledged master with a world-wide repu- tion, and his original studies of intestinal function by means of idiology, his work on visceral sensation, and his conception of an leer diathesis, have laid the foundations of modern gastro-ntology. He was largely instrumental in founding in 1937 the Gastro- ntological Club of Great Britain and became its first president.

Great though his gifts were, and enduring as much of his work ill be, it was his courage, his fortitude in overcoming the adversi- es of physical handicap and ill-health, which endeared him most o those who knew him best. No complaint ever fell from his lips. e accepted his burden and made light of it, so that even the equent episodes of infirmity were taken for granted. They seemed o spur him to ever greater efforts, and like Wordsworth's happy arrior, he "turned his necessity to glorious gain." But it had been y too evident of late that his strength was slowly failing. The ening before his death he was one of a small group of younger en, and, though gravely handicapped, dominated the company, as as his wont, with incisive comment and argument in a discussion s to the most important advances in medicine during recent years. n the morrow he worked at an autobiography which he had long een writing, and the end came peacefully while he was engaged on his congenial task. Arthur Hurst died as he would have wished, t work, his fine intellect undiminished after a full life lived to much urpose. A great physician, a brilliant teacher, and a most lovable nan, his death will occasion widespread sorrow, his life deep hankfulness.

Dr. Alex. Patton writes:

May I add a humble tribute to the memory of a great genius? n a world where so many able teachers fail to transmit even ideas f value, William Osler and Arthur Hurst—heard once only across he years—remain as an abiding beacon of charm and lucidity. So ften a babel, and not only in Aesculapian counsel, the English anguage becomes in the hands of these rare spirits a beautiful arment to clothe refulgent thought.

The death of DOUGLAS ASHLEY MITCHELL, M.D.Lond., F.R.C.S.Ed., as the result of a motor collision is little short f disastrous to Bath and district. He had worked as specialist ystetrician and gynaecologist since 1930, when a special ystacological and obstetric department was formed in the Royal United Hospital largely as the result of his enterprise and enthusiasm. Two years later arrangements were made for the city maternity hospital service to be centred in the Royal United Hospital under the general direction of Mitchell and his staff. During the last war Douglas Mitchell served with the Royal Navy, retiring with the rank of lieutenant-commander, and then took up general practice at Midsomer Norton. He soon found his special interest and moved to Bath. A member of the B.M.A. since 1911, he served as chairman of the Bath Division during 1936-7. He was elected to Membership of the Royal College of Obstetricians and Gynaecologists in 1933 and was the author of several articles in the medical journals. He made himself universally beloved by all his colleagues and by a large circle of patients, and his loss will be mourned throughout the district as that of a close personal friend.—R. G. G.

We regret to record the death by enemy action of Dr. LUTHER JAMES SOUTTER. His eldest son, Ian, a medical student, was killed on the same occasion, and his wife was

injured. Dr. Soutter was born on Dec. 13, 1898, the son and grandson of doctors. From Tollington School he entered Westminster Hospital with a scholarship, and won several prizes on his way to graduating M.B., B.S.Lond. in 1922. After working as house-physician and house-surgeon at the Westminster he took over his father's practice at Highbury and quickly gained the regard and admiration of his patients. In addition to his many professional duties he played a prominent part in A.R.P. work in the borough of Hornsey, where he was medical officer of a mobile unit; he will be sadly missed among the Civil Defence personnel of the borough. A congregation of some 700 colleagues, friends, and patients attended the funeral service at Highbury Quadrant Church. Dr. G. F. Rigden, Hornsey A.R.P. medical officer, in a high tribute paid to his colleague in the local newspaper, has written: "The Hornsey mobile units, largely owing to Dr. Soutter's energy and fore- sight, were p.o.r.eers at working at the incident immediately after it occurred, work which was not their original function but which has now been generally adopted and recognized as invaluable."

News has reached this country of the death on June 25 in Victoria, British Columbia, of Dr. IVAN WILLIAM MACKINNON, who had been a member of the B.M.A. since the year in which the Association held its Annual Meeting at Winnipeg. Dr. Mac- Kinnon studied medicine in Montreal and Edinburgh; he graduated M.D., C.M. of McGill University in 1902 and took the Scottish triple qualification in 1906. He had been house- physician to the Royal Victoria Hospital, Montreal, and house- surgeon and senior clinical assistant to the London Throat Hospital; and during the last war he served with the rank of captain, R.A.M.C. (T.). For some little time before the present war he had made voyages as a ship surgeon.

## The Services

Temp Surg. Lieut. A. Finlayson, R.N.V.R., has been mentioned in dispatches for great skill and devotion to duty in the care of survivors from ships which were sunk on the hazardous passage to North Russia.

Temp. Surg. Lieut. E. Fowler, R.N.V.R., has been mentioned in dispatches. This name appears in a list of awards for outstanding courage, skill and devotion to duty in certain of H.M. ships in action with German destroyers.

Acting Wing Cmdr. R. H. Winfield, A.F.C., R.A.F.O., has been awarded the D.F.C. in recognition of gallantry and devotion to duty in the execution of air operations.

Capt. (Temp. Major) J. G. Reid, R.A.M.C., has been appointed M.V.O. (Fourth Class).

The *London Gazette* has announced the following appointments, awards, and mentions in recognition of gallant and distinguished services in Italy.

*C.B.E. (Military Division).*—Brig. (Temp.) S. Arnott, D.S.O., late R.A.M.C.; Lieut.-Col. (acting Col.) C. H. Playfair, O.B.E., R.A.M.C.

*O.B.E. (Military Division).*—Col. E. C. Beddows, M.C., late R.A.M.C.; Col. (Acting) J. W. Hirst, T.D.; Col. (Temp.) C. E. Eccles; Lieut.-Col. F. A. Roddy; Majors (Temp. Lieut.-Cols.) W. C. Alford, R. Armstrong, J. A. Binning, G. W. Crammin, A. L. d'Abreu, I. D. Easton, C. D. Evans, J. L. Gordon, F. H. Hollingshead, A. M. Hughes, M.C.; T.D. W. H. M. Jones, T.D.; F. P. L. Lander, W. D. F. Lytle, A. S. Pern, T.D.; R. W. Scott, E. J. Selby, R. W. D. Turner, and R. B. Wright, R.A.M.C.; Lieut.-Col. R. C. Dickson, R.C.A.M.C.

*M.B.E. (Military Division).*—Capt. (Temp. Major) J. B. Barr, W. R. West-Watson, G. Blackburn, C. D. P. Jones, R. Kauntze, D. G. Liversidge; Capt. G. H. M. Hemsted, A. Henderson, and A. E. O'Donnell, R.A.M.C.; Capt. M. S. R. Rao, I.A.M.C.

*D.S.O.*—Capt. (Temp. Major) F. J. O'Dowd, I.A.M.C.  
*M.C.*—Capt. J. G. Macarthur, R. J. N. Pellow, W. H. Lang, T. McCarroll, and L. J. Samuels; Lieuts. F. H. Leckie, and T. Norman, R.A.M.C.; Capt. F. Martin, R.C.A.M.C.; Capt. H. L. Bhatia, I.A.M.C.

*Mentioned in Dispatches.*—Major-Gen. (Acting) R. W. Galloway, C.B.E., D.S.O.; Brig. (Temp.) W. P. Croker; Majors (Temp. Lieut.-Cols.) W. C. Alford, H. Allan, M.C., W. M. Capper, R. W. Hendry, and D. T. Swift; Capt. (Temp. Major) J. W. L. Bain, H. J. Bell, H. W. Burge, D. J. Campbell, S. Carter, H. J. Croghan, V. Downie, M.C., P. R. Evans, T. D. W. Fryer, C. C. Hurst, J. Irvine, D. B. Jagger, T. G. S. James, J. G. Jamieson, J. W. Litchfield, R. B. Robertson, M.B.E., J. McL. Ross, C. V. Salisbury, V. A. J. Swain, N. G. G. Talbot, E. Townsend, M.C., W. S. Tulloch, and R. H. Webber; Capt. K. M. Bell, A. M. Brown, N. C. Coombs, F. H. Counihan, J. Cumming, J. S. Davidson, T. C. H. Davies, W. A. Dewar, F. R. Duggan, S. M. Gill, J. G. Gow, C. J. Hodson, H. J.

Holloway, C W Marshall, R D Rutherford, R W Temple, and H A Wells, Lieut R H Hughes, R A M C, Col G R D Farmer, Lieut-Col R W Richardson, Major D A Young, Capt C A Campbell, H V Slenon, D A Wanklyn, R C A M C, Acting Subadar-Major K L Sharma, I A M C

The *London Gazette* has announced the following awards in recognition of gallant and distinguished services in Normandy

D S O—Majors (Temp Lieut-Cols) D M Ahern and E I B Harvey, and Capt (Temp Major) A D Young, R A M C  
Bar to the M C—Capt (Temp Major) P K Jenkins, M C, R A M C

M C—Capt (Acting Major) L V MacDonald, Capts G R Clark, J C F Cregan (attached Special Service Troops), W R Lamb, G P McGowan, J C R Nuttall-Smith, G S Sheil, P H Tasker (attached Special Service Troops), J C Thom (since killed in action), D J Tibbs, W W Yellowlees, Lieuts G M Ashurst, D M de R Wincer (attached Special Service Troops), R A M C

The following awards have been announced in recognition of gallant and distinguished services in the field

D S O—Major H A Procter, R C A M C  
M C—Capts L E Cowan and J A Patterson, Lieut J L Heaslip, R C A M C

### CASUALTIES IN THE MEDICAL SERVICES

Major EWAN BOILEAU ROTHERHAM, son of Dr and Mrs F H Rotherham of Grimsby was born April 27, 1907. From Uppingham he went to the London Hospital, qualified in 1932, and took the M B, B S Lond in 1933 with honours and distinction in obstetrics and gynaecology, after which he practised at Grimsby. He volunteered at the outbreak of war and went to France in February, 1940. He was through Dunkirk, and went over-seas again in May, 1942, being promoted to major six months later. He was reported on April 26, 1944, as lost at sea on Feb 12, 1944, and is now presumed killed in action. He was a member of the B M A, and before the war served on the local executive. Mr Guy Pulvertaft writes: "The news of Ewan Rotherham's loss at sea was a hard knock to those who knew and loved him, and it is difficult to express in words all that he meant to us. Ewan came from the London Hospital in 1933 to work in practice with his father and was soon recognized as a future leader among us. He was always well informed of recent work, and enriched his knowledge with a tenderness and devotion which was an inspiration to those who saw his work. Paediatrics held his keen interest, and his special gifts were gaining him a growing reputation. In early 1940 Ewan received his commission in the R A M C and in the Army he found his fullest expression. Those who were honoured by his friendship and saw him during brief periods of leave could not fail to be struck by his inward happiness and peace, seen only in those who have no fear of life. His friends mourn him and their hearts go out to his dear ones who face the future here without him."

Killed on active service in Normandy—Major F H Lloyd, R A M C

### DEATHS IN THE SERVICES

Lt Col OWEN ALFRED ROWLAND BERKELEY-HILL, I M S, is reported to have died recently at Ranchi, India. He was the son of the well known University College Hospital surgeon and was educated at Oxford, Göttingen, and University College Hospital, London. He qualified with the London Conjoint Board in 1905, took his university degrees in the following year, the D T M in 1907, and proceeded M D Oxon in 1914. He gained the first place at the entrance examination for the I M S in 1907 and later specialized in mental diseases and psychology and became the leading authority on those subjects in India at a time when they had been much neglected. When it was decided to move the very out-of-date lunatic asylum from Calcutta, which had previously been a subordinate charge of the senior resident surgeon of the neighbouring European General Hospital, and to build a modern institution in the country near Ranchi in Chota Nagpur at an elevation of some 2,000 feet, Berkeley-Hill was chosen to organize and superintend it, which he did with characteristic thoroughness. Apart from war service in East Africa he spent the remainder of his time in the Ranchi post. After his retirement from the Service he lived in England for some years with his wife, an Indian lady, and several children, but subsequently returned to Ranchi to end his days there. His work in organizing the first modern mental institution will live after him, and he contributed a number of papers on his speciality to medical journals. Socially he was the wittiest of companions and a great talker. Officially he was difficult to deal with, but he was successful in his insistence on the new mental hospital being really up to date at whatever cost. It will be long before he is forgotten by those who knew him well.

Major P Heffernan, I M S (ret), writes: "Endowed by Nature with a brilliant intellect, a needle-like wit, and an unsurpassed power of instantaneous repartee, as well as with a considerable amount of

congenital impishness, Berkeley-Hill laid himself out throughout his life to debunk pomposity and stupidity in high places, so that on more than one occasion both India and Africa became almost too hot to hold him. In his speciality he was far in advance of his time, and his contributions to scientific journals written years ago compare favourably with those of to-day's psychiatrists and are remarkably modern in outlook. His son, a pilot officer in the Royal Air Force, was killed in the defence of Malta two years ago."

## Universities and Colleges

### UNIVERSITY OF CAMBRIDGE

At a Congregation held on July 29 the following medical degrees were conferred

M D—T B L Bryan  
M B B Chir—T S L Beswick \*D G Braitherton \*D Brazier \*G Crockett \*P D B Davies \*P J De Vecovi \*H J Dismore \*J F Dudgeon \*M A Floyer \*P H Friedlander \*J W Fullerton \*C E Green \*J A Harrington \*C E Harlley \*R F Hollick \*N S Hooton \*W R Horstall \*R E Irvine \*W Kwanies \*J Lorber \*M B Matthews \*J R May \*M Newton \*K N V Palmer \*M B Paul \*P B Philip-Smith \*P D G Pugh \*G F Roberts \*J Roche \*B Schofield \*J A Shiers \*J F N Siddhant \*C A Storr \*J M Stowers \*M Symons \*P G Turner \*D R D Vansone \*B H Vawdrey \*D G Vlater \*P R Westall \*V H Wilson \*A P Wingate L Wolman \*G S Yeoh

\*By proxy

An announcement appears in the *University Reporter* inviting applications for the post of whole-time secretary of a committee appointed to arrange, on behalf of the Ministry of Health, for the provision of postgraduate instruction in the Eastern Counties for medical officers released from the Forces. Applicants should be graduates in medicine. The appointment is temporary and will be for one year in the first instance. The salary will not exceed £1,000 a year, non-pensionable, with an allowance for travelling expenses. Applications should be sent before Oct 2 to the Registry, University Registry, Cambridge.

### UNIVERSITY OF LIVERPOOL

As a result of collaboration between Liverpool University, the Liverpool City Council, and the Royal Liverpool Children's Hospital who will share the cost, a Department of Child Health has been established within the University and will be opened by the Minister of Health in the autumn.

Dr Norman B Capon, FRCP, has been appointed part-time director of the new department, and has been given the title of Professor of Child Health while holding that post. He has been lecturer in diseases of children in the University since 1935 and is also a lecturer in clinical medicine. The new department will be concerned not only with the investigation of diseases of childhood, but also with the preservation of good health, physical and mental, during the early years of life. Its staff will consist of members of the staffs of Alder Hey Children's Hospital, belonging to the Liverpool Corporation, and of the Royal Liverpool Children's Hospital, and will include both full-time officers and part-time officers who, like Prof Capon, will combine private practice with their departmental duties.

### UNIVERSITY OF GLASGOW

Dr Thomas Ferguson, deputy chief medical officer, Department of Health for Scotland, has been appointed to succeed Prof James M Mackintosh as Professor of Public Health in the University. The incumbent of this chair is associated with the work of the Corporation Public Health Department. Dr Ferguson graduated M B, Ch B Ed in 1922. He became a member of the Home Office Medical Board for Sclerosis in 1929, and a year later was appointed H M Medical Inspector of Factories in Scotland with headquarters in Glasgow. He joined the staff of the Department of Health for Scotland in 1933.

### SOCIETY OF APOTHECARIES OF LONDON

At a recent meeting of the Court of Assistants, with Mr L Vernor Cargill, Deputy Master, in the chair, Dr J P Hedley was elected Master for the ensuing year and Dr H F Powell and Dr C T Parsons, Wardens. Rear-Adm C P G Wakeley succeeded Sir Hugh Lett as the Society's representative on the Governing Body of the British Postgraduate Medical School, and Dr H Seaward Morley was appointed to represent the Society on the Negotiating Body of the British Medical Association. The Honorary Diploma of the Society was bestowed upon Sir Buckston Browne, LL D, FRCS.

The Diploma was granted upon examination to D Cappon, E A Humphrey, I W Williams, L J Wood, R W Barr-Brown, K R J Coates, N J Caldwell, T H Eustace, I P D W Skenpton, A E Buck, A H Poie.

No 31

# INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended Aug 19

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year for: (a) England and Wales (London included) (b) London (Administrative County) (c) Scotland (d) Eire (e) Northern Ireland. *Deaths* (a) The 126 principal towns in England and Wales (including London) (b) London (Administrative County) (c) The 15 principal towns in Scotland (d) The 13 principal towns in Eire (e) The 10 principal towns in Northern Ireland. A dash — denotes no cases; a blank space denotes disease not notifiable or returns available.

Disease	1944					1943 (Corresponding Week)				
	(a)	(b)	(c)	(d)	(e)	(a)	(b)	(c)	(d)	(e)
Cerebrospinal fever Deaths	—	1	26	1	1	35	—	2	1	1
Diphtheria Deaths	39	10	132	94	1	527	291	141	61	24
Dysentery Deaths	25	14	95	—	—	195	19	89	—	—
Encephalitis lethargica Deaths	1	—	1	1	—	—	—	—	—	—
Erysipelas Deaths	—	—	6	—	—	—	—	—	6	2
Infective enteritis or diarrhoea under 2 years Deaths	—	—	47	124	—	48	10	8	95	16
Measles* Deaths	1 606	9	75	2	20	1 049	53	18	7	3
Ophthalmia neonatorum Deaths	—	—	20	1	—	90	7	26	—	—
Paratyphoid fever Deaths	—	—	3 (B)	—	—	—	—	1	—	2
Pneumonia influenza† Deaths (from influenza)	345	7	—	1	2	312	10	4	1	5
Pneumonia primary Deaths	—	1	2	—	—	9	—	1	—	1
Poliomyelitis, acute Deaths	—	22	13	10	4	—	12	122	12	3
Poliomyelitis acute Deaths	14	—	10	1	—	16	1	—	1	—
Puerperal fever Deaths	—	—	10	—	—	—	1	17	—	—
Puerperal pyrexia‡ Deaths	154	8	11	—	—	157	9	12	2	5
Relapsing fever Deaths	—	—	—	—	—	—	—	—	—	—
Scarlet fever Deaths	1 068	24	181	29	4	1 516	131	221	45	55
Smallpox Deaths	—	—	—	—	—	—	—	—	—	—
Typhoid fever Deaths	5	—	3	10	—	13	2	2	15	14
Typhus fever Deaths	—	—	—	—	—	—	—	—	—	—
Whooping-cough* Deaths	1 603	60	36	65	1	2 015	12	90	19	22
Deaths (0-1 year) Infant mortality rate (per 1 000 live births)	—	—	85	52	19	26	39	46	46	9
Deaths (excluding still births) Annual death rate (per 1 000 persons living)	355	570	55	177	92	371	425	44	186	16
Live births Annual rate per 1 000 persons living	6 406	496	941	525	25	5 889	703	866	370	245
Stillbirths Rate per 1 000 total births (including stillborn)	226	14	20	—	—	193	14	26	—	—

\* Measles and whooping-cough are not notifiable in Scotland and the returns are therefore an approximation only.

† Includes primary forms for England and Wales, London (Administrative County) and Northern Ireland.

‡ Includes puerperal fever for England and Wales and Eire.

§ Owing to evacuation schemes and other movements of population birth and death rates for Northern Ireland are not longer available.

## EPIDEMIOLOGICAL NOTES

### Discussion of Table

In England and Wales notifications for whooping cough were 199 higher than last week and for dysentery 121 higher. The incidence of measles and diphtheria fell by 189 and 35 respectively.

For the first time the notifications of diphtheria which is more prevalent in the north than in the south were fewer than 400. Only 13 of the 393 cases were recorded in the combined regions of London south east, south west south midlands and eastern counties. There were local variations in the trend of whooping cough in the south east and south west there was a rise of 121 and in the west midland counties of 65, in the south midlands the notifications fell by 79. In the southern counties a fall of 139 was recorded for measles notifications.

The incidence of dysentery with a jump from 127 to 248 cases, has reverted to the high level of the first six months of the year. There were new outbreaks during the week in Cheshire 30 Durham 18 Essex 16 Leicestershire 14. The other principal centres of infection were Lancashire 35 Glamorganshire 34 London 14 Surrey 14.

In Scotland there was a rise in the notifications of diphtheria 29 and of dysentery 17 the latter being due mainly to the large increase from 24 to 45 reported from Glasgow. There was also a small increase in Edinburgh from 21 to 25.

In Eire the large rise of 81 in the notifications of diarrhoea and enteritis under the age of 2 was contributed by Dublin C.B. where there were 107 cases compared with 7 in the preceding week. The incidence of typhoid fell from 23 to 10.

### Poliomyelitis in America

The incidence of poliomyelitis in the U.S. is at the highest level since 1916. Since the beginning of the year 3 311 cases have been reported this being almost 1 000 more than in the same period of last year.

### Week Ending August 26

The notifications of infectious diseases in England and Wales during the week included scarlet fever 1 071 whooping cough 1 316 diphtheria 410 measles 1 114 acute pneumonia 321, cerebrospinal fever 30 acute poliomyelitis 25 dysentery 299, paratyphoid 14 typhoid 8.

## Medical News

A sessional meeting of the Royal Sanitary Institute will be held at the Civic Offices Swindon on Saturday Sept. 9 at 10.30 a.m., under the chairmanship of Dr Thomas Orr, with Dr Llywelyn Roberts as honorary local secretary.

The Nuffield Provincial Hospitals Trust, on the recommendation of the standing committee of the Trust's Scottish Advisory Committee, have made a grant in aid of further research in neonatal and infant problems to be carried out by the Department of Child Life and Health of Edinburgh University at the Simpson Maternity Pavilion Edinburgh. The grant which will be made for an initial experimental period of three years and will cover the appointment of a specially qualified nurse-expert and teacher, will allow a planned and detailed study of the important physiological problems of early nutrition and infant dietetics to be made. In addition to infant dietetics and particularly of breast feeding the problem of prematurity which plays a large part in infant mortality during the first month will be dealt with. The research will be directed by Prof. Charles McNeil and the experiment will be under the auspices of the University and the Royal Infirmary of Edinburgh. It is hoped that this research will have practical results which, when embodied in the teaching of medical students, pupil midwives, and pupil health visitors will raise the general standard of infant health and reduce infant mortality.

The Ministry of Health has issued a memorandum (Circular 106/44) concerning the use of mobile first aid units. The memorandum has been prepared in the light of practical experience of the operation of the units where they have been in use during raids. It should be of interest to all medical officers in the first aid post service, and the Minister desires that it should be made available to them. A sufficient number of copies for this purpose is being sent to the County Medical Officer or M.O.H.

The organizing committee of the Institution of Chemical Engineers has decided to postpone the joint conference on instruments for the automatic controlling and recording of chemical and other processes, which was to have been held in Loddon on Sept. 22 and 23.

### Repairing Torn Perineum

Mr M P REDDINGTON (London, W1) writes The directions given in "Any Questions?" (Aug 12, p 230) on how to repair a torn perineum cannot possibly be allowed. They state "To complete this small operation, a rectal examination is made to ensure that there has been no damage to the rectum." Presumably, if rectal damage is found, your instructor undoes his stitches, repairs the rectal damage, and repeats his perineal repairs. Again "An examination is made to ensure that no stitches have been inserted through the rectal mucosa." I presume he uses a cystoscope after a colporrhaphy "to ensure that no stitches have been inserted through the bladder." Really, Sir, English surgery must have a steadier hand than this. He advises mattress sutures to bring together the torn ends of the internal sphincter and. Mattress sutures should not be used in muscle. He further states that the vaginal mucosa should be sewn up before approximating the perineal tissues. If this is done, it is much easier to put in this topmost stitch when the vaginal wall has been sewn for about half its length. I see too that he advises silk-worm-gut for the perineal skin. If the approximating sutures have been placed with intelligence the skin edges will come nicely together, and a few No. 40 cotton stitches complete the repair. The difference to the patient's comfort is immeasurable. The subject is dealt with fully in my article "The Perineum" in the *Clinical Journal* April, 1944.

Our contributor replies. Mr Reddington objects to the principle of making a rectal examination after repairing the perineum. His grounds for this objection are apparently that this examination is unnecessary. But it is all too easy to overlook minor damage to the rectum, and even the steadiest hand may accidentally insert a stitch through the rectal mucosa, especially while repairing an extensive laceration. In the majority of cases probably little harm results. I have in mind, however, a case where a stitch was accidentally inserted through the rectal mucosa, it was discovered but not removed and a recto-vaginal fistula resulted. A rectal examination can do no harm and may save a great deal of future trouble. I agree that, especially in large lacerations, it is sometimes well to insert the topmost stitch in the perineal tissues before completely closing the vagina. Mr Reddington condemns silk-worm-gut for uniting the perineal skin. His objections, as given in his article in the *Clinical Journal* are that "it is painful—the ends catch on the pad, it is a path for infection into the perineal tissues, and it is often tied too tightly." The answer to these objections is that if the ends are left long and knotted together they do not catch on the pad and the sutures are not painful. Silk-worm-gut is no more a path for infection into the perineal tissues than any other suture material inserted through the perineal skin, in fact, less so than catgut, cotton, or linen thread, which are liable to get soaked in the lochial discharge. Finally they should not be tied too tightly, this point was made in the answer to the question.

### Shooting Pains in the Head

Dr L. GORDON (Leeds) writes. In "Any Questions?" of Aug 12 (p 231) there was described a case of shooting pain in the right side of the head following sneezing, straining, or stooping, with negative clinical findings. An interesting case which I saw in 1941 may perhaps throw some light on what may sometimes appear to be a baffling problem. My patient was aged 52, and he gave a history that for upwards of 4 years sneezing, the strain of lifting a heavy weight, or straining at stool caused intense pain behind the eyes extending upwards to the top of the head. The pain made him keep his eyes closed. Latterly, too, he said, he had had stiffness at the nape of the neck during the attacks. When the pain in the head was present it disturbed his balance and made him veer to the left, giving people who watched him the impression that he was drunk. He had some numbness of the left thigh and leg during the attacks. He invariably had to be brought home in a car and put to bed for 24 hours, by which time he had completely recovered, although the attack usually had become somewhat less severe after the first two hours. Clinical examination was entirely negative. The CSF, the optic disks, field of vision, and the ears were normal. The blood and CSF gave a negative Wassermann reaction. I then had the skull x-rayed, and this revealed that he was a well-marked case of Paget's disease with some thickened bone causing pressure on the semicircular canals. X-ray examination of other bones confirmed the diagnosis. No treatment cut short the attacks or gave him much relief until I decided to try him on an inhalation of amyl nitrite on the onset of the attack. This very dramatically relieved his pain and aborted the attack instantaneously.

### Vitamin C for All

Dr S. HALES (Wembley Park), who is a Fellow of the Royal Horticultural Society, writes in the course of a letter. War memorials are in the news and many people are discussing the age-old custom of planting trees. May I suggest that in this matter the medical profession should not stand aside? First, because every

doctor is qualified to give an opinion in matters of botany as well as pharmacology, and secondly, the doctor, when treating his patients, is constantly prescribing vitamins and stressing the importance of including a maximum of fresh fruit in the diet. If we are to win in the near future a widespread planting of trees, may I make a plea that fruit trees be given priority? Why can we not have fruit trees on our main roads and in the roads and public squares of our cities? The official replies will be straightforward, for the Ministry of Agriculture has already declared that roadside fruit trees would become reservoirs for disease-producing pests, which would destroy neighbouring orchards, and the Ministry of Transport considers that children who might be in fear of detection when removing some fruit would run suddenly away and be killed by passing traffic. But may I suggest that it should not be an offence for a child to acquire a surplus of vitamin C from roadside fruit? Public health authorities might produce a poster to remind him that moderation in fruit-eating is in his own interest, and some other poster might remind him that to offer this public fruit for sale would be an offence. Dr W. Fox, in a recent issue of the *Journal of the R.H.S.*, suggested that "permanent inspectors of roadside trees" appointed by the Ministry of Transport to attend to all matters of "tree after-care." Perhaps sanitary inspectors could play some part in the scheme. The expenses of maintaining such a service would balance favourably with that at present devoted to the purchase of vitamin tablets when deficiency has already established itself and that devoted to sickness benefits and to preventable disorders in terms of extra demands on overworked doctors, loss of manpower in factories, or absence from school.

### Typewriting in Darkness

One of the base hospitals of the Department of Health for Scotland employs a blind typist in the x-ray department whose work it is to transcribe on the typewriter in total darkness, which she does with facility and accuracy, the remarks of the radiologist. He screens successive patients. Thus, of course, is a great advantage to the radiologist, who is no longer compelled to rely on his memo or on his own scribbled notes made after each examination. To the blind typist the darkness is no obstacle, and it is suggested that x-ray departments offer such an opening for blind women or men. Every avenue of useful occupation for the blind is to be encouraged though for the sake of accuracy, and as something to be acted upon when a blind assistant is not available, it should be added that a sighted typist who is trained in the modern "touch" method would be able to type with the same accuracy and speed in the darkness. Her disadvantage as compared with the blind typist would be a slower adaptation to conditions when there is no light.

### Why Tie the Cord?

Dr J. D. POLE (Salford, Lancs) writes. The interesting correspondence on this subject reminds me of an experience I had shortly after beginning practice some twenty years ago. A favourite way of protecting the bed was to use sheets of brown paper, and in that case they were fairly stiff, and, unknown to me, overlapped the edge of the bed. I had just delivered the baby with forceps, and was laying it down when, to my horror, the "shelf" gave way and a baby dived under the bed. I was soon after it, and found it yelling lustily. The cord had been twisted off about an inch from the umbilicus and no bleeding. The midwife assisting was so helpful with laughter at the whole proceeding that she was unable to give me any help for some time. This cord was never tied, as there seemed no need, and all went well afterwards.

### Pin-hole Urinary Meatus

Mr WILLIAM J. MOORE, FRF.P.S.G., writes from Glasgow. The causes of pin-hole urinary meatus (Feb 21, p 314) may be congenital or acquired—as, for example, injury to the point of the meatus as the result of circumcision—but whatever the cause there is no doubt that it should be attended to when recognized. When the passage of probes may temporarily enlarge the opening there is a tendency to recurrence. It is suggested, and it has been found successful in several cases, that the enlargement be made elect surgically, the result being that the restoration of calibre is permanent and there is no tendency to recontraction. This treatment also seems to have a beneficial effect on enuresis if it is present.

### Priority Demobilization of Doctors

A SERVING OFFICER writes. Of grave concern to many medical officers serving with the Forces over-seas is the length of time they will be detained subsequent to the termination of hostilities. It will be to the advantage of the Admiralty, War Office, and Air Ministry to retain a substantial medical service abroad for some time. Many of us are still paying for our practice and are anxious to return to work as soon as possible. It is to be hoped that a strong representation of the British Medical Association will appeal for priority repatriation of medical practitioners.

## LABORATORY TESTS IN THE DIAGNOSIS OF LIVER DISEASE

### A REPORT ON THREE PROCEDURES

BY

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Two important trends in recent work on liver function tests are noticeable at the present time. The first is a broad division between those which test known or accepted functions of the liver and certain empirical procedures which do not test known functions but which are obviously correlated either with certain types of liver damage or with certain diseases in which liver damage is prominent. Among the former the most important are the serum bilirubin estimation, galactose and laevulose tolerance tests, serum protein and urinary urobilin estimations, and the hippuric acid test. The latter include estimation of the serum alkaline phosphatase and choline-esterase activity and the flocculation tests (i.e., the Takata-Ara reaction, the serum colloidal gold reaction, and the cephalin cholesterol test). The flocculation tests are thought to depend upon an increase in the gamma globulin content of the serum, and the hepatic origin of this protein has not been proved. Nevertheless positive results occur principally in diseases in which liver damage is known to be present. The former tests, with certain exceptions, tend to give similar results to all types of liver damage, while some of the latter show striking differences and therefore promise more diagnostic help.

The second trend is the increased sensitivity of most of the tests as compared with those in use 15 years ago. While the earlier complaints of negative results in cases of known hepatic insufficiency have largely disappeared, we are now faced with the opposite finding of a proportion of positive results in a variety of diseases not primarily affecting the liver, such as pneumonia (Curphey and Solomon, 1938), hyperthyroidism (Althausen and Weyer, 1937; Haines, 1939; MacLagan and Rundle, 1940), rheumatoid arthritis (Rawls *et al.*, 1937), following surgical operations (Boyce, 1941), and in scarlet fever, diphtheria, and tuberculous meningitis (Meneghelli and Driberg, 1943). It is hardly surprising that liver function should be impaired in general intoxications of this type, but it complicates the question of interpretation since we need to distinguish between functional impairment and structural damage.

The three procedures described here were originally chosen because they appeared to give the maximum chance of differentiating toxic from obstructive jaundice, but they happen to include one example from each of the three major groups—i.e., a flocculation test, an enzyme test, and a purely functional test. This selection is not intended to preclude the use of other tests such as the serum bilirubin and urinary urobilin estimations which are both of particular value in patients not obviously jaundiced and the first of which is indispensable as a record of the intensity of jaundice when present. The serum protein estimation and the hippuric acid tests also have their special merits, but on the whole their value has been greater in prognosis than in diagnosis (Foley *et al.* 1937; Higgins *et al.* 1944; Quick, 1933, 1939; Boyce, 1941).

#### I. Serum Colloidal Gold Reaction

Introduced by Gray in 1940 this appears at present to be the best of the flocculation tests from the diagnostic standpoint. It does not test any known function of the liver and should be regarded as an indicator of disturbed liver metabolism rather than a function test. The results reported here were obtained by a modified method described elsewhere (MacLagan, 1944a),

in which 0.05 ml. of serum, 0.5 ml. of special buffer solution at pH 7.8, and 2.5 ml. of gold sol prepared by Patterson's (1931) method are mixed in a single tube. 5 represents complete precipitation of the sol and is the strongest positive, while 0 represents no precipitation and is a negative or normal result. The reaction apparently depends upon an excess of gamma globulin in the serum (Gray and Barrow, 1943; Kabat *et al.* 1943), it is thus not directly dependent upon either the total globulin or the albumin-globulin ratio. This was shown by Gray (1940), but also holds for the modified technique used here (Table I).

TABLE I—Serum Proteins (G %) and Gold Reaction in 24 Cases

Case No.	Gold (No.)	Albumin (Normal 4.0-5.5)	Globulin (Normal 1.5-3.0)	Total (Normal 5.5-8.5)	Diagnosis
1	5	2.4	7.8	10.2	Infective hepatitis
2	5	4.0	2.9	6.9	" "
3	5	3.7	6.4	10.1	" "
4	5	4.3	6.5	10.8	" "
5	5	4.1	7.1	11.2	" "
6	5	3.9	5.9	9.8	" "
7	5	3.3	6.9	10.2	" "
8	3	3.7	6.5	10.2	" "
9	0	3.9	6.1	10.0	" "
10	4	3.0	6.3	9.3	Arsenical jaundice
11	5	3.5	9.0	12.5	Subacute hepatitis*
12	5	3.9	8.2	12.1	" "
13	5	1.4	4.4	5.8	" "
14	5	2.1	4.0	6.1	Cirrhosis
15	5	2.5	3.2	5.7	" "
16	5	2.3	6.8	9.1	" "
17	5	3.4	5.6	9.0	Bacterial endocarditis
18	5	1.7	4.3	6.0	" "
19	0	1.8	3.4	5.2	Nephritis
20	0	1.8	3.8	5.6	" "
21	0	2.5	4.1	6.6	" "
22	0	4.6	6.8	11.4	" "
23	0	3.3	5.7	9.0	" "
24	0	3.6	3.2	6.8	Biliary obstruction, recurrent

\* Subacute hep. than two months' line between this findings are very similar in the two

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It will be seen from Table I that, although there is some correlation with the total serum globulin, nearly half the cases with strongly positive gold reactions had normal globulin figures, and one case of recurrent biliary obstruction had a raised globulin and a negative gold reaction. The inversion of the albumin-globulin ratio in nephritis was associated with negative gold tests. These protein estimations were performed by the manometric method of Peters and van Slyke (1932), using the selective digestion mixture of Beaumont and Dods (1941). The globulins were precipitated with 22.5% sodium sulphate.

Table II gives the serum colloidal gold reactions in 319 cases of liver disease. It will be seen that the test is usually positive in infective hepatitis (93%) and in cirrhosis, and is negative in jaundice due to biliary obstruction (93%). It usually remains negative in obstructive jaundice in spite of increasing liver damage as shown by other tests—e.g., the galactose index—and is therefore of value in distinguishing this condition from the first two. A strongly positive gold reaction (4 or 5+) has not been seen in obstructive jaundice, and is thus of more help in this connection than a negative result, which does not absolutely exclude infective hepatitis. The results in infective hepatitis are usually maximal at the onset of jaundice and



become negative after 3 to 6 weeks, although sometimes persisting much longer. In cirrhosis there is little change from month to month, so that repeated observations help to decide between these two. In arsenical jaundice—i.e., jaundice

TABLE II.—Serum Colloidal Gold Reaction in 319 Cases

	Precipitation Number						Totals	% Pos.
	5	4	3	2	1	0		
Obstructive jaundice .. ..	0	0	0	3	0	39	42	7
Infective hepatitis .. ..	84	24	22	10	7	11	158	93
Cirrhosis and subacute hepatitis ..	12	0	0	0	0	0	12	100
Arsenical jaundice .. ..	5	5	4	6	7	35	62	44
Weil's disease (jaundiced) ..	0	0	3	2	3	11	19	42
Weil's disease (not jaundiced) ..	0	1	1	1	1	10	14	29
Toxic jaundice .. ..	0	0	0	1	0	2	3	7
Amyloidosis .. ..	0	0	0	1	1	5	7	3
Liver abscess .. ..	0	0	0	0	0	2	2	2

occurring during antisyphilitic treatment—and also in Weil's disease negative results are frequent (about 60%) and make the distinction from biliary obstruction more difficult, but fortunately this is rarely a clinical problem. The rather striking difference between the infective and the arsenical cases has been noted elsewhere (MacLagan, 1944b), and suggests a probable aetiological difference in the two groups. In liver abscess and in amyloidosis results have been mainly negative.

As with most other liver function tests some positive results occur in heart failure, in severe chronic anaemia, and in various acute and chronic infections, of which the following are the most important: glandular fever, atypical pneumonia, infective endocarditis, advanced pulmonary tuberculosis, and rheumatoid arthritis (MacLagan, 1944a). In this group the liver involvement was obviously only an incident in the primary disease, but such conditions might complicate obstructive jaundice, when due allowance would have to be made. In practice they can usually be eliminated without difficulty by other means.

Finally, it should perhaps be emphasized that the results given here are not the same as those obtained with Gray's (1940) original technique, which has been adversely criticized by Mateer *et al.* (1942). The technical details referred to above must be followed exactly if comparable results are to be obtained.

## II. Serum Alkaline Phosphatase

This estimation, like the gold reaction, does not test any known function of the liver, and raised values are found in infancy and in a variety of bone diseases. In spite of this the test has been much used in jaundice since Roberts's (1933) observation that the level is usually higher in obstructive than in other types of jaundice. The 136 results in Table III were obtained by the method of King and Armstrong (1934).

TABLE III.—Serum Alkaline Phosphatase in 136 Cases

	Range of Values (Normal 3-13 Units)							Totals
	0-13	14-24	25-35	36-45	46-55	56-80		
Obstructive jaundice .. ..	0	3	7	13	13	9	43	
Infective hepatitis .. ..	6	35	6	0	0	0	47	
Cirrhosis and subacute hepatitis ..	0	6	3	2	2	1	14	
Arsenical jaundice .. ..	8	12	2	0	0	0	22	
Toxic jaundice .. ..	1	3	0	0	0	0	4	
Amyloid disease .. ..	0	0	2	1	0	0	3	
Liver abscess .. ..	0	0	2	0	1	0	3	

It will be seen that the test is of some value in distinguishing biliary obstruction on the one hand—usually over 35 units—from infective hepatitis and arsenical jaundice on the other—usually below 25 units and may be within normal limits. However, 15 of these cases fall into the doubtful range (25-35 units), and 3 of the obstructive cases were below 25 units. This is about the same degree of overlap reported by others (Gutman *et al.*, 1940; Giordano *et al.*, 1939; Higgins *et al.*, 1944). If, however, cirrhosis has to be considered the test is of much less value, as figures over 35 are frequent in this condition. In liver abscess and in amyloid disease a raised phosphatase is often present, and may be the only biochemical indication of disturbed liver metabolism.

## III. Galactose Index

This index (MacLagan, 1940) is the sum of the four blood-galactose values at 1/2, 1, 1½, and 2 hours after the oral

administration of 40 g. of the sugar. The estimations were performed mainly on capillary blood as previously described, the results being read from the table given below (see Appendix). This table is based on figures given in the references cited above and does not involve any alteration in the method. The normal limits for the galactose index, based on 50 normal subjects, are 0-160 (0-110 for male medical students). The test is contraindicated by nausea or vomiting from any cause.

TABLE IV.—Galactose Index in 145 Cases

	Range of Values (Normal 0-160)							Total
	0-160	161-200	201-300	301-400	401-500	501-600		
Obstructive jaundice .. ..	23	3	7	4	2	0	39	
Infective hepatitis .. ..	4	5	15	8	3	1	36	
Cirrhosis and subacute hepatitis ..	0	1	8	2	2	0	13	
Arsenical jaundice .. ..	0	1	2	6	1	2	12	
Toxic jaundice .. ..	0	0	2	1	1	0	4	
Hyperthyroidism (from MacLagan and Rundle, 1940)	11	7	16	4	3	0	41	

It will be seen from Table IV that the index is nearly always above normal in infective hepatitis, arsenical jaundice, and cirrhosis, but is frequently normal in jaundice due to biliary obstruction. Considerable impairment of function can, however, be demonstrated in certain cases of obstructive jaundice, particularly after the first three weeks, in febrile or cachectic patients, and after repeated attacks of obstruction (MacLagan, 1941). The only normal results in the toxic and infective group were in 4 cases of infective hepatitis in young adults from the Services, a class of patient in which liver function is no doubt above the average. The test is therefore of some value in distinguishing these two groups if interpreted with due regard to clinical data. A normal result in an elderly jaundiced patient is of particular diagnostic value, and has so far been seen only in obstructive jaundice. It is also useful as an extra aid in cases in which the gold and phosphatase tests are equivocal and for assessing the degree of liver damage when present.

The test has also been much used in hyperthyroidism, in which there is impaired tolerance in a high proportion of cases (Althausen *et al.*, 1940; MacLagan and Rundle, 1940; Barnes and King, 1943; and Table IV). Some workers have found it as sensitive as the B.M.R. in diagnosis, although Rundle and I got values decisively above normal in only 75% of our cases; it is agreed that the test is less affected by iodine therapy than is the B.M.R. There is some difference of opinion as to the mechanism involved, since both liver damage and increased intestinal absorption have to be considered. Most recent articles express the view that both factors contribute to the results in hyperthyroidism (Lichtman, 1941; Grauer *et al.*, 1942; Rosenkrantz *et al.*, 1942).

## Discussion

It is now generally agreed that a combination of liver function tests yields more information than any one test, and this is particularly true of those described here. Liver function tests are useful in three principal types of case.

1. *Suspected Liver Disease in Non-jaundiced Patients.*—The three tests appear to be sensitive enough to detect cirrhosis, and in common with others they also indicate hepatic involvement in a variety of other diseases such as hyperthyroidism (galactose index), heart failure and various infections (serum colloidal gold reaction), and in liver abscess and amyloidosis (serum alkaline phosphatase). In this group the pigmentary tests—serum bilirubin and urinary urobilin estimations—reach their maximum degree of usefulness and should not be omitted, but they may sometimes be completely negative in cases with known liver damage.

2. *Jaundice of Known Origin.*—The galactose index will reveal liver damage in late biliary obstruction, the other two tests being of no value in this respect. Either the gold reaction or the galactose index may be used to follow the course of a hepatitis, and will often give positive results for some weeks or months after the disappearance of clinical or latent jaundice. In cirrhosis and in subacute hepatitis all three tests have been positive, and the galactose index appeared to have some correlation with clinical severity, so far as could be judged from this small series (13 cases).

3. *Jaundice of Unknown Origin.*—Haemolytic jaundice is usually diagnosed by clinical and haematological methods, and will not be considered here. The way in which these tests can help in the more difficult task of distinguishing obstructive from toxic and

infective jaundice is indicated in Table V, which shows the typical or average results in the types most commonly encountered.

TABLE V.—"Typical" Results with 3 Tests in Jaundiced Patients

	Gold	Phosphatase	Galactose Index
Obstructive .. .. .	Negative	Over 35	Frequently normal
Infective hepatitis .. .	Positive	Under 25	Raised
Cirrhosis and subacute hepatitis .. .	Positive	Raised	Raised
Arsenical .. .. .	44% pos.	Under 25	Raised
Weil's disease .. .. .	42% pos.	?	Raised

The interpretation of the results in these cases must always depend partly upon clinical data, and can never be completely rule of thumb. Nevertheless there are many instances in which a slight acquaintance with the history permits an almost certain diagnosis on the basis of the tests. Considering the gold and phosphatase tests first, three particular combinations appear to have diagnostic significance: (A) A negative gold reaction with phosphatase above 35 units suggests biliary obstruction. (B) A positive gold reaction with phosphatase below 25 suggests parenchymatous hepatic disease and absence of biliary obstruction. (C) A strongly positive gold reaction (4 or 5+) has not been seen in obstructive jaundice and appears to be diagnostic with any phosphatase level. In such cases a phosphatase above 35 suggests cirrhosis rather than acute hepatitis.

It will be evident from Table V that the chances of making the distinction are greater in infective hepatitis and cirrhosis than they are in arsenical jaundice and Weil's disease, but fortunately the two latter conditions do not usually present great diagnostic difficulties. When the gold reaction is positive possible complicating diseases must be considered, but these rarely cause serious trouble in interpretation.

The constancy of these findings is illustrated in Table VI, which includes all jaundiced patients on whom both tests were

TABLE VI.—Combination of Two Tests in 100 Jaundiced Patients

	1	2	3	4	Totals
Gold .. .. .	Negative	Negative	Positive	Positive	
Phosphatase .. .	Over 35	Under 35	Over 25	Under 25	
Obstructive jaundice <sup>1</sup> .. .	22	9	1 (1+)	0	32
Infective hepatitis <sup>2</sup> .. .	0	7	1 (5+)	23	36
Cirrhosis and subacute hepatitis <sup>3</sup> .. .	0	7	4 (A15-)	6	10
Arsenical jaundice <sup>4</sup> .. .	0	6	1 (5+)	12	19
Toxic jaundice <sup>5</sup> .. .	0	2	0	1	3
Totals .. .. .	22	24	7	47	100

<sup>1</sup> Due to pancreatic carcinoma in 14, gall-stones in 9, hepatic metastases in 6, and other causes in 3. Diagnosis established by necropsy in 15, laparotomy in 15, and by other methods in 2.

<sup>2</sup> Diagnosis established by necropsy in 5 cases, biopsy in 2, and clinically in 3.

<sup>3</sup> Due to T.N.T. in 2 cases and to sulphapyridine in 1.

<sup>4</sup> Figures in brackets indicate strength of gold reaction.

done. It will be seen that out of these 100 cases 75 fall into group A, B, or C (columns 1, 3, and 4), and in all of these the findings were in keeping with the final diagnosis. The galactose test was confirmatory in 26, omitted in 41, and atypical in 8. The atypical galactose tests were 4 cases of biliary obstruction with secondary liver damage and the 4 cases of infective hepatitis in young adults referred to above.

In the remaining 25 cases (column 2 and one case in column 3) the results did not always give a definite answer, but in some instances the galactose test provided further information. They may be classified as follows: (1) Three cases of obstructive jaundice with negative gold reactions and phosphatases of 16, 25, and 29, and galactose indices of 118, 126, and 143 respectively. In view of the ages of the patients—72, 62, and 40—the normal galactose tests here were felt to be strongly in favour of what proved to be the correct diagnosis. (2) A group of 22 cases with negative or weakly positive gold reactions in which the findings were conflicting and of little diagnostic value. These consist mainly of obstructive and arsenical jaundice, but include some cases of infective hepatitis and toxic jaundice. The galactose test was omitted in 18 of these, and in some it would probably have helped. In two of the obstructive cases a later repetition of the tests showed a rise of the phosphatase to a diagnostic level.

The final assessment of the three tests in these 100 jaundiced patients is therefore that the distinction between biliary obstruc-

tion and generalized liver disease could be made in at least 78, which include about the same proportion of the obstructive and of the non-obstructive cases. It is not, of course, suggested that these rules of interpretation will be infallible, but since no exception to them has been observed in this series they appear to be reliable enough to form a useful diagnostic guide.

As a matter of practical convenience it is easier to do the gold and phosphatase tests first, and to reserve the galactose for cases in which the first two are atypical or in which the degree of liver damage is of interest. The galactose index has, however, a special place in the investigation of hyperthyroidism.

### Summary

The clinical value of laboratory tests in the diagnosis of liver disease has been reviewed with special reference to the serum colloidal gold reaction (319 cases), the serum alkaline phosphatase (136 cases), and the galactose index (145 cases).

The first two tests, taken together, often give valuable diagnostic information when considered in conjunction with clinical data. A jaundiced patient with a negative gold reaction and a phosphatase above 35 King-Armstrong units probably has biliary obstruction; one with a positive gold reaction and a phosphatase below 25 units probably has not. A 4 or 5+ gold reaction is against biliary obstruction whatever the phosphatase level.

The galactose index is useful as a confirmatory test in special cases and for assessing the degree of liver damage when present. It is also of value in the diagnosis of hyperthyroidism.

The results given indicate that out of 100 jaundiced patients the distinction between biliary obstruction and generalized liver-disease could be made in 75 cases with the gold and phosphatase tests, and in a still higher proportion if the galactose index was included.

I am much indebted to the medical staff of the Staines County Hospital and of Sector 7 for permission to investigate their patients, and to Prof. A. D. Gardner, Dr. E. N. Allott, Dr. A. J. Amor, Major J. Marshall, and the Middlesex County Medical Society for various sera.

### APPENDIX

Table for Blood Galactose Method of MacLagan (1940)

VII of 0.002 N sodium thiosulphate (blank minus unknown)											
	0.0	0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	
	Mg. of galactose per 100 ml. of blood										
0.0	0	10	17	21	24	27	29	33	35	37	
0.5	40	43	46	48	51	54	57	59	62	65	
1.0	67	70	72	75	78	80	83	85	88	90	
1.5	94	97	99	101	104	107	110	112	115	118	
2.0	121	124	127	130	132	135	138	140	143	146	
2.5	149	151	154	156	159	162	165	167	170	173	
3.0	176	178	181	183	185	187	190	192	194	196	
3.5	199	201	203	205	208	210	212	215	217	219	

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## ROYAL COLLEGE OF SURGEONS REPRESENTATION ON THE COUNCIL

The letter by the President of the Royal College of Surgeons of England printed below is being sent to bodies representing the following branches of practice: ophthalmology, otolaryngology, radiology, anaesthetics, and general practice—except such as already have representation on the Council of the College by election under the ordinary procedure.

Dear Mr. President,

The Council of the Royal College of Surgeons regard it as increasingly important to ensure the representation on the Council of branches of practice which at any time have not secured representation by the ordinary process of election. The Council therefore intend to apply for such alterations in the Charters as will enable them to co-opt additional members for this purpose.

The Council wish to make it clear that the College was founded "to promote the science and art of surgery," and it is to assist in this work that the representation on the Council of appropriate branches of practice is thought desirable. The College is not constituted to deal effectively with social and ethical questions affecting not only Fellows and Members of the College but all members of the medical profession. Such questions pertain to some central authority such as the General Medical Council, or some voluntary intraprofessional organization such as the British Medical Association.

It is intended to propose that co-opted members may be Fellows or Members of the College of the same seniority as that required for those seeking election into the Council; that co-opted members of the Council be appointed annually (after consultation with the bodies representing appropriate branches of practice); that the same individual be not eligible for re-appointment beyond five years; and that co-opted members do not have the right of voting for the election to the office of President or Vice-President.

These proposals require alterations in the Charters of the College, and application for such alterations will not be accepted until after the war. The Council, however, consider it desirable that they should have, at an early date, the assistance in their deliberations of representatives of those branches of practice not represented by any of the elected members. They have therefore decided forthwith to invite representatives of appropriate branches of practice to attend the meetings of the Council. The Council have not the power to grant voting rights to those invited to attend the meetings of the Council, but these representatives would have every opportunity to express their views.

I shall be grateful if the ..... will suggest names of a few ..... who are eligible as Fellows or Members from whom the Council of the College could select the one who seems to them most suitable.

Yours sincerely,

ALFRED WEBB-JOINSON,

President, Royal College of Surgeons of England

The bodies invited to suggest names are the Council of British Ophthalmologists, the Association of Oto-Laryngology, the Faculty of Radiologists, the Association of Anaesthetists, and, for general practice, the British Medical Association.

## FIRES AND EXPLOSIONS IN OPERATING THEATRES AND ANAESTHETIC ROOMS

A circular has been addressed by the Ministry of Health to all voluntary hospitals and hospital authorities, and to county district councils exercising delegated powers as to nursing homes, on the subject of fires and explosions in operating theatres and anaesthetic rooms. With it is sent out a warning notice based on recommendations by the Operating Theatre Electrical Committee of the Institution of Electrical Engineers. The placard is for display in each anaesthetic room or operating theatre so that its contents may be brought to the attention of all anaesthetists, operating surgeons, and members of theatre staffs. The notice runs as follows:

### WARNING NOTICE

Accidents due to the ignition and explosion of anaesthetic vapours have been attended by serious consequences. Such accidents are

usually due to: (a) the ignition of the vapour by cautery, surgical diathermy, electrical switches, or similar appliances; or (b) the overheating, short-circuiting, or breakage of the small electric bulbs, or their conducting wires or leads, used in various forms of endoscope; or (c) the generation of static electricity, resulting in trolleys, tables, blankets, and even the clothing of operating personnel becoming charged with electricity. Contact with an object at a different electrical potential may cause a spark of sufficient energy to ignite an anaesthetic vapour.

*Spirit Lotions, etc.*—It should be remembered that the use of spirit, spirit lotions, and other similar solutions which are frequently employed for cleansing the patient's skin, etc., involves dangers similar to those mentioned above.

### Precautions and Recommendations

1. Hot-wire cauteries and surgical diathermy present obvious possibilities of ignition, especially near the patient's face. There is also some degree of danger attending the use of x-ray apparatus, motor-driven suction apparatus, and from the general electrical equipment for lighting, heating, sterilizing, etc., unless it is kept away from the neighbourhood of the patient.

2. Five minutes at least before any form of cautery or diathermy is to be used all ignitable anaesthetics—e.g., ether, ethylene, ethyl chloride, cyclopropane—must be removed from the apparatus and a safe agent substituted. A simple and wise precaution is to blow air or some safe gas through the anaesthetic apparatus before use when diathermy is projected, even if this is to be performed under a non-ignitable anaesthetic. It is not sufficient to turn off the "ether tap," as this may not be gas-tight. The ether bottle should be removed, and if it must be replaced, it should first be rinsed out so as to remove any trace of ether.

3. The presence of oxygen and/or nitrous oxide, although these gases themselves are not ignitable, increases the risk of the ignition of other gases.

4. Surgical lamps are often used with some form of regulating resistor. These small lamps are usually made for either 2.5 or 3.5 volts, and it may be dangerous to increase the voltage beyond this even if by so doing the surgeon's request for more light can be met.

5. All the insulated flexible wire connected with surgical lamps should be frequently inspected and renewed. If this precaution is neglected, the insulation may become faulty or some of the conducting wire strands broken, although the lamp still apparently functions normally. Expert technical advice should be obtained on methods whereby the current and voltage of the lamp can be limited to values which greatly reduce the risk of ignition even if a short circuit occurs.

6. Foot switches should be flameproof.

7. Insulated apparatus such as rubber-tyred trolleys can be electrified in various ways, as, for instance, by drawing a dry blanket or towel across them. All anaesthetic, operating, and theatre instrument tables, and all trolleys if they are insulated by non-conducting rubber tyres or pads, must, therefore, be fitted with trailing chains which make good contact with the floor.

8. This method is adequate with ordinary granolithic theatre floorings, but is useless when the floor is covered with dry non-conducting rubber, cork carpet, or linoleum.

9. Anaesthetists and others should bear in mind that under suitable conditions they themselves may by their own movements become charged, and shoes incorporating "conducting" rubber may be used as a safeguard on conducting floors. The general use of special "conducting" rubber for tubing and tyres would tend to prevent accidents when it is available. Under war conditions damping of the floor may have to be adopted instead.

10. The generation of static charges is greatly facilitated by a dry atmosphere. Thus the danger is liable to be greater in times of high barometric pressure.

11. Some security may be obtained by slightly damping facepieces, bags, tubing, floors, etc.

12. Should it be necessary during anaesthesia to make or unmake metallic unions or carry out similar alterations to the apparatus, all ignitable gases must be cut off until the alterations have been completed.

*General.*—The dangers of open flames, matches, cigarettes, etc., need hardly be emphasized. Complete exclusion of all such sources of ignition from the anaesthetic and operating rooms should be strictly enforced.

Brig.-Gen. Leon A. Fox, director of the U.S. Typhus Commission, recently announced plans for the free distribution of typhus vaccine in countries of the Middle East. More than 1,973,000 c.c.m. of vaccine have been supplied to Middle East Governments through Lend-Lease since early in 1943. The Typhus Commission has instructions to make the vaccine available to public health authorities wherever typhus epidemics appear. Shipments of the vaccine have gone to Egypt, Iran, Iraq, Cyprus, Cyrenaica, Eritrea, Palestine, Trans-Jordan, Tripolitania, Saudi Arabia, and Aden. The vaccine has been used for both military and civilian measures of control.

## Reports of Societies.

### STILBOESTROL FOR ADVANCED BREAST CANCER A COMBINED INVESTIGATION

The treatment by stilboestrol of about 100 advanced cases of carcinoma of the breast was reported on by about a dozen speakers at a meeting of the Section of Radiology, Royal Society of Medicine, on June 16.

Dr. FRANK ELLIS (London) said that correspondents in the *British Medical Journal* had drawn attention to the value of stilboestrol in this condition, and a few radiotherapists thereupon decided to treat a number of such cases and present their results. Patients with advanced breast carcinoma often came for radiotherapy, and if some more effective treatment could be found it was important to know of it. It had been possible to assemble only preliminary reports owing to the shortness of the period of observation. He himself described 31 cases in all of which, save one, the effects of stilboestrol could be noted without any complicating effects of radiation. Some of the cases were too advanced for radiotherapy, others were on the waiting list for it, and others again had passed the stage at which further irradiation could usefully be given. The doses of stilboestrol he had employed were relatively large unless the patients were very intolerant; the average was 15 mg. a day. In some cases—though in none of those which showed improvement under treatment—the administration was followed by nausea and vomiting; other manifestations were activity of the breasts, with pigmentation, tenderness of the areola, and in some cases resumption of menstruation. Eight patients had shown improvement; their average age was 67.6 years. Fifteen, the average age being 53.5, became worse under treatment. Two patients became worse during the administration, but improved, both subjectively and objectively, after it stopped. His conclusions were that stilboestrol might make the malignant condition in a younger woman worse, but it might have value in the older woman. It did not bring about any improvement in bone metastasis of breast cancer.

Dr. S. B. ADAMS (Bristol) said that of 10 cases treated, 4 showed improvement, 1 being a woman aged 82. In 3 cases some of the lesions were observed to grow in size during treatment, though the main lesion shrank. The first case began treatment in July of last year; only 1 mg. of stilboestrol was given daily. Improvement took place to a marked degree. The primary in this case was a deep cancer crater of the breast, with diffuse infiltration of the chest wall and skin involvement, and this had healed leaving a fibrous scar with two small residual nodules. The liver had increased in size since treatment started, though whether this was due to secondary deposits could not yet be stated.

Dr. G. W. BLOMFIELD (Sheffield) said that his cases did not show any appreciable toxic symptoms, though some were disturbed by psychological effects when menstruation restarted years after the menopause. Of the 10 cases treated, 8 derived no benefit so far as could be estimated, and in 2 the result was indeterminate. In 6 of the cases the growth was such that it could be accurately measured and any improvement could be assessed.

Dr. ALEXANDER HADDOW (London) gave details of 13 cases, several of which had previously been treated by surgery and had shown recurrence, or by high-voltage x rays, though after a sufficient interval not to affect the results produced later by stilboestrol. The stilboestrol was given in total doses varying from 75 mg. to 676 mg. over periods of from 4 to 24 weeks. Administration was by mouth or by intramuscular injection, in some cases by both routes. In the cases responding in some degree lesions previously red tended to show a purplish tinge, or sometimes pallor; small skin nodules were flattened and occasionally disappeared; larger nodules and masses might undergo partial regression. In these 13 cases there was continued advance of the disease in 9, a temporary improvement in 3, and a marked and more lasting benefit in 1. This last, a woman of 64, had continued to show improvement over a period of 4 months. Favourable responses were much more likely in the older and post-menstrual group.

Dr. W. M. LEVITT (London) described 11 cases, all advanced but all well enough in their general condition to be treated as out-patients. Only one showed any marked improvement. In this case, a woman of 69, the ulcer shrank in four weeks from 11×6 cm. to 4×5 cm. He thought it would become more and more evident that with increasing age there is improvement in response to treatment.

Dr. R. McWHIRTER (Edinburgh) had 37 cases, of which were under the age of 58. Of these, 2 improved and 18 did not improve. Of 17 cases over the age of 58 there was improvement in 3 and no benefit in 14. One of the improvements was spectacular. It included the healing of the ulcer and almost complete disappearance of the disease. This case was one of poorly differentiated scirrhus of the breast, and the woman's age was 75.

Dr. EDITH PATERSON (Manchester) described 13 cases treated with stilboestrol and 23 with triphenylchloro-ethylene. In 11 stilboestrol cases, the average length of treatment was 12 weeks, the average daily dose 5.8 mg. The growth regressed in 2 cases, it was stationary in 8, and it progressed in 3. The average length of treatment in the 23 cases given triphenylchloro-ethylene was 27 weeks, the average daily dose 3 g. There was regression in 9 cases, the condition was stationary in 4 and progressive in 10. The most striking regressions were in the older patients.

Mr. C. J. L. THURGAR (Newcastle) had treated 10 cases, with promising results in 2 and a spectacular result in 1. Of his 4 cases under the age of 58 not one improved. The spectacular result was in a patient aged 58 who had had 10 weeks' treatment. This patient had multiple glands and skin nodules after a radical operation, and all the deposits had disappeared. The treatment was begun in April last.

Dr. J. Z. WALKER (Scunthorpe) also described 10 cases. In 3 the treatment had considerable palliative value; in 4 it failed; in 2 it was discontinued owing to intolerance; and 1 patient died during the period of treatment. One of the failures was a case of male breast cancer; the disease advanced rapidly under treatment, and the patient died within a month.

Prof. B. W. WINDEYER (London) gave particulars of a further 10 cases, 2 of which had had no previous treatment, 5 had had surgical removal, and 7 x-ray therapy. The average period of observation was 5 months. In none had there been complete disappearance of the growth, but at least 3 had improved, the ages being 43, 54, and 55.

#### Summary of Results.

In the whole series recorded by the various speakers there were 69 patients under the age of 58, of whom 43 had not improved, and none showed spectacular improvement. Of the 52 patients over 58, at least 17 had improved, and 6 or 7 were reported as showing spectacular improvement amounting in some cases to complete disappearance of fairly advanced disease.

Prof. E. C. DODDS said that, particularly in patients over 58, it was most important to determine the general systemic effect of an oestrogen, because anyone with experience of treatment of disorders of the menopause with synthetic oestrogen would know the great physical and psychological effects, and these were likely to influence the general condition of the patient with carcinoma. He had been surprised at the smallness of the dosage reported by some of those who had taken part in the investigation; it seemed to him that it would have been worth while to give really massive doses. He was also surprised that synthetic oestrogens, which were more powerful than stilboestrol when given by mouth, had not been tried. If the work was continued a control series of cases treated with lactose tablets should be taken.

Dr. LEVITT said that what had been presented was regarded only as a preliminary experiment to obtain an idea whether the investigation was worth pursuing. He proposed (and it was agreed) that a committee be formed consisting of those who had reported on that occasion, together with Prof. Dodds, and with Dr. Alexander Haddow as chairman, to follow the matter up further.

Dr. N. S. FINZI, from the chair, said that radiologists saw a large number of cases of malignant disease of the breast, but he wondered how many of them had seen spontaneous

appearance of a carcinoma. In his long experience he could recall only one case of his own, and one other which he saw at the R.S.M., and even in his own case there was either recurrence or a new tumour in the other breast later on. The improvements reported might be only temporary. The only male case that had been mentioned did very badly; possibly a male patient the male hormone ought to be given.

## Correspondence

### Infective Hepatitis

SIR.—Prof. Witts's interesting summary of infective hepatitis (June 3) prompts me to record some observations, made by Capt. Damodaran, R.A.M.C., and myself, on 430 cases admitted to the medical division in a general hospital in Malta in 1941-3.

Siege conditions favoured the epidemiological aspects of the study, the civil population and military personnel remaining more or less static till 1943. Thus the fallacy mentioned by Prof. Witts was enormously reduced since it could be assumed, for this period, that the experience of the garrison was uniform.

Infectious hepatitis exists in a mild sporadic form as "catarrhal jaundice" affecting children and young adults of the native Maltese, its highest incidence being in late autumn and winter. Cases have occurred among the British garrison, and since 1932 there has been a steady increase from 4.38 per 1,000 to 20 per 1,000 in 1939. There was a further increase in 1940 and in 1941, and in 1942 it reached almost epidemic proportions, the monthly incidence curve showing almost perfect symmetry with a maximum for the months of October, November, and December, and a minimum in April, May, and June.

Among the 450 cases 86% were between the ages of 20 and 29. The incidence as between British and locally enlisted troops was as 10:1. The one fatal case of acute cytolytic necrosis of the liver was in a Maltese. There is, from the careful study of the living conditions and contacts of known cases, abundant evidence confirming the well-accepted views of the approximately 30-day incubation period, the short pre-icteric infective phase, and the probability of droplet infection by "speech contact." Infection conveyed by direct transfer of the infective agent through contaminated syringes and needles can be eliminated in all but the group of post-arisenal hepatitis, of which 13 occur in this series. An investigation of the prothrombin content of the blood (Quick's method modified by Kark and Souter) during, and one month after, the attack of jaundice showed a variable lowering of the percentage figure. It never was it below 30%, and in all except two it was or above 95% in one month. The clinical types encountered were:

(1) *Gastro-intestinal type* (53%). Insidious onset: anorexia, often fully and unexplained, followed by nausea and vomiting; fever less than 100°, with dark urine and clinical jaundice in 3 to 5 days.

(2) *Febrile type* (30%). More sudden, even abrupt onset with temperature ranging from 101 to 103°, often simulating sand-fly fever (malaria was not present in Malta), followed by nausea, anorexia, and abdominal discomfort—sometimes vomiting, and ending in 2 to 4 days from onset.

(3) *Ambulatory icteric type* (10%). Cases with no notable general symptoms or, at most, slight malaise, usually insufficient to cause a soldier to report sick. He is observed to be yellow by his comrades while still on duty.

(4) *Hepatitis without icterus* (7%). The prodromal symptoms are ultra to the gastro-intestinal or febrile type with fullness and gastric discomfort and at least two fingerbreadths enlargement of the liver. No clinical jaundice develops, but latent jaundice is shown by a raised icterus index of 10 to 14 and/or the passage of a slightly bile-stained specimen of urine. Small groups of cases were followed with several members showing the typical gastro-intestinal febrile clinical picture and jaundice, and a single member with ictal symptoms of onset, enlarged liver, yet not having jaundice. Was thus that attention was drawn to hepatitis without icterus.

The last two groups (3 and 4) are of special importance in epidemiological studies, for, being "subclinical" types, they are presumably infective at some stage. True relapse is rare when it occurs it is apt to be severe. A single attack does

not necessarily confer immunity. One of my general duty officers in Malta had a typical attack of "catarrhal jaundice" when he was my house-physician in Leeds in 1937. He again fell a victim to infective hepatitis in 1942 when working in the medical division in Malta.

Among many other interesting facts a note may be added on the adverse effects of other hepatotoxins, particularly alcohol (acting in the presence of an epidemic) upon an individual who is incubating the disease, in provoking an overt attack, or in worsening and prolonging an attack otherwise mild, and in causing a "relapse" or second delayed attack of jaundice. We have detailed studies of at least 12 cases of relapse of jaundice after the first attack of infective hepatitis due to alcohol—not necessarily excessive—taken from 12 to 72 hours previously. This period of sensitivity of the liver may last at least 6 months, during which time alcohol is potentially dangerous. One patient was able to determine exactly how much alcohol could "turn him yellow." He said his "hangover" was out of all proportion to the amount consumed, and, after several unhappy experiments with progressively smaller quantities of liquor producing this untoward effect, he became a total abstainer. Some other effects of alcohol in the presence of infective hepatitis are epitomized in the following history:

A squadron of R.A.F. was moved from one landing ground to another in the Middle East in the last week of November, 1942. A section of the personnel lived and messed together and were closely mingled; one of their number at this time had a raised temperature for a few days and was removed to hospital, where he later developed jaundice. In the meantime the squadron moved to Malta (Dec.). On Christmas and Boxing Day a substantial quantity of drink was taken by most of the section. In 24 to 48 hours eight of their number developed jaundice. Two abstainers, however, living companions of the affected personnel, also developed jaundice, but it was mild in character and delayed a further seven days—"I am, etc.,

STANLEY J. HARTFALL, M.D., F.R.C.P.,  
Lieut.-Col. R.A.M.C.

### Treatment of Haemorrhage and Shock

SIR.—In the early days of the Spanish Civil War, and, indeed, right through it, the results from the transfusion of blood for the treatment of haemorrhage and shock among battle casualties were most contradictory and certainly not as satisfactory as those obtained with the improved methods in current use.

While many surgeons advocated its use and assured us that their results were excellent, others, like myself, soon gave up transfusing in the certainty that its theoretical advantages were outweighed by its practical disadvantages. This might have been due to the fact that we administered the blood too rapidly, giving too much in too short a space of time. By making frequent B.P. readings I discovered that shortly after transfusion there was an initial rise in B.P., but this was invariably followed by a dangerous fall which often coincided with the commencement of an operation, thus adding to its dangers. I don't know how the Group IV blood, with which we were amply supplied, was prepared, and since those days an improvement may have taken place which, in conjunction with the present-day slow-drip method, may be the reason for the well-earned popularity of blood transfusion in this war.

I treated over 5,000 wounded of the type which must receive urgent surgical treatment close to the firing line, and I therefore had considerable material upon which to study the clinical aspects of shock and haemorrhage. This led me to devise a method for raising and maintaining B.P. which served me well throughout the war and which I believe to be quite as good as any other, particularly in cases of shock, though I also used it in cases of haemorrhage accompanied by shock, a type of case very common in war wounds.

I administered, by intravenous drip, a mixture of calcium gluconate, hypertonic saline, and pholedrine (veritol), which I finally decided upon after trying out other drugs such as adrenaline. Veritol contains gr. 1/3 of pholedrine per c.c.m., and, although much greater doses can be administered, we found that three ampoules (gr. 1) a day, added to the calcium and saline, were sufficient even in the gravest of cases. Our aim was to obtain a systolic B.P. of 130, and we regulated our drip to this end. Cases differed considerably in their response according to the degree of shock and haemorrhage, and hence the total amount of fluid, glucose, and pholedrine administered



varied accordingly; but we never gave more than three ampoules in 24 hours, not more than three litres of glucose saline, which was usually hypertonic for the first litre but diluted gradually and slowed up as the general condition improved, while the amount of calcium gluconate we kept constant for all cases at 2.5 g. daily—three 10-cm. ampoules of the 8% solution.

A typical example of the results obtained is afforded by the following case of a young sub-lieutenant aged 17. Multiple wounds from mortar explosion, left arm shattered near the shoulder, left leg with gaping wound, and fractured femur at the upper third. When he was taken off the ambulance all bleeding had stopped, he was completely unconscious, and was put aside to be examined by me before being sent to the mortuary. On auscultation an occasional very faint heart-beat could be appreciated. A vein was dissected out in his sound leg and the calcium-veritol-saline drip at 120 drops per minute started. Within a few minutes he had recovered consciousness and his wounds had to be packed and bound tightly to stop bleeding. Within two hours his systolic B.P. was high enough to warrant a disarticulation of the shoulder-joint and debridement and application of closed plaster to his leg. He received a total of 6 ampoules of pholedrine in 48 hours, after which it was discontinued. He was evacuated to a base hospital eight days later, after removal of stitches and change of plaster.

The present phase of the war is going to make great demands on the blood banks, and blood may not be available at all times in all places. The calcium-glucose-pholedrine mixture can be used successfully in place of blood and plasma. It is with this object in view that I have ventured to encroach upon your valuable space.—I am, etc.,

E. MARTINEZ ALONSO, M.B., Ch.B.

Queen Mary's Hospital, Roehampton, S.W.15.

### Experimental Shock

SIR,—Prof. Moon's detailed analysis of shock (June 10, p. 773) is timely and valuable, but there is one point on which I should like to comment. His experimental evidence has been obtained largely by the method of implanting minced muscle in the peritoneal cavity of dogs. This method was used by me in rats with similar results, the animals dying on an average 12 hours after operation with obvious clinical signs of circulatory deficiency, such as cyanosis and coldness of the skin, and a haemoconcentration of 40%. But a bacterial peritonitis was found in every case despite careful measures of asepsis in the preparation and implantation of the muscle. The minced muscle provides an ideal culture medium for organisms, and a single sporing bacillus will produce an army within a few hours. The admixture of a little proflavine powder prevented the bacterial growth, and the animals did not develop clinical shock or haemoconcentration.

It would seem that the effects of muscle implantation are not due to tissue autolysis, as claimed by Moon, who did not report bacteriological examinations, but to bacterial toxins. Several of the features which he lists as characteristic of secondary shock, such as persistent vomiting and a dilated and atonic gastro-intestinal tract, are features of bacterial peritonitis rather than of traumatic shock. Since bacterial activity probably plays a small role, if any, in the development of secondary shock following extensive trauma or severe burns, it is wrong to apply to this type of shock conclusions which appear to come from the study of an infective process.

The rats which had proflavine powder implanted intraperitoneally, with or without minced muscle, died in 3 or 4 days with gross abdominal distension and ileus, although the peritoneal fluid remained sterile. This suggests that solid proflavine is not suitable for intraperitoneal administration in large doses to human beings.—I am, etc.,

Radcliffe Infirmary, Oxford.

HERBERT HAXTON.

### Ether and the Oxford Vaporizer

SIR,—I am grateful for the bit of sugar in the first paragraph of Dr. Durrans's letter (June 17, p. 826), in which he is appalled by the high incidence of vomiting reported in a paper by two members of this department. A figure giving the frequency of post-operative complications depends in considerable part on the diligence with which these are sought and the honesty with which they are recorded. I remember some years ago Dr. Freda B. Bannister embarking on an investigation which entailed radiological examination of the chests of patients who

had been subjected to abdominal operations. After some months of careful work she obtained concrete evidence that what others had conveniently dismissed as "reactionary temperature" was often demonstrable on an x-ray plate. She was then greeted in some quarters with: "I hear you are getting more 'chests' than you used to!"

Recent correspondence in another journal suggests that it is profitless, in fact misleading, to compare statistics from different sources. Some strain at, and record, gnats, while others digest camels without deeming the incident worthy of note. I recall two relevant facts. (1) At a meeting—well attended by surgeons—an anaesthetist provided figures to show that vomiting rarely occurred in his patients. A subsequent private cross-examination elicited that he disregarded vomiting on the day of operation! (2) A patient was subjected to appendicectomy under nitrous oxide. True, the patient didn't vomit, but for 24 hours afterwards was grey, nauseated, and ill at ease. The anaesthetist recorded this case as "vomiting—nil." A bout of vomiting would have spoiled his figures, but would have resulted in a happier, healthier patient.

There is often a great discrepancy between the bouts of vomiting recorded by an observer and those remembered by the patient. Mushin and Wood wished to eliminate as many variables as possible, and preferred the evidence of observers instead of relying on the memory of the patient, notoriously unreliable in the immediate post-operative period, because of the combined effects of hyoscine, morphine, anaesthetic, and operation. Lastly, the Oxford vaporizer was introduced not as a panacea for post-operative vomiting, but as a means of providing simple safe anaesthesia, particularly in war conditions. I have just returned from a hospital where one anaesthetist was responsible for four operating tables (one for induction) throughout a busy day with the help of three orderlies using Oxford vaporizers. Three surgeons, working simultaneously, were kept supplied with a stream of patients, and 38 operations were performed in 10 hours without incident.—I am, etc.,

Nuffield Department of Anaesthetics, Oxford. R. R. MACINTOSH.

SIR,—Dr. Durrans's letter under this heading (June 17, p. 826) reads so strangely that it is worthy of passing comment. He refers to the series of cases in the experiment carried out by Drs. Mushin and Wood as "admittedly" uncomplicated, and emphasizes the "admitted" incidence of post-operative vomiting.

The authors of the experiment did not claim that the administration of ether was done under the most favourable conditions, though their use of the vaporizer might well imply this. I imagine that the use of the vaporizer would at least allow them to keep one factor in the experiment constant, and but for the No. 2 vaporizer I know of no other apparatus likely to do so. He then reveals the truth that the ether vaporizer delivers ether! Does he try to infer that this was not "admitted" in the experiment? Does he seek to disprove the statement made by the Nuffield Department of Anaesthetics that "the concentration of ether vapour in the inspired mixture is indicated by the position of the tap"? I believe that one can have the vaporizer calibrated to deliver a known concentration of trilethyl or chloroform.

Dr. Durrans regrets that the Oxford vaporizer was not designed twenty years ago, and strongly deprecates submitting the patient to the discomforts and dangers attendant upon ether. Less than five years ago (*B.M.J.*, Dec. 2, 1939) Macintosh and Pratt wrote of ether: "This drug, discovered almost a hundred years ago, has never lost its pride of place as the safest and most reliable of anaesthetics." I am unaware of any ridiculous claims put forward for the clinical performance of the apparatus. I have used it since first it became available and with gratifying results.—I am, etc.,

Salisbury.

A. D. H. SIMPSON.

### Post-operative Vomiting

SIR,—Dr. Barbara Crawford (June 17, p. 826) states that the oral administration of adrenaline is of value in controlling post-operative vomiting. The publication of this letter was stimulated by the paper by Dr. Wood and myself on the effect of nicotinic acid on post-operative vomiting. The type of clinical research exemplified by this paper requires



its performance only painstaking observation, honest recording, and analysis of the results. Dr. Crawford would be performing this service if she would submit her suggested treatment to this *etc.* or, alternatively, publish the evidence on which her statement is based. Anaesthetists would thereby be indebted to her not only for suggesting what may be a valuable remedy but for being spared the necessity of carrying out an investigation to confirm what may be only a clinical impression.—I am, *etc.*,  
Nuffield Department of Anaesthetics, Oxford WILLIAM W. MURPHY.

#### Administration of Pentothal

SIR.—I am deeply grateful to Dr. F. W. Roberts and to Dr. H. B. C. Sandiford (June 17, p. 825) for their clear and timely warning of the dangers of overdosage of pentothal in deeply shocked cases. I, however, plead not guilty of having underestimated these dangers. The administration of any anaesthetic agent to a seriously shocked patient is a highly delicate procedure, calling for a considerable degree of experience and skill. Accordingly, those surgical units whose duty it is to assist the recently wounded—where shock is common and severe—are staffed by specialist and graded anaesthetists. Nothing less would be good enough for our fighting men.

Our ranks at home have, however, been depleted, and we have to find a simple formula to encourage the "occasional" anaesthetist to tackle with confidence the average uncomplicated case. If we have to achieve this purpose it is necessary that the instructions given should be simplicity itself and should allow for a reasonable margin of safety. As Dr. Sandiford agrees with me, within these very strict limitations, may I consider his most valuable comments and instructions to be complementary, not contradictory, to mine?—I am, *etc.*,

E. MONTUSCHIL,  
E.M.S., Sector X

#### Episiotomy

SIR.—I feel that Dr. Neilson Dow's memorandum (June 17, p. 813) should not be allowed to pass without comment. The author seems to overlook the fact that it is essential, when repairing an episiotomy, to unite the deeper layers—that is, the muscles—of the perineum, and, when necessary, the levator ani. If this is not done, a deficient perineum is certain to result with considerable disability and the risk of development of rectocele. Surely, if the method outlined is adopted, the result must be that only the mucous membrane of the vagina and the skin of the perineum are united, unless further sutures are inserted. Thus the method, if it is to be an effective means of repairing an episiotomy, defeats its own end, which is, in Dr. Neilson Dow's own words, to make it so that "there is no need to give chloroform after birth to relieve the pain of stitching up."

I am glad to have an opportunity of protesting against the prevalent and pernicious practice of giving a general anaesthetic for repairing the perineum. This is extremely dangerous, as it is well known that a parturient woman tolerates a general anaesthetic very poorly, and alarming or even fatal collapse may occur. Such anaesthetics are often given by a doctor working single-handed and having to rely on the midwife to maintain the patient in a state of unconsciousness. The danger of chloroform in the pregnant and parturient woman has been emphasized by Sheehan (*J. Obstet. Gynaec. Brit. Emp.*, 1941, 47, 49), but no general anaesthetic is entirely safe in the period immediately following childbirth.

The perineum can be repaired painlessly, thoroughly, and with complete safety, using local infiltration with procaine. This procedure was fully described by Prof. Browne in 1928 (*Lancet*, 1928, I, 1281), and it has been and is in routine use in the obstetric unit at University College Hospital. Local analgesia has now been used for perineal repair in many thousands of cases without a single fatality. It has the further advantage, besides complete safety, that it can be used by a single-handed practitioner without the additional anxiety of caring for an unconscious patient while his attention is, or should be, fully engaged in repairing the damaged tissues.

Finally, I cannot agree with Dr. Neilson Dow that episiotomy is only rarely indicated. On the contrary, I should say that it is one of the most useful procedures in obstetrics. It is indicated in labour when a tear of the perineum is seen

to be inevitable, in almost all cases of forceps delivery in primigravidae, and in every case of breech delivery in a primigravida, unless the baby is small. An episiotomy is a cleanly incised wound, and is thus much easier to repair than a spontaneous and possibly ragged laceration. Timely episiotomy will often prevent severe damage to the tissues of the perineum and vagina and even of the rectum.—I am, *etc.*,

JOSEPHINE BARNES,  
University College Hospital London First Assistant, Obstetric Unit.

#### Mastoiditis and Mastoidectomy

SIR.—I have read with considerable misgiving Dr. H. Hilton Brown's correspondence (March 18 and May 6) on this subject. One gathers from his observations that he is in complete agreement with what is, as he states, the public viewpoint on mastoid operations. The public is represented as regarding the mastoid operation as of a very serious nature, often fatal, with frequent great disfigurement, possible facial paralysis, possible deafness, a continuation and aggravation of the ear discharge, and very painful and prolonged post-operative dressings. In short he would have us believe that the mastoid operation for acute mastoiditis is very dangerous, and that it is quite unnecessary. I find it impossible to agree with these assumptions.

During recent months I have performed 97 conservative mastoid operations for acute mastoiditis. Fourteen of these had serious complications before operation, and it is instructive to consider these cases in some detail.

(1) A case of general streptococcal meningitis. (2) A case of meningeal reaction with a turbid sterile C.S.F. (3) A case of otitic hydrocephalus in deep coma, associated with a large extradural abscess in the middle cranial fossa. (4) Five cases of pons abscess, one of which was associated with lateral sinus thrombosis. In another case the inflammatory infection in the middle ear had resolved with a tympanic membrane somewhat thickened and opaque in appearance, but otherwise normal; the presenting sign was a subperiosteal abscess over the mastoid, which at operation was found to be associated with coalescent suppurative mastoiditis and a large pons abscess. (5) A case of suppurative petrositis with Gasserian ganglion neuralgia, external rectus paralytic squint (6th C.N.), transient facial paresis, transient vertigo, middle-ear deafness, and a small extradural abscess in the region of the Gasserian ganglion (Gradenigo's syndrome). (6) A case of abscess formation at the apex of the mastoid process with the pus tracking down the neck deep to the sternomastoid muscle (Bezold's abscess). (7) Two cases of acute mastoiditis associated with focal nephritis. (8) Two cases of haemorrhagic inflammation throughout the mastoid process. The large majority of the remaining 83 cases were of coalescent suppurative type of mastoiditis.

In this series there was only one fatal case—namely, the one of streptococcal meningitis, and this patient was almost moribund before operation. There was no case of facial paralysis, and with the exception of a few of the complicated cases scarring was inconspicuous. There was one case of persistent otorrhoea associated with infection by the *Pneumococcus mucosus* and a case of unhealed perforation—probably of old standing. In the other cases good hearing returned with dry ears and healed ear-drums. This included the case of suppurative petrositis, which is a severe test for functional recovery. In this case it is interesting to note that the squint due to paralysis of the external rectus muscle recovered completely within a few weeks of a conservative mastoid operation and drainage of a small extradural abscess in the neighbourhood of the Gasserian ganglion.

In view of these results Dr. Hilton Brown's suggestions that mastoidectomy is dangerous, *etc.*, do not appear to be well founded. As regards painful and prolonged post-operative dressings, if the mastoid wound be insufflated with sulphonamide powder and closed except for the lower third of the incision—which will provide for drainage—and if the cavity is syringed out occasionally with a few c.c.m. of 10% albucl solution, the wound will heal soundly within a few weeks, with little discomfort.

The degree of conservatism exercised in selecting cases for operation is illustrated by a review of the following cases. In a series of 132 cases of acute mastoiditis treated at one hospital complete resolution occurred in 77 cases with conservative treatment, including sulphonamides; the remaining 55 cases had mastoid operations either immediately or after conservative treatment had failed. Paracentesis of the tympanic membrane

is considered to be a conservative measure. In this connexion it is true to say that sulphonamide treatment has not reduced the number of cases of mastoiditis requiring mastoidectomy that was hoped at one time.

In conclusion it may be claimed with all fairness that the conservative mastoid operation done at the right time is a safe procedure, which preserves life, restores function, and reduces very considerably the incidence of chronic otorrhoea.—I am, etc.,

London, W 1

W. H. B. MAGAURAN, F.R.C.S.

### Morning Protamine and Evening Soluble Insulin: A New Abuse

SIR.—Six unfortunate insulin cases have been referred to me lately from different parts of the country in great difficulty, under a novel use of insulin, so unsuccessful and irrational that it deserves condemnation. They have been given P.Z.I. (mostly 20 units) before breakfast and soluble insulin (mostly 20 units) before supper, a treatment which shows surprising ignorance of the different action of the two types of insulin. In this way the weak insulin is given to counteract the day's food, and hence the patient is loaded with sugar after all the day's meals; and the strong insulin is given in the evening with resultant hypoglycaemia about 1 to 2 a.m. There is no space here to expose in detail the inimitable bad results from this abuse, nor do I often use your columns for self-advertisement, but I would ask the doctors involved to study the last edition of *The Diabetic Life*, which demonstrates the unphysiological nature of the above treatment.—I am, etc.,

London, W 1.

R. D. LAWRENCE.

### Ketosis in Children

SIR.—In a series of 239 consecutive cases of tuberculous disease of the abdominal lymphatic glands Clark and Colt (*Lancet*, Jan. 16, 1937, p. 125) found that ketosis was present in the great majority of subacute and acute cases when vomiting had been absent or infrequent. This would fit in with Dr. Bray's note (June 17, p. 824) that ketosis occurs after "emotion, exertion, or excitement." The sign is so marked and so constant that it may be relied on in a difficult case to differentiate the condition from acute appendicitis or from partial intestinal obstruction. An x-ray examination is always advisable.—I am, etc.,

G. H. COLT.

### Service Medicine

SIR.—I am very much interested in the correspondence in our columns on this subject. After 4½ years' experience in the administration of hospitals at home and over-seas I agree that the treatment of the Service patients is excellent, better perhaps than that of the patient in the civil hospital. But it must be remembered that for the most part this treatment is, during wartime, carried out by specialists who have not only been trained but have been brought up in teaching or good non-teaching hospitals with all the traditions which this means. These officers, moreover, at first welcomed the change in their daily routine—the greater leisure they had in which to think and the opportunities for communal discussion which they enjoyed—but later, at least in my experience, they hankered after their old way of life and lost their enthusiasm for the Service community. While there were some excellent regular specialists, in my opinion the "bringing up" of the clinician in Service conditions in peacetime did not produce anything like the same quality of physician or surgeon as that of the voluntary hospital staff; but in fairness it must be admitted that the peacetime Army did not offer any comparable clinical material.

I also agree with one of your correspondents that the majority of the higher-ranking administrative officers were most helpful and quite delightful to work with, but still I feel that the system is wrong. If administration is done by an individual with a clinical bent who wants to study disease in the human body, however interesting he may find administrative tasks, he is always beset by the feeling that this is not his job, and the constant inspections of kitchens, vegetable stores, latrines, and wash-houses, which are very necessary, become inexpressibly tedious. Certainly he can, if he likes, see clinical cases, but

it is rather by the courtesy of his junior officers, and he never can have the close contact and personal responsibility for diagnosis and treatment of the clinician, though theoretically he is responsible for both.

If the administrator is not clinically minded, he may find enough to do without interfering with his clinicians, and no doubt most do, but he is in a position to interfere to a serious extent. He has almost autocratic power in his unit, and may or may not use this well. Without his encouragement and consent clinical meetings and discussions would be difficult to hold. The writing of papers and other communications to the medical press may be discouraged, and their forwarding for publication may be so delayed that their usefulness may have passed or some other worker may have got in first. Directions for treatment of various diseases are given by consultants, which are most useful, but they are meant to be guides. They may, however, be regarded as instructions irrespective of the special circumstances of a case, which may demand quite different treatment. Inquiries may be ordered and results demanded without any consideration of statistical validity or control of findings, and policy may be initiated based on totally erroneous premisses. No doubt all such mistakes will eventually be rectified, but meanwhile there may be much waste of time and effort, and, what is worse, irritation and a sense of futility among the team of clinicians whose potentialities for united work are the great argument in favour of Service medicine. Under the stress of war Service medicine is good, but in the reaction of peace it seems likely that the stimulus of altruistic individualism is likely to give better results.—I am, etc.,

Bath.

R. G. GORDON.

SIR.—Only the professional eminence of Air Cdres. Cade and Conybeare and the possibility that their experience has been of the ivory tower variety prevents me from condemning their letter outright as "apple polishing" (May 20, p. 574). I cannot speak for British Forces, but I think that sentiments of the majority of medical men in the Canadian and U.S. Forces are identical with those of your correspondent of April 1 (p. 470).

Examples of bad staffing are not rare, but here the main complaint is of over-staffing. Dr. Frank Lahey is chief of the Procurement and Assignment Board which furnishes doctors to the U.S. Forces. I suggest that Air Cdres. Cade and Conybeare read his remarks made a few weeks ago at the meeting of the American College of Surgeons, in which he called attention to the waste of medical man-power in the Forces. Your space is too valuable for a detailed list, but I will tell of the complete medical and enlisted staff of a 1,000-bed general hospital shipped to the South Seas where for weeks they had neither patients nor buildings, and the medical officers were engaged in stavedoring, felling trees, and so on.

I know the task of furnishing medical men for the armed Forces is a big one. No one wishes to deprive any soldier of his needs, but I am sure the job could have been done better and that glaring evils go uncorrected.—I am, etc.,

Prairie Grove, Arkansas

FRANK RIGGALL.

SIR.—I have just been reading a letter published in your issue of April 1 and entitled "Service Medicine?" It was received in our mess with feelings of disgust—both for the authors and for the journal which published such gross libel. I may add that more than 50% of the members of the mess are M.Os.

I myself have been in the Army for two years, and admit that I entered it with a poor opinion of both the Army and its medical service. During this past two years I have seen the Army from many different aspects while serving with different types of medical unit, both at home and abroad. During that time I have considerably revised my opinions; I now feel proud to be in the Army, and hold in high respect the organization of the R.A.M.C. I freely admit that the R.A.M.C. has its faults, but I maintain that these are considerably fewer than I found in the chaos of civilian medical practice. If I were a layman without much money I would far rather be treated for illness by the Army than as a civilian. I admit that I have met medical officers of high rank whom I have considered incompetent, but I met many, probably more, of

such type in civilian practice. Those met in the Army are only too often either Territorials or civilian consultants who have been given high rank because of professional ability but who are failures because they take no interest in the Army as a whole. Many M.O.s—civilians conscripted into the Army—have joined up with antagonistic feelings to the Army, and have adopted an attitude of obstruction from the start. The "colleague in the Forces" sounds to me to be of this type. Yet in spite of these bad examples of our profession the Service has functioned well. Let me mention two examples of good organization. I have known a hospital of 1,200 beds empty itself of patients, move over 300 miles, and be ready to fill its beds again within 2 to 3 weeks. On an assault landing surgical teams were operating on shore within 8 hours of zero hour, and earlier casualties were receiving treatment on a hospital ship.

Now I will answer some of the points raised by my colleague. Concerning "the heavier burdens of civilian life in comfort, transport, and relaxation (especially alcohol)." I would like to point out that on the Anzio beach-head, where I am writing this letter, and where medical units have been working for nearly 4 months, comfort and relaxation are minimal, transport is of little use, and the supply of "alcohol" is within very narrow limits. The food is very good and well prepared, but I would still prefer a civilian ration cooked by my wife in my own home.

As regards confidential reports, there are two types—an adverse report which must be shown first to the officer concerned, and a recommendation for promotion, which for obvious reasons is confidential. Remarks about medium reports, etc., merely show the ignorance of my colleague on the subject. Also promotion for medical officers is rare within a unit, so that there is no petty rivalry between fellow officers on this account.

The hospital referred to seems to be having a very slack time indeed (a state of affairs I found difficult to fit in with the shortage of catgut). How much time per day does this officer devote to training his underworked orderlies to a higher standard of work for when their time comes? Or are they all perfect nursing orderlies? It must be remembered that the assessment of numbers of sick and wounded is extremely difficult, and that preparations must be made for the maximum number. I have known cases where the Service has been considerably strained, especially in isolated areas, but it has never broken down.

I have heard so much nonsense about Army Forms, which I once agreed, but when they are carefully looked into there is a reason for each one of them. For my own personal needs I probably have to fill in many fewer forms than my wife, and I know that I have far less medical "clerking" to do than when I was an R.M.O. at a civilian maternity hospital.

I am 100% in favour of a State Medical Service, though not one run on exactly Army lines, because it will be dealing with different problems. I feel sure it will come and have grave doubts of its initial success. These doubts, however, are mainly fears for what our profession will do to make it a failure.—I am, etc.,

T. EDWIN HALL,  
Capt., R.A.M.C.

### Spanish Medicine

SIR.—In your annotation on Spanish medicine (June 17, p. 820) you say: "Spanish has not hitherto been regarded as a medically or scientifically important language, but in Argentina, Mexico, Chile, and elsewhere in the Spanish-speaking world, active centres of medical investigation exist or are developing, and it seems not unreasonable to suppose that Spanish will in the future achieve an important position . . . as a medium for the communication of discoveries in medicine and other scientific fields." This statement does substantially less than justice to the outstanding researches in the last twenty years in physiology and experimental medicine of B. A. Houssay of Buenos Aires and his past and present collaborators like Braun-Menéndez and Orias. The contributions of the Houssay school in all fields of endocrinology are of outstanding importance; I need only refer to their discovery of the diabetogenic hormone of the anterior pituitary, which has revolutionized our views on carbohydrate metabolism and diabetes mellitus. The periodic reviews which Houssay has contributed to American journals reveal a wealth of significant advances made by his school in connexion with the physiology of all the ductless glands. The Houssay school are also responsible for our current interpretation of Goldblatt's work on experimental ischaemic hypertension; a recent monograph on the subject from the Argentine is well worth

translating into English. The monograph by Braun-Menéndez and Orias on the heart sounds has been translated into English, and has been highly appreciated. It would be as well if you could arrange for authoritative informative reviews of the important work of Argentine medical scientists to be made available more often to their colleagues in this country.—I am, etc.,

SAMSON WRIGHT.

\*. We think that a careful reading of the annotation shows that we fully recognize the importance of Argentina as an active centre of medical investigation. Prof. Wright's reference to the work of B. A. Houssay may be supplemented by the observation that in 1942 we invited Prof. Houssay to write an article for the *Journal* on renin, and a paper entitled "The Role of Renin in Experimental Hypertension," by B. A. Houssay and E. Braun-Menéndez, appeared in the opening pages of our issue of August 15 in that year.—ED., B.M.J.

### Colonial Medical Service

SIR.—I would like to have an opportunity of saying that my remarks on the above Service have been unfairly and unjustly misinterpreted. The strictures of my censors are quite unjustified. It was never my intention to "cast a slur" on the medical personnel of the Colonial Service, collectively or individually, in a general disparagement. I know too well the very fine, praiseworthy professional work which has been done continuously, sometimes under most unfavourable conditions, in many Colonies. Indeed, in previous observations in the House of Commons in Colonial debates I had praised without stint such excellent efforts, as, for example, when I singled out for special approbation the estimable work of the medical officers in Caribbean ports who had by their superb vigilance kept certain epidemic diseases from the West Indies. My castigation was intended for the administration, organization, set-up, and general conditions of the Service from the aspect of an overriding medical bureaucracy, without Whitley Councils, or negotiating or arbitrating machinery, or organizational representation in past years. On that I am prepared to stick to my guns and to defend my remark, which was made in the debate on the proposed British health reorganization, and which was not challenged by any opposing M.P. at the time.

I hope this disclaimer will stop the twisted interpretation of my Commons sentences in one debate. My professional friends and colleagues in many Colonies are fully aware of my admiration for their devoted medical work, and my B.M.A. constituents in the West Indies especially will recognize the prejudices of my critics. A criticism of any Service has never previously meant a disparagement of its personnel. This line of argument would stultify any unfavourable comment on any Government Department or administration. Lord Hailey is concerned with the effect of my remark on the recruitment to the Colonial Service from "the medical profession in this country, which must provide the personnel for its expansion." I am keener on properly organized recruitment, not on *Herrnvolk* lines but on merit and qualifications, without regard to colour, race, or creed, carefully vetted by an independent advisory professional Colonial Appointments Board, with a preferential tendency towards native-born talent if available and up to the required standard.

I hope my language here is suitably reserved as compared with the over-emphasized abuse of my chagrined critics.—I am, etc.,

House of Commons

H. B. MORGAN.

SIR.—Your correspondents have so far praised the organization of this service and its British medical personnel. Hardly a word has been said about the native Colonial peoples for whom the Service is intended. Research is, of course, indispensable to progress, but since the results of its findings bear a reference to the future, the merits of the Colonial Medical Service have to be judged not merely in terms of the satisfaction which it derives from its own efficiency but also in terms of its immediate effects on Colonial health and welfare. Some pertinent questions suggest themselves:

1. Is the relation between doctor and native patient personal? Is any such relation possible without a knowledge of the patient's

language and/or some intimacy with his cultural background? Is there free choice?

2. What is the ratio of doctors, or of hospital beds and welfare centres, to the population of each colony? What is the infant and adult mortality rate? Is there health insurance of any kind?

3. Are fully qualified natives engaged on a basis of equality? Is the expansion of the Colonial Medical Service conceived merely in terms of increasing the number of European doctors and native auxiliaries respectively?

4. Is the Colonial Medical Service a subsidiary branch of the colonial political system? Do the native colonials possess any effective democratic control over the political structure?

When these questions have been fully answered it will soon be obvious whether or not Dr. Morgan's condemnation is justifiable.—I am, etc.,

Chesham.

S. D. CUDJOE.

SIR.—Evidently Dr. Columba Guest (June 10, p. 797) sees the medical world split sharply into two camps: the noble altruists of the Service and the mercenary "diehards" whom nought but a fee will galvanize into activity.

This goes too far. For, on the one hand, my various friends serving in the Colonies (where living costs are low for the most part) assure me that they are adequately paid and pensioned—I should infer as much in any event from the favourite words "Efficiency Bar at £850," which, incidentally, hint delicately at that problem confronting so many services: a certain tendency to resting upon oars. And, on the other hand, I see so many consultants working many hours a day for nothing, and not entirely in institutions, while most of us can remember the G.P. of the old school whose fee was his last concern—a means whereby to live but not an end in life. Nor is he yet quite dead, and if his day is passing it is mainly 'because changed economic conditions render his unpaid work at once less essential to his patients and a matter of more difficulty to himself. Times change and we with them.

But there are still times when fees should be waived, and I prefer to think they still sometimes are forgone. This represents a real sacrifice on the part of the private practitioner, for he has neither the backing of a regular salary nor the expectation of a coming pension.

We are short of good men here as well as in our Colonies. And it seems a pity that so many ardent medical reformers are like Dickens's character Mrs. Jellyby. With "their fine eyes" on Africa they fail to see that there is plenty of scope for missionary zeal and the crusading spirit in the place where humanity proverbially starts work—at home.—I am, etc.,

Birmingham

PETER PARRY.

### Medical Research and General Practice

SIR.—The article by Dr. C. E. S. Flemming on research and general practice (June 3, p. 759) encourages me to write to you on the same subject.

Organized medical research in this country is undertaken partly by the Medical Research Council's workers, partly by research departments in some of the large teaching hospitals, and by the research departments of a few of the large industrial concerns. The number of permanent posts which can be obtained in such work is extremely small. The majority of research workers receive grants or scholarships or salaries which compare very unfavourably with the remuneration that an average general practitioner expects to earn. The future is relatively insecure for the research workers, since their grant may last 2 or 3 years and then terminate, and a fresh grant may not be obtainable.

As a result of these conditions many doctors who are suited in temperament and in mental ability to a life of research gradually drift into general practice. Most general practitioners are too busy to spend much time in study, and no facilities exist from which they could easily obtain help and advice should they wish to explore a suitable field in clinical medicine.

One of the chief benefits to the doctor which may accrue from practising in a health centre as a member of a team instead of working a single-handed practice will surely be that facilities for clinical research will be much more readily available. More cases of the type that interests him should be forthcoming, for his colleagues will probably refer such cases

to him for an opinion. Moreover, he will have at his back a pathology department equipped for simple routine tests, and this will enable his observations to be more scientific and less the result of guesswork.

If such research became at all common, advice centres might be set up in suitable teaching hospitals to guide the practitioner in his choice of subject and in his methods of work. The multiplication of research results which would follow would surely be of great ultimate value to medicine. At present, study is largely limited to work on cases of advanced disease, since it is these cases almost entirely which are sent to the large hospitals where research is carried on. The first stages of disease are seen by the general practitioners only. As a result, organized study of the important first stages of disease is largely lacking. A new phase in the study of disease might open if the general practitioner, suitably equipped and with expert guidance available, were given an opportunity to continue his studies, begun during his training, right through his career.—I am, etc.,

Wem, Salop

MARY E. YUILL.

### "Departmental Prescription"

SIR.—You are taken to task by Dr. W. F. Annand (June 17, p. 827) for "snarling at the Minister of Health." You are reproved for failing to realize "that the Minister is working in the interests of the community, and that those of the doctors are of small importance in comparison." And you are adjured to give the Minister credit for a single-minded belief that his proposals are in the public interest; "after all, he is advised by expert medical men."

A growl of protest at these ingenuous views may be permitted, bearing in mind that if criticism of Government proposals is offensive to some minds, snarling is to others an objectionable term. Dr. Annand fails to give due consideration to the fact that large numbers of his colleagues share a single-minded belief that these proposals are very far from being in the public interest and deem it imperative to say so. Despite official denials, they do see in these proposals a desire to control an independent profession in order to control medical certification. They regard any such tendency in policy as a menace to the public interest and to the preservation of professional standards, both ethical and material. They hold that the interests of the community are not best served by attaching small importance to those of the doctors. And for so thinking they have very solid grounds indeed.

Dr. Annand concedes that the Minister may be mistaken—"misguided"—although advised by experts. Many share this view, as your columns, Sir, bear witness. In National Health Insurance matters the attitude of the Ministry, since its inception, has been narrow, stultifying, and repressive. Dr. Dain on June 1 at Bristol, put it on record that the profession "has experienced the futility of attempting to influence the development of the insurance service. Representations made over and over again for the enlargement and improvement of the service had fallen on deaf ears." He referred to the Insurance Act Committee and its continual struggle with the Government to obtain suitable remuneration.

The issues raised in the White Paper for a comprehensive health service are wide, and far more is at stake for the public and for the profession than appears on the surface. Dr. Annand concludes that the whole is always greater than the part. Quite so; let us scrutinize the parts now, however, building only on secure foundations.—I am, etc.,

High Wycombe, Bucks.

DOUGLAS J. B. WILSON.

### The National Maternity Report: Correction

SIR.—In the report on a National Maternity Service just published by this College a most regrettable mistake has occurred. On page 5 in Table II a maternal mortality rate of 3.6 per 1,000 is given to Birmingham. This is wrong. For "Birmingham" read "Blackburn." I and my colleagues deeply regret having done this disservice to the fair fame of a city whose records for maternity and other health services have always stood so high.—I am, etc.,

FRANKLY HOLLAND,  
President, Royal College of Obstetricians  
and Gynaecologists

## Obituary

J. HUGH THURSFIELD, D.M., F.R.C.P.

Consulting Physician, St. Bartholomew's and Great Ormond Street Hospitals

Born in July, 1869, Hugh Thursfield, who died on June 20, was the eldest son of Dr. T. W. Thursfield, F.R.C.P., at one time a physician of eminence at Leamington Spa. He was at school at Leamington College, and with a classical exhibition he went up to Trinity College, Oxford, where he obtained an honours degree in Greats. Thereafter he became a student at St. Bartholomew's Hospital, and later obtained the Oxford degrees of M.A. and D.M. in 1897 and 1899 respectively. At St. Bartholomew's he was for many years a demonstrator in morbid anatomy, and in 1909 published jointly with Dr. W. P. S. Branson a volume on *Medical Morbid Anatomy and Pathology*. With his election as assistant physician at St. Bartholomew's and the Hospital for Sick Children, Great Ormond Street, his professional career was fully established. At both hospitals he worked until he reached the age limit for active service, but at St. Bartholomew's, unfortunately for him, his retirement became due before there was a vacancy for him on the senior staff. His Fellowship of the Royal College of Physicians dated from 1906, and he was a member of the Council from 1929 to 1931. During the period 1910-26 he held various posts of honour in the Sections of Pathology and of Children's Diseases at the Annual Meetings of the British Medical Association.

Although he had an extensive knowledge of general medicine and medical pathology his chief interest was in his work at Great Ormond Street, and his most important literary activities were in connexion with paediatrics. He was, with the late Sir Archibald Garrod and Dr. F. E. Batten, an original editor of the well-known book *Diseases of Children*, published in 1913, and was responsible for its latest edition with Dr. Donald Paterson. Also he was the first co-editor of the *Archives of Disease in Childhood*, founded by the British Medical Association in 1926. The original editors continued in charge for eight years; and it was through Thursfield that the policy was adopted to publish only original work in paediatrics. This policy gave publicity to valuable contributions for which no other outlet existed, and it is impossible to doubt that this has had its effect on the English school of paediatrics.

At the age of 66 he retired from London, and finding a house and garden which just suited him near Basingstoke he settled in with great happiness. Early in the war he was appointed physician to Park Prewett E.M.S. Hospital, Basingstoke, which post he still held at the time of his fatal illness.

Thursfield was a bachelor and exhibited the best traits of that state. Among these was a great gift for keeping in touch with people, so that his circle of friends was most extensive. So, too, were his intellectual interests. Coloured by his classical education, his devotion to Oxford, his work at two important hospitals, and his long membership of the Athenaeum, he had an immense fund of knowledge at his disposal. He was much more than merely well read in prose and verse, and himself wrote the simplest and most accurate prose. The very strong discipline which he maintained over his own literary language was perhaps compensated for by his love for words themselves, their histories and developments. He had an expert knowledge of English birds, and was a rare connoisseur of red wines. But in addition to such special subjects—and others might be mentioned—his general knowledge was quite remarkable. Mixing once more in the last years of his life with many men so much younger than himself, his encyclopaedic knowledge became not only a convenience but a source of pride to the hospital. He would surprise a radiologist by detailing the history of the invention, and development of the dynamo; and without hesitation give a complete list of the signs of the Zodiac, or the dates and publishers of all the earlier editions of the *Encyclopaedia Britannica*. How or why he remembered such things was not divulged; yet he had never a good word for his memory! He was more interested in facts than in theories, but seldom gave full assent to any opinion expressed

before him. His method of meeting such a situation was highly characteristic. He would propound some opposing view, courteously and in no spirit of criticism or controversy; it appeared as an alternative suggestion which his opponent might care to consider, and there it was left. As a man of decided views this was an example of his wide tolerance for others: he assumed an honesty of purpose and that sufficed. One other great note of his character was his equanimity. He was never out of temper, never even ruffled, and he was ever ready to excuse faults which he would not wittingly have tolerated in himself.

Thursfield held the view that a memoir should deal more with the personality than with the career of its subject. It did not occur to him that in some instances the writer might encounter special difficulties in what is at best an unhappy business. In his own case there are no such difficulties: nothing to be glossed over, nothing to be suppressed. The chief notes of his straightforward character were truthfulness and tolerance, and for these he earned men's high regard.

J. SHAW DUNN, M.D., M.Sc.

Professor of Pathology, Glasgow University

John Shaw Dunn was one of the most eminent pathologists of his generation. Temperamentally a naturalist, his powers of observation were sharpened early by ranging over his native countryside in Ayrshire and on the streams and lochs where he loved to fish. Like many others, he owed much to the Department of Pathology of Glasgow University and Western Infirmary, where he became successively student, assistant, and lecturer with Prof. Robert Muir. The individuality of his bent soon declared itself in the pursuit of problems which he made peculiarly his own, and it is of the chief of his many contributions to medical science that I wish to speak here. The first of these was the demonstration, along with J. W. McNece, of the pathological nature and mode of spread of gas gangrene, which was investigated at a mobile laboratory in France during the war of 1914-18 (published in this *Journal*, June 2, 1917). It was shown that gas gangrene is a disease of muscles and tends to spread in their long axis, so that single muscles are involved from end to end, while neighbouring ones are untouched. The essential materials used in this work were limbs amputated for gas gangrene and brought to the laboratory while the healthy muscles were still contractile. As a direct result there followed the successful conservative treatment of early gas gangrene by the resection of infected muscles. This revolutionary procedure spared many wounded men the mutilation of the older method of high amputation.

After the war Shaw Dunn took up studies arising out of trench nephritis, which he followed with undivided and indefatigable enthusiasm for over twenty years along with numerous younger workers. He determined to bridge the gulf between the clinicians' and the pathologists' conceptions of nephritis by relating disturbances of renal function to the underlying structural changes. Throughout this period much experimental work was carried out on nephritis produced by chemical substances such as oxalates. In particular, he followed the functional damage over considerable periods, and showed how the ultimate fate of a nephritic animal might depend on its intake of water sufficing to ensure the necessary excretion of nitrogenous waste products. But failure to reproduce that type of primary glomerulo-nephritis which so often characterizes the initial lesion in the human disease led him to concentrate attention on the state of the glomeruli in various acute and subacute renal disturbances. By Mallory's method of staining he detected as the essential lesion abnormal hyaline thickening of the capillary walls and patency of their lumina, which had hitherto escaped attention. Further, he set himself to apply the modern theory of secretion of urine propounded by Cusby to the phenomena presented by subacute glomerulo-nephritis, lipid nephrosis, and a proportion of pregoacy nephritis, where there is hydraemia with oedema but the related oliguria is associated with little or no impairment of the excretion of urea. In order to explain these conditions it is necessary to postulate, as Shaw Dunn showed, that the nephrons, because they are permanently dilated, must act continuously instead of with the normal intermittency exhibited in health; also they will be somewhat permeable to protein. At the same time,







## Medical Notes in Parliament

### Certificates for Special Foods

Sir ERNEST GRAHAM-LITTLE reported on June 8 that there was an official requirement that doctors issuing certificates for patients requiring certain special foods must give the clinical and biochemical data on which the diagnosis was based, and that certificates so completed were required to be submitted to the local food committee, so that a lay body was charged with revision of the medical certificate and was put into possession of details concerning the patient involving a breach of professional confidence. Col. LLEWELLIN said Sir Ernest was misinformed. Arrangements for granting extra or special foods to invalids were such that either the foods were immediately made available against a medical certificate stating only the medical condition of the applicant, or, where the medical certificate had, at the request of the Food Rationing (Special Diets) Advisory Committee of the Medical Research Council, to contain the clinical and biochemical details on which the diagnosis was based, it was at once transmitted, through the agency of the Ministry of Food and its local offices, to that committee for consideration. At no stage was a detailed medical certificate submitted to a local food control committee or any other lay body for consideration or revision. The procedure had recently been re-examined by the Ministry of Food and approved by the Food Rationing (Special Diets) Advisory Committee.

### Discussions with Socialist Medical Association

Sir ERNEST GRAHAM-LITTLE asked on June 8 whether the Minister of Health, in preparation of his Bill determining the future conditions of medical practice, had consulted, or proposed to consult, the body calling itself the Socialist Medical Association. Mr. WILLINK answered that he had not had any discussions with this association since the issue of the White Paper, but would, of course, be glad to do so if it wished. He was anxious to hear the views of all concerned before the stage of legislation.

### Wartime Diet and Health

Col. LLEWELLIN on June 9 opened a debate on the Estimates for the Ministry of Food. He said the country would be able to maintain existing ration scales in everything for the rest of the year, except in milk, which had a seasonal variation. Despite increased military traffic on railways and roads, food supplies were getting through well, and there had been no call on the emergency supplies which had been laid in. He had undertaken to make, during the earlier stages of the liberation of Southern and Western Europe, a generous contribution towards the foodstuffs which the combined military authorities assessed as necessary for the liberated peoples. It would be absurd for this country, which was itself an importer, to make long-term provision of foodstuffs for Europe, or to cut down our reduced standard of living so that this provision could be made. The evidence available showed that in the United Kingdom national health had been maintained. There was no general loss of weight. Adolescents showed an increase, but there was some sign of a loss of the "middle-aged spread." There was no sign of impaired resistance to infectious diseases. Infant mortality reached its lowest level in 1942, and had maintained the same rate last year. Nevertheless the nation had been on a little-varied diet for some time, and more variety would be good. He would have to reduce on June 18 the milk allowance, though not to priority consumers, from four pints to three pints a week. He hoped to restore the cheese ration to three ounces before winter. Soft fruit would be short. It was impossible to carry fresh fruit about the country and distribute it evenly. He hoped to get oranges from Palestine, South Africa, and Spain. The Ministry was bringing in 17,000 tons of lemons, and he hoped to keep up that supply next year. This year he hoped to get apples from Canada, dates from Iraq, raisins from Cyprus, and 32,000 tons of Turkish dried fruit. Bread was better. The oats, rye, and barley had gone from it, and the only cereal in the loaf was wheat. The next four years would be a period of world shortage in dairy products and meat. We must produce as much as possible of these at home. He desired to see the National Milk Scheme and the milk-in-schools scheme continued, but to discontinue milk rationing and meat rationing as soon as possible after the war. The orange-juice scheme had been a success with mothers and young children. The take-up was well over 50%. He wished to see this continued after the war.

Mr. WILFRED ROBERTS said that some doctors were not happy about national health. There had been an improvement during

the war, but there were signs last winter that the health of the country was not so good. One local survey found symptoms of rickets in 10% of infants. Better distribution of more standardized vitamins would meet the problem. Doctors also criticized the fats position. Wartime rationalization made it difficult for people to get the purer grades of milk.

Col. ELLIOT said the health of the country was not so good as the figures seemed to indicate. People drove themselves to work, which diminished the sickness statistics. One could not feel happy about the tuberculosis statistics, especially in Scotland. Greater variety of food was needed. Lady APSLEY said the Government should make sure that children were not deprived of cod-liver oil and fruit juices through the ignorance or laziness of their mothers. National bread had improved the children's teeth and should be retained in use after the war. Mr. WOOTTON-DAVIES contended that the issue of fruit juices and vitamins should be continued to children up to the age of 7 instead of 5. Sir Henry MORRIS-JONES considered that all could do with more protein. People did not now recover so rapidly and readily from illnesses.

### Administration of Milk Regulations

In the House of Commons on June 13 the Food and Drugs (Milk and Dairies) Bill passed through the Committee stage. A long debate took place on an amendment to Clause 1, moved by Mr. ERSKINE HILL, which, he said, would ensure that a dairy farmer was not struck off the register or refused registration solely because, in the opinion of the Minister of Agriculture (which meant in the opinion of his servants), the regulations would not be complied with. The amendment provided that the dairy farmer could only be removed on proof of some definite act or fault on his part. A right of appeal to an independent Court was asked for. In reply Mr. HUDSON, Minister of Agriculture, said the Bill was designed to try to improve the milk supply. The system which had been in operation under the Ministry of Health and the local authorities for the last 10 or 15 years had failed completely to achieve this purpose, and the Government had decided that a new system ought to be tried. This was the new system. They were concerned to secure, if it was humanly possible, the children of this country from the danger of drinking unsafe or unclean milk. All the clause was designed to do was to ensure that a man should not be registered, coming new into the industry, for the provision of milk for sale to human beings unless he fulfilled certain minimum standards. If the Minister of Agriculture was made responsible for the production of clean milk he must be given the necessary powers. To meet the question of an appeal, he proposed to ask the Milk Marketing Board and the National Farmers' Union to nominate a series of panels, consisting of his superintendent veterinary officer for the region and one member from both of the two nominating bodies. To these panels the dairy farmer could appeal if he disagreed with the recommendation of the Ministry's inspector. If a panel's decision was unanimous he (the Minister) would accept it. The amendment was negatived.

During a further discussion Mr. HUDSON undertook to set up county advisory committees, which should consist, broadly speaking, of his veterinary representative, probably someone with the qualifications of a sanitary inspector, the medical officer of health for the county, and some representatives of the local authority, the smaller authorities, and representatives of the Milk Marketing Board and the National Farmers' Union. These committees would act as general supervisory committees over the administration of the milk regulations in the particular counties. He also proposed to set up a central advisory committee in London, containing representatives from the various county committees.

### Horton Hospital

On June 13 in the House of Lords the EARL OF CORK AND ORRERY drew attention to the conditions with regard to food under which military patients lived in Horton Hospital, Epsom. He said he was not making any direct attack on the hospital and certainly not on the medical treatment which the patients received, for that, he understood, was first-class. The chief complaints he had heard had been in regard to the quantity and quality and the service of food. He had heard of overcrowding in certain wards, inattention to the patients, and a general want of system in the whole administration.

Viscount DAWSON OF PENN said it was admitted that the feeding arrangements at Horton had not been satisfactory. The actual building was good, but it was never meant for a hospital in the ordinary sense of the word; it was a place for mental patients in the old days. The hospital was spread out—it was almost a Sabbath-day's journey to go from one part of it to another—and the only way to provide hot food in some of the more distant wards would be by means of trolleys. This hospital was one of the best. He was not talking of the culinary side

of it, but the hospital was reckoned by those of them who knew it as one of the best hospitals for good work for the sick and wounded that they knew of.

The EARL OF MUNSTER said that Horton Hospital was administered by the London County Council under arrangements made with the Ministry of Health, and general supervision was exercised by the Ministry to ensure that the treatment and welfare of the patients were satisfactory. It was one of the largest E.M.S. hospitals in the country and could accommodate 2,300 patients. Some of the wards were a very considerable distance from the main kitchens, which had, in addition, to cater for the patients and the staff as a whole. Consequently the facilities for cooking and serving meals were very inferior to those which would be met in a normal general hospital. Horton was visited under the new scheme of inspection in February last, and it was found that the general standard of the feeding arrangements was not satisfactory. A further visit was made to the hospital on May 30 by officers of the Ministry of Health and Ministry of Labour, and although the feeding arrangements were then found to have been much improved it was clear that further action was still needed. As a result steps were taken by the L.C.C. to introduce a greater variety into the menus, and a catering administrator was to be appointed at once. Taking into account that many of the patients would be on low diet, it was thought that with appropriate management and avoidance of waste the civilian rations in hospitals receiving a substantial number of Service patients should suffice. Service men, however, had been accustomed to considerably larger meat rations, and it had been agreed that provision should be made for a necessary margin. Measures were being taken to increase the kitchen and administrative staffs. New gas mains were being laid, and electrical equipments were being fitted to some trolleys. Extra machines for the preparation of food and twelve refrigerators were being installed. There was some justification for the complaints which had been made but it was hoped that these difficulties would finally be resolved.

#### Vaccination in Gibraltar

Mr. MANT on June 13 asked the Secretary of State for the Colonies whether Rule 5 of the temporary rules for the vaccination of people resident in Gibraltar during the outbreak of smallpox in February and March contained any recognition of conscientious objection to vaccination; and what authority existed for imposing vaccination on persons leaving a colony. Col. STANLEY said that Rule 5 did not make vaccination compulsory, its effect was simply to make it clear that persons who had not been vaccinated might not leave Gibraltar. The absence therefore, of the element of compulsion made unnecessary, in this particular rule, any reference to the recognition of the rights of conscientious objectors. The rules were made by the Governor under the authority conferred on him by Section 209 of the Gibraltar Public Health Ordinance.

#### Scottish Health Services

The House of Commons, in Committee, discussed the estimates for the Housing and Health Services for Scotland on June 20. Mr. JOHNSTON said he had asked for a comparative table of health statistics, and the Chief Medical Officer of Health for Scotland had reported that, in spite of the strains and stresses of four years of war, by and large the health of the people of Scotland, despite a breach in the wall here and there, was better than in the last pre-war year. The number of live births was up by 12%. The death rate was up 0.7 per 1,000 of the population compared with the last pre-war year. Since 1939 the figures for stillbirths had been reduced by 6 per 1,000 of the total population and there was a steady decline year after year. Compared with 1938 the maternal mortality figure was down by 1.2 per 1,000 live births. In 1938 the maternal deaths totalled 432 in 1943 364, and year after year the rate was coming down however slowly. The lowest rate for maternal mortality ever recorded in Scotland was in 1943—3.7 per 1,000 live births. The reduction in infant mortality—deaths under 1 year of age—in 1943, against 1938, was 4.3 per 1,000 live births. That rate was still too high, and was nearly one-third worse than the rate for England. The Scientific Advisory Committee was now considering the high proportion of neonatal deaths due to infections at home and in hospitals.

#### Infectious Diseases in Scotland

With regard to the notification of infectious diseases, diphtheria notifications fell from 10,786 in 1938 to 9,255 in 1943. Scarlet-fever notifications were down about 4,500. Measles and whooping-cough showed a remarkable reduction, being down from 33,000 in 1938 to 23,000 in 1943. In 1938 diphtheria deaths among children totalled 430, but in 1943 they were only 195. Immunized children showed only one death in every 163 cases, while non-immunized children showed one

death in 18. Pressure was still going on to increase the number of children immunized in schools. Notifications of cerebrospinal fever had fallen 55% since 1940. Here, again, the Department expected a report from the Scientific Advisory Committee on treatment by sulphonamide drugs. The fatality rate for cerebrospinal fever had fallen, it was alleged, by 50% as a result of this treatment by sulphonamide drugs.

In the entire group of diseases typhoid and paratyphoid A and B, taken together, showed that notifications were down by one half since 1938. There were 268 notifications of typhoid in 1938 and 160 in 1943. There were no notifications of paratyphoid A in 1943, and 60 of paratyphoid B. There were more dysentery notifications than in 1938. This problem apparently was also exercising the authorities in England. The Scientific Advisory Committee—Sir John Orr's committee—with Prof. Mackie as chairman of the subcommittee, was reviewing the available evidence about the cause or causes of this increase in dysentery. In 1938 there were 2,648 cases of dysentery, and in 1943 3,425 cases. There was only one case of smallpox in 1943.

Veneral disease was a very difficult subject, on which there was a great deal of difference of opinion, both about methods of treatment and the powers that ought to be given to local authorities. The question of notification covered a vast field of dispute. The Church of Scotland had come down strongly on the side of compulsory notification. Some of the other Churches were against compulsory notification, but a large number were with the local authorities, in favour. The Department were in contact with all these bodies, and they were trying to reach the maximum amount of common agreement preliminary to coming to the House of Commons. The report of the Committee of Inquiry showed that in 1938 new cases of syphilis under treatment at clinics rose from 2,990 in that year to 4,841 in 1943. In 1938 there were 5,133 cases of gonorrhoea, and in 1943 5,437.

Notifications of pulmonary and non pulmonary tuberculosis were on the increase having risen from 7,565 in 1938 to 10,088 in 1943. The figures for the first quarter of 1944 showed a diminution—it might be only temporary—against the first quarter of last year. In 1938 there were 3,431 deaths from tuberculosis, and 3,949 in 1943 an increase of about 520. They had been able substantially to increase the number of beds in tuberculosis institutions in Scotland, from their civil defence hospitals, from 5,300 beds to 6,300. The real difficulty was not the beds but the provision of nurses and domestic staffs in these hospitals. Many institutions were grievously short of these. The number of probationer nurses was increasing, but not sufficiently to meet the demand. The Department had taken the best advice they could on the question of nurses from medical men and the nursing associations, but obviously the Minister of Labour would hesitate to direct civilian employees compulsorily into T.B. institutions. The Advisory Council were opposed to compulsion on the ground that they would not get the right type of nurses in that way, and that if they did the nurses they got would not be too friendly disposed, and their presence might do more harm to the patients than otherwise.

The Department had done everything possible to appeal for part-time volunteers. There were only two additional sources which he thought they could tap one was the Women's Voluntary Service, the other suggestion, made by Dr. Laidlaw of Glasgow, was that some empty houses should be taken and used for sleeping accommodation for men who were otherwise fit and able to go to their work. This had been tried in Russia, he was told, with some considerable success, and he was prepared to try it if houses were available.

The best evidence of the improvement in health compared with 1938, Mr. Johnston said, was contained in the reports of the school medical officers on the weighing and measuring of school-children. These showed, by and large, that the health of Scotland was being maintained so far as women and children were concerned, although in regard to tuberculosis they went back. He hoped for considerable results from the Scottish Council of Health Education. The object was to encourage education in the science and art of healthy living and the principles of hygiene, and to assist local authorities in publicity or propaganda for health purposes.

#### The Housing Problem in Scotland

With regard to housing, Mr. Johnston said that over 75,000 war-damaged houses had been restored, and arrangements had been made to erect 2,000 new houses in specially badly hit areas. There were 600 shops or houses requisitioned and repaired as temporary dwelling-houses. There would be, although not immediately, some augmentation of the housing programme through the provision of steel houses of new and improved types. The Government was doing everything it could to

arrange for mass-servicing of housing sites, providing water, drainage, roads, etc., for some 40,000 houses. He was doing his best to get 100,000 factory-made houses, of the emergency ten-year-life type, for Scotland.

Lieut.-Cmdr. HUTCHISON urged that the most essential single factor in the health of the nation was the provision of better housing conditions. That point, he said, was brought out very strongly in paragraph 7 of the paper issued by the British Medical Association on the national health services. He did not believe that any amount of organization or reorganization of the medical services would, by itself, bring about any improvement in the nation's health unless and until they had as a foundation-stone good sound houses, fitted with modern sanitation and proper water supplies.

Dr. ELLIOT said that the programme for permanent building was not enough, nor were the proposals for the labour supply to handle the materials adequate. Until the Portal house had been lived in it was not safe to say that it was a suitable house to put into flow production.

Mr. HUBBARD said that the conditions now existing in the maternity services should be taken seriously into consideration before those services were divided. The same thing applied to the services relating to infectious disease. The closest collaboration between the medical services, including the welfare service, should be explored before any alteration was made. The Department would be well advised to spend much more on preventive measures.

Major LLOYD, who emphasized the importance of the dental service, asked the Secretary of State, before committing himself to any future plans, to consult those best qualified to speak on the whole question of the medical, hospital, and allied services and their future administration.

Mr. WESTWOOD, replying to the debate, said that all the suggestions which had been made would receive serious consideration.

#### Nutrition in the Colonies

In a reply on June 21 to Mr. Creech Jones Col. STANLEY said that for some years now nutrition committees had been functioning in a large number of Colonies. Many had done valuable work. Following on the resolutions of the Hot Springs Conference, he communicated further with Colonial Governments as to their nutrition policy. The Medical Research Council recently formed a Human Nutrition Research Unit. This, under the direction of Dr. B. S. Platt, was engaged in investigations on colonial nutrition and offered hospitality for study and research to nutrition workers from the Colonies. The unit would also be ready to advise Colonial Governments on technical questions. Its formation was a first step towards a wider organization to include both teaching and research. He hoped that in the near future Dr. Platt would again visit certain Colonial territories to investigate the position and advise on future plans.

### EPIDEMIOLOGICAL NOTES

#### Discussion of Table

In *England and Wales* measles and whooping-cough rose in incidence by 320 and 200 notifications respectively, but the totals for scarlet fever and acute pneumonia fell by 51 and 56.

The notifications of diphtheria were 1 fewer than the record low total of the preceding week. Lancashire notified 95 more cases of whooping-cough than last week, but London's total fell by 41. Measles notifications exceeded last week's totals in Lancashire by 93, in Northumberland by 65, in Wiltshire by 52, and in Southampton by 45, but the incidence fell in London and in Essex by 29 each, and in Middlesex by 24.

Dysentery notifications were 6 fewer than last week. The only new outbreak of any size was in Gloucestershire, Bristol C.B., 17. Other important centres of infection were London 38, Lancashire 27, and Derbyshire 12.

In *Scotland* there was a general diminution in the incidence of infectious diseases, the only exception being a rise of 39 in the notifications of diphtheria. There was a small rise in diphtheria notifications in most registration areas.

In *Eire* the total notifications of measles were 74 more than last week, and of diphtheria 34—the latter contributed mainly by Dublin C.B. A fourth case of typhus was recorded in Roscommon, Castlereagh R.D. Scabies is prevalent in Cork C.B.; the M.O.H. states that a conservative estimate would put the cases at 15,000 to 20,000.

#### Week Ending June 17

The notifications of infectious diseases in *England and Wales* during the week included: scarlet fever 1,544, whooping-cough 2,628, diphtheria 456, measles 2,623, acute pneumonia 490, cerebrospinal fever 38, dysentery 191, paratyphoid 5, typhoid 8.

### INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended June 10.

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year, for: (a) England and Wales (London included), (b) London (administrative county), (c) Scotland, (d) Eire, (e) Northern Ireland

Figures of Births and Deaths, and of Deaths recorded under each infectious disease are for: (a) The 126 great towns in England and Wales (including London) (b) London (administrative county), (c) The 16 principal towns in Scotland, (d) The 13 principal towns in Eire, (e) The 10 principal towns in Northern Ireland.

A dash — denotes no cases; a blank space denotes disease not notifiable or no return available.

Disease	1944					1943 (Corresponding Week)				
	(a)	(b)	(c)	(d)	(e)	(a)	(b)	(c)	(d)	(e)
Cerebrospinal fever ..	66	6	21	2	2	50	2	30	5	1
Deaths .. ..		1	2				1	3		
Diphtheria .. ..	470	28	163	87	25	607	45	178	51	2
Deaths .. ..	3	1	1	2	—	7	3	—	1	—
Dysentery .. ..	181	38	80	—	—	127	10	135	—	—
Deaths .. ..										
Encephalitis lethargica, acute .. ..	2	1	—	—	—	3	—	—	—	—
Deaths .. ..							1			
Erysipelas .. ..	—	—	42	8	1	—	—	47	5	2
Deaths* .. ..										
Infective enteritis or diarrhoea under 2 years .. ..	—	—	—	17	—	—	—	—	23	—
Deaths .. ..	41	5	15	7	1	51	9	9	17	3
Measles .. ..	3,078	242	416	179	46	6,724	349	481	30	25
Deaths .. ..	4	—	2	—	—	3	1	2	—	1
Ophthalmia neonatorum .. ..	60	5	23	1	—	97	2	14	1	—
Deaths .. ..										
Paratyphoid fever .. ..	3	—	2(B)	1(B)	—	6	1	2	—	—
Deaths .. ..	—	—	—	—	—	—	—	—	—	—
Pneumonia, influenza* .. ..	—	—	5	2	8	637	31	4	4	3
Deaths (from influenza) .. ..	19	1	2	—	—	16	—	4	—	1
Pneumonia, primary .. ..	738	61	200	26	8	—	20	217	11	13
Deaths .. ..	33	3	8	8	—			9		
Polio-encephalitis, acute .. ..	1	—	—	—	—	2	—	—	—	—
Deaths .. ..	—	—	—	—	—	—	—	—	—	—
Polio-myelitis, acute .. ..	4	1	2	2	—	5	1	1	3	—
Deaths .. ..	—	—	—	—	—	—	—	—	—	—
Puerperal fever .. ..	—	1	15	—	—	—	1	15	—	—
Deaths .. ..	—	—	—	—	—	—	—	—	—	—
Puerperal pyrexia† .. ..	179	11	14	—	1	143	10	29	—	—
Deaths .. ..	—	—	—	—	—	—	—	—	—	—
Relapsing fever .. ..	—	—	—	—	—	—	—	—	—	—
Deaths .. ..	—	—	—	—	—	—	—	—	—	—
Scarlet fever .. ..	1,428	78	194	28	59	1,966	195	231	37	53
Deaths .. ..	2	—	—	—	—	1	1	—	—	—
Smallpox .. ..	—	—	—	—	—	—	—	—	—	—
Deaths .. ..	—	—	—	—	—	—	—	—	—	—
Typhoid fever .. ..	1	1	3	8	—	5	—	4	6	—
Deaths .. ..	—	—	—	—	—	—	—	—	—	—
Typhus fever .. ..	—	—	—	1	—	—	—	—	—	—
Deaths .. ..	—	—	—	—	—	—	—	—	—	—
Whooping-cough .. ..	2,473	242	156	34	17	2,063	122	240	46	38
Deaths .. ..	11	2	1	—	—	14	1	4	1	3
Deaths (0-1 year) .. ..	319	49	58	31	18	342	34	50	38	41
Infant mortality rate (per 1,000 live births) .. ..										
Deaths (excluding still-births) .. ..	3,889	573	591	231	118	4,130	571	576	185	145
Annual death rate (per 1,000 persons living) .. ..			13.6	15.0	†			13.0	12.2	‡
Live births .. ..	7,454	877	989	425	297	6,857	783	966	406	365
Annual rate per 1,000 persons living .. ..			20.1	—	‡			19.7	26.7	‡
Stillbirths .. ..	246	26	30	—	—	219	21	34	—	—
Rate per 1,000 total births (including stillborn) .. ..			2.2	—	—			3.4	—	—

\* Includes primary form for England and Wales, London (administrative county), and Northern Ireland.

† Includes puerperal fever for England and Wales and Eire.

‡ Owing to evacuation schemes and other movements of population, birth and death rates for Northern Ireland are no longer available.

## Medical News

Once again this year the Derry Gardens, Kensington High Street, will be "open" on behalf of St Bartholomew's Hospital from Monday, July 3, to Friday, July 7, each day from 9.30 to 6. The gardens are worth viewing and the object is a good one.

An extra general meeting of the Middlesex County Medical Society will be held at the Royal Society of Medicine on Wednesday, July 5, at 4.30 p.m., when Sir Harold Gillies will read a paper on "The Province of Plastic Surgery in a Health Service." Visitors, including members of the American and Canadian Forces at present in this country, will be welcome.

The London Women's Parliament (24, High Holborn W.C.1) has arranged a conference on Sunday, July 9, at 3 p.m. at Conway Hall, 100, Lion Square, to discuss (a) how to get full- or part-time labour or hospital nurses, factory canteens, British restaurants, schools, audrines, and home help schemes—all social services on which the lifetime front depends; (b) how to improve wages, conditions, and social status so as to encourage women to take up domestic work and stay in the job.

At a meeting of the Danish Medical Society, Prof. K. A. Jensen of Copenhagen University recently reported that a Danish chemical factory was shortly to begin production of penicillin. The experiments were conducted by the pathological institute of the University.

The Committee on Nutrition Surveys, set up by the English Group of the Nutrition Society a year ago, has drawn up a list of investigations, recent or in progress, into: (1) consumption of food, (2) nutritional state, and (3) effect of supplements on health and efficiency. The number is unexpectedly large. A list of these investigations will be sent to anyone working on the subjects, on application to the Director, Prof. J. R. Marrack M.D., Advisory Committee on Nutrition Surveys, Bureau of Nutrition Surveys, London Hospital E.1.

The Colver Prize was founded in 1926 by the Royal Society of Medicine to commemorate the twenty-five years' service of Sir Frank Colver as honorary curator of the Odontological Museum, and regulations were approved. The accumulated income of the fund is ordinarily used every third year for a prize for the best original work in dental science completed during the previous five years by a dental surgeon educated at any recognized dental school in Great Britain or Northern Ireland who has not been qualified to practise more than five years at the date of the award. Applications from candidates, with a general account of their researches, should be submitted to the Colver Prize Committee, 1, Wimpole Street, London, W.1, by Oct. 1, 1944.

## Letters, Notes, and Answers

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### ANY QUESTIONS?

#### Bronchitis in Children

**Q.**—*Lately I have observed that many children in the families I attend get frequent attacks of bronchitis. Would you recommend trying spraying the rooms and blankets with emulsified oil daily for a couple of months? If so, are special sprays and liquids recommended?*

**A.**—Bronchitis is a complication in about a third of attacks of the common cold. Children between the ages of 1 and 5 years are most addicted to colds, with an average of three to four a year. Therefore bronchitis is a common complaint among children. But colds in the spring or summer have a reputation for being more persistent than winter colds, and it may be that irritants such as dust predispose to bronchial involvement. Summer colds are also treated rather lightheartedly and children are not usually kept in an equable temperature until the acute corviza has gone. However, any measure that will minimize the dissemination of dust in the house is good hygiene, and for the purpose vacuum-cleaning of carpets, curtains, etc., damp dusting and damp sweeping (with tea leaves) of

polished surfaces, and, above all, good ventilation are strongly recommended, particularly in families where there are young children. Oiling of household bed linen is not at present practicable and spraying with emulsified oil is not advisable. To minimize blanket dust, the blankets may be sewn inside cotton sheets, or the Continental feather-blanket may be used instead. Another practical precaution would be to treat the floor of playroom or nursery with spindle oil (see M.R.C. War Memo No. 11, 1944).

#### Vaginal Pessaries

**Q.**—*Do vaginal pessaries containing quinine or lactic acid as the spermicidal factor cause a vulvitis, vaginitis or cervicitis? If so, how is the inflammation prevented or treated?*

**A.**—Most chemicals which are spermicidal are irritant to the tissues when present in high concentration. The amount of active principle in contraceptive pessaries is therefore usually low. Even so, quinine pessaries, as sold, not infrequently cause severe vulvovaginitis and acute cervicitis in women who are susceptible. "Quinism" from absorption of the drug also occurs. Though lactic acid has a caustic action it is of low toxicity, and is a normal constituent of the vaginal "secretion." Moreover, pessaries usually contain only enough to counteract the alkalinity of the seminal fluid and to keep the vaginal pH within a normal range. They are therefore not so likely to have any irritant action on the vaginal epithelium and most women tolerate them well, cases of idiosyncrasy are comparatively rare. It is often stated in textbooks and elsewhere that the regular use of chemical contraceptives may result in such cervical lesions as erosion, chronic cervicitis, and endocervicitis. But this view appears to be based on general principles and on the known irritant action of these chemicals in high concentration. Definite proof has not yet been adduced to show that cervical lesions (and consequent sterility) have resulted from the use of chemical contraceptives, and the subject is one causing considerable dispute (see correspondence columns of the *Journal* June to December, 1943). However it remains a possibility, particularly in regard to the use of quinine.

The acute vulvovaginitis which sometimes follows the use of quinine pessaries usually responds quickly to simple treatment by rest in bed and warm baths. It is prevented by avoiding the use of pessaries containing quinine, which in any case, have a low spermicidal value, and on account of this and their irritant properties have been condemned by official opinion for some considerable time. Chinosol is said to be less irritant, but the results of scientific inquiry go to show that phenyl mercuric acetate is to be preferred (J. R. Baker and others, *Lancet* 1938, 2, 882). This has a high quotient of efficiency and is comparatively free from harmful effect, though on rare occasions reactions occur in either male or female partner when an idiosyncrasy to mercury exists.

#### Toxaemia in Pregnancy

**Q.**—*Mrs. H. 38, mother of two children (5 and 2 years) is anxious to have a third. In her first pregnancy albuminuria, oedema of the ankles and some hypertension were present at the seventh month. Despite the usual treatment these signs increased markedly so that at term the urine was solid with albumin and the B.P. 190/100. The confinement itself was uneventful. Urine and B.P. returned to normal in two weeks. History of the second pregnancy is similar except that albuminuria etc. were present at the sixth month, that the highest recorded B.P. was 212/110, and that I induced labour uneventfully 10 days before term. What advice ought I to give? Would a urea-clearance test now be any guide to me?*

**A.**—This type of case is well known. The patients are usually over 30 at the time of the first pregnancy and the toxæmia develops relatively early. The condition recurs with subsequent pregnancies. The case described belongs to this clinical group. On the other hand both previous pregnancies proceeded to near term without abortion or premature labour, and after the first pregnancy the urine became clear of albumin. It is almost certain that the toxæmia will recur in a future pregnancy. On the other hand there is no reason to expect that the third attack will be more severe than the previous two. The risk is that of pregnancy toxæmia with the possibility of premature labour with a stillborn baby. It is doubtful whether a urea-clearance test will be of any help, for if the blood pressure and urine are normal the test will probably show normal values.

#### Red Hair and Rheumatism

**Q.**—*There is a widespread belief that people with red hair are especially susceptible to rheumatism and also to excessive bleeding. Is there any physiological or pathological basis for this? Indeed, is there any evidence for it?*

**A.**—There is undoubtedly a belief among physicians of experience that red haired persons are unduly susceptible to acute rheumatism. Shrubbsall in a paper on physical characters and morbid predispositions made the striking observation that no less than 21% of a series of cases (28 out of 133) had red hair. This is far greater than the proportion in the general population in England, which is about-

4%. Honeyburne,<sup>2</sup> however, did not confirm this result. He found that only 6.5% of a series of cases of acute rheumatism had red hair, compared with 5.2% in a control series (26 and 21 respectively out of 400). Further investigation would be well worth while. (It is perhaps an indication of the general lack of interest in the question of physical make-up and disease that in a copy of *St. Bartholomew's Hospital Reports* on the shelves of the Royal Society of Medicine, Shrubbsall's interesting paper had been reposing with uncut leaves for more than 40 years.) Should it be found that red-haired persons are even twice as susceptible as other people, so striking an association would be of much interest, and might well lead, as the question suggests, to physiological and pathological discoveries. Considerable numbers would be required, however. To demonstrate with reasonable certainty a difference in susceptibility of two to one, a series of acute rheumatics of the order of 500 would be needed. It would suffice to record simply whether each patient was red-haired or not. There seems to be no indication that it would be worth while investigating other differences in colouring. A control series of similar number would serve to remove any doubt as to variations in personal judgment of what constitutes red hair. I have no knowledge of any work on red hair and excessive bleeding. In the absence of data, is there not a suggestion here of the kind of false association upon which so many superstitions depend? I have even come across the peculiarly absurd belief that red hair is due to conception during the period of the menstrual flow.

## REFERENCES

- <sup>1</sup> *St. Bart's Hosp. Rep.*, 1903, 39, 63.  
<sup>2</sup> *Med. Officer*, 1940, 63, 77.

## Hairiness in a Woman

**Q.**—A married woman aged 35, with one child, complains bitterly of hairiness of the beard region and of arms and legs. Her menstrual history is normal. She states she is disinterested in intercourse and never gains satisfaction from it. Is endocrine therapy indicated in such a case, and what form should it take?

**A.**—If the hairiness began at puberty, and if there are no other endocrine stigmata, the condition is probably genetic and uninfluenceable by endocrine therapy. In the presence of other features—e.g., adiposity, plethora, hypertension—one should investigate with a view to excluding an adrenal or ovarian tumour. In the case of Cushing's syndrome not due to an adrenal neoplasm, irradiation of the pituitary fossa is sometimes helpful. It is difficult to know how far the attitude to sexual intercourse is determined by the condition.

## Sensitivity to Sulphonamides

**Q.**—What are the dangers of repeating a course of sulphonamide therapy? How can one distinguish the patient who is likely to be susceptible? What length of time is it advisable to leave between the courses? Are adults more likely to be susceptible than children?

**A.**—In the great majority of patients there are no such dangers. If no signs of intolerance have been observed during one course, they are unlikely to develop during a second, whatever the interval between them, and regardless of the patient's age. There should therefore be no hesitation in repeating a course when there are definite indications for it. On the other hand, early repetition implies previous failure, and if any doubt exists on these points it should be considered whether the treatment is correct or the dosage adequate. It is exceedingly uncommon for a patient to become sensitized to these drugs after administration by the mouth, though, as has recently been pointed out by Tate and Klorfajn (*Lancet*, 1944, 1, 39), this effect is very much more liable to follow local application.

## Ant, Wasp, and Bee Stings

**Q.**—I have a patient who is hypersensitive to stings. Twice in one month he has been stung by an ant while gardening. He is quite fit, but the whole arm swells like a balloon. How can he be desensitized? I have given him a course of peptone injections. A wasp sting has little or no effect.

**A.**—Reports in the literature of allergy to ant bites are extremely rare, but reactions to bees, wasps, mosquitoes, fleas, lice, bedbugs, and chiggers frequently appear, and occasionally in this country cases of hypersensitivity to the bites of horse-flies. If the angio-neurotic oedema of the arm was definitely due to the bite of an ant (and not to, say, touching a primula) the reaction may have been due either to some specific chemical compound in the bite (such as formic acid, which also seems to play a part in the urticaria which follows nettle-stings), or more usually to a specific "ant" protein. This is analogous to what may happen in the case of bee stings, where some acute allergic reactions appear to be due to the pollen on which the bee has been feeding being injected into such a pollen-sensitive individual, but the majority of reactions occur in beekeepers and the like who have become sensitive to bee protein by recurrent stings and contact. In the treatment of insect sensitivity of whatever kind, the most successful therapy is not to get bitten or stung. But if this is unavoidable a sterile extract of the whole body of the

insect should be prepared, the patient's sensitivity to the extract always tested by skin test, and according to the degree of sensitivity elicited a course of desensitizing injections prepared. Such testing and treatment extracts can be obtained from Messrs. C. L. Bencard, Gorgate Hall, Dereham, Norfolk. Prince and Secrest (*J. Allergy*, 1939, 10, 379) have succeeded in protecting individuals sensitive to bee, wasp, or ant bites by using a whole-bee extract, and so believe that certain insect groups contain a common antigen. But I have not been able to confirm this observation.

## Lichen Simplex

**Q.**—Could you advise me on the aetiology and treatment of lichen simplex? Could this condition be caused by chemical irritation, and is it the same condition as neurodermatitis? As lichen, I understand, is sometimes seen in those suffering from duodenal ulcer, is there any relation between the two conditions?

**A.**—Lichen simplex describes an itchy patch of skin thickened, pigmented, and quadrillated as the result of scratching. It develops primarily on the inner thighs and sides and nape of the neck; and secondarily, with a flexural distribution in the eczematoid eruption associated with asthma, a variety of the so-called neurodermatitis. Chemical irritation of the skin, if it induced scratching, might originate a patch of localized lichen simplex. There is no relation with duodenal ulcer except the psychological background common to both. An occlusive dressing, when practicable, cures by breaking a vicious circle. Otherwise a crude coal-tar paste may be prescribed, or x rays given with all the reservations called for in radiotherapy.

## Thyroid for Premature Babies

**Q.**—Is it still generally accepted that large doses of thyroid should be given to premature babies, as advocated by Pritchard? If so, what doses may be employed without giving rise to toxic effects?

**A.**—Thyroid extract appears to have a beneficial effect upon a certain type of premature baby with a subnormal temperature, drowsiness, and reluctance to feed. It is given in maximum doses of 1/10 gr. per lb. body weight per day. A baby of 4 lb. can have, for example, 1/8 gr. b.d. or t.d.s. It should not be continued for more than a few days, and should be stopped if it does not seem to be improving the situation. Toxic manifestations do not occur with this dosage.

## Nepenthe and Tinct. Opii

**Q.**—Can you tell me what advantage, if any, the drug nepenthe has over tinct. opii?

**A.**—Nepenthe is a trade preparation of opium containing 0.84% morphine in alcohol. It is used as an alternative to tinctura opii, which is slightly stronger, containing 1% of opium. I know of no difference in qualitative action, but nepenthe is more palatable.

## LETTERS, NOTES, ETC.

## Control of Crab Lice

Dr. RALPH JONES (London, W.11) writes: Within a day or so of reading Dr. K. Mellanby's memorandum on crab lice I ordered his prescription to a patient I considered very suitable for his method. I think it only right to warn your readers that there appears to be great difficulty (in London at any rate) in getting this prescription dispensed. I believe the trouble is that lanette wax is largely reserved by chemists for making benzyl benzoate emulsion. It looks as if, for the present at any rate, it will be more expedient in general practice to stick to the older methods.

## Operation for Urctero-pelvic Stricture

Mr. J. B. MARINAN, F.R.C.S.Ed., medical superintendent, Dryburn Emergency Hospital, Durham, writes: I notice in your issue of June 10 a review of the 1943 *Year Book of Urology*, and a reference therein to a "new" operation for uretero-pelvic stricture. A similar manoeuvre was suggested by my then chief, E. S. Gawne, F.R.C.S.Ed., of Bolton, and used by us in a case of acute uretero-pelvic kink in a patient I investigated for him in 1935; the result was excellent. It seemed such an obvious procedure that we did not bother to publish it, and I should be surprised if some urologist in this country has not at least considered it.

## Locked Twins

Dr. W. M. CHESNEY (Birmingham) writes: Mr. C. A. Horder's account in your issue of June 10 (p. 783) of a case of obstructed labour due to locked twins suggested the following observations: (1) As the membranes were still intact was the diagnosis of obstructed labour warranted in this case? (2) The amount of descent of the head of the first child at the time of intervention is not indicated, apart from the doubtful inference drawn from the position ascribed to the head of the second child. (3) Incidentally it is hoped that Mr. Horder is satisfied as to the accuracy of his informant's statement that full dilatation had existed for six hours; for it is well known that the adjective "full" is not infrequently used when dilatation is still incomplete.



LONDON SATURDAY JULY 8 1944

## A CLINICAL VIEW OF SHOCK\*

BY

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Many words whose significance is well understood are difficult to define. This remark applies to the word "life" itself, and it is not surprising that shock, which threatens life and is the very shadow of death, should escape precise elucidation and definition. The difficulty is greater because similar symptoms may be produced by so many different agencies. The conditions induced by traumatic shock can be simulated by the effects of severe hæmorrhage by sudden loss of body fluid (as in cholera) by the introduction of foreign protein into the body by severe burns, by high voltage electric currents, by acute toxicæmia, by some cases of visceral perforation, and even by severe mental stress.

Some critical observers have been so impressed by the absence of definite and easily measurable criteria of shock that they will accept no definition, and prefer to describe it by the enumeration of symptoms. Others have suggested different terms for the condition, such as "depressant syndrome," "traumatic hypodromia," or "exæmia," which give some indication of the pathological process involved. Shock is, however, a clinical state, and any definition must allow for the varied clinical picture which every clinical state may from time to time present. In any definition it is unwise to specify any particular symptom for the first thing the clinician should learn is that there is hardly one symptom of shock which is constant, yet by a careful consideration of all the symptoms it can almost always be decided whether or not shock is present. It is generally agreed that shock is associated with impending or actual failure of the peripheral circulation, and we might perhaps adopt as a safe working definition that "shock is a condition following the application of harmful stimuli, or the rapid depletion of the body fluids, in which there is a serious and clinically demonstrable depression of the vital processes of the body, particularly of the circulation."

In connexion with trauma it is customary to speak of primary and secondary shock—the former coming on immediately and the latter at an interval after the injury. Perhaps the terms "immediate" and "delayed" would be clinically preferable to indicate the immediate and delayed onset of shock. Immediate shock may last for only a short time unless the causative factors continue to act.

### Clinical Symptoms

What are the main clinical symptoms of the shocked condition? A persistent reduced blood pressure is regarded by most investigators and clinicians as an essential feature of shock. They say, "No fall of blood pressure, no shock." Yet 30 years ago Parsons and Tyrrell Gray showed that clinical symptoms of shock might appear with a blood pressure that was still high, and in the last war Bayliss showed that a high blood pressure might persist with a small blood volume owing to powerful vasoconstriction. Recently Grant has called attention to the same phenomenon, and Meakins has emphasized the same point in a clear manner. The latter states: "After the introduction of the sphygmomanometer our thoughts were slowly, ever so slowly, directed to the belief that a falling

blood pressure and shock were synonymous. This is to some degree correct, except that the real condition of shock has been initiated and has travelled well along its course before this spectacular and exact physiological disturbance occurs. It should be considered as one of the later findings to indicate the condition. It occurs after all compensatory mechanisms to maintain the circulation have failed."

Before we can tell whether the blood pressure has fallen we must know what it was before the injury, and there should be no need to be reminded that the average blood pressure for a given age may not be the normal for the patient. There are cases also, in which the failing circulation is shown more by the rise in diastolic than by the fall in systolic pressure. A low pulse pressure is probably a better indication of shock than a lowered systolic pressure. Even while the blood pressure remains high and before any serious symptoms have appeared shock may be present in a latent form. This *latent shock* corresponds to the time at which the compensatory vasoconstriction barely maintains the intravascular pressure, collapse may be precipitated by any further strain on the circulation—even turning the patient over may cause serious collapse. This clinical condition of latent shock must have been noted by most experienced surgeons but there is still need to emphasize its occurrence and its deceptive nature.

In well developed shock it will be agreed that its severity can best be measured by the amount of fall in blood pressure. If the systolic falls below 80 the condition is serious, and a pulse pressure of under 25 is of bad prognosis.

A *small weak and rapid pulse* is regarded as a necessary accompaniment of shock, yet it is now well recognized that serious shock may be present without any increase in the pulse rate. Many years ago Malcolm pointed out that the pulse rate might remain slow in shock but get gradually smaller until it failed altogether. Cuthbert Wallace in the last war noted a class of shocked men whose pulse remained slow, and the same phenomenon has been observed in the shocked air raid casualties of this war by Kekwick and others. From the operating surgeon's point of view I have confirmed that shock and a lowered blood pressure may coexist with a slow pulse. The testimony of so many observers must convince everyone of the not uncommon occurrence of shock accompanied by a slow pulse.

A *subnormal temperature* is a common symptom of shock, indeed I have come to regard this as one of the most constant features of the condition. Kinnaman's experiments on animals showed that a fall of temperature was a better guide to shock than a fall of blood pressure. Observation of air raid casualties led Kekwick and his fellow workers to say that the general temperature of all severe cases is invariably subnormal. The drop in temperature may be down to 95° or lower. This fall is not dependent upon the fall in blood pressure, for the metabolic processes of the body are not seriously affected until the blood pressure has fallen below 80 mm Hg, whereas it is common to get a temperature of 95° F in cases of immediate shock in which the blood pressure may be lowered but little or not at all. It may be that there is a definite inhibition of metabolic processes in shock. The immediate shock which may

\* An abridgement of the Annual Oration to the Medical Society of London, delivered on May 8, 1944.

follow the perforation of a peptic ulcer frequently results in a temperature of 95° F. with pallor and cold extremities even though the blood pressure may be about normal or only lowered 10 or 15 mm. Hg. I think that those who deny that shock is often present in cases of perforated peptic ulcer take too narrow a view of the condition.

In cases of shock *the skin is usually cold and pale or cyanotic, and sweating is often profuse.* It is frequently the onset of these two symptoms which indicates to the surgeon that shock is present. If the cheek feels cold to the back of the observer's hand and if small beads of moisture appear on the forehead one knows that the patient on the operating table has had enough. Latent shock is becoming patent.

*Mental dullness* is a variable symptom in shock. It is quite true that many shocked patients are dull or stuporous, but others are mentally alert. It was said of the wounded at El Alamein that the mental state was usually one of alert interest even when the blood pressure was very low. It is difficult to account for these differences. It is important that we should diagnose shock before all the textbook symptoms have appeared. Shock may be indicated by a subnormal temperature with a low blood pressure although the pulse rate may be within the normal limits; it may reveal itself by pallor, sweating, subnormal temperature, and a small rapid pulse, while the blood pressure may remain approximately normal; and some cases occur in which the appearance and mental alertness give no indication of the serious state of the circulation which the sphygmomanometer may demonstrate. When a person has sustained injuries which are such as to be productive of shock one must assume its presence in a latent form even though no obvious symptoms are observed. The clinician must look at the whole picture before he pronounces judgment.

#### Pathology of Shock

Can the clinician throw any light on the vexed question of the pathology of shock? He is at a disadvantage with the experimental worker in that he cannot standardize his cases or furnish accurate controls; but clinical cases deal with human beings and usually present the important factor of pain in the causation of shock. Though Moon asserts that "conditions accompanied by prolonged and intolerable pain such as renal or biliary colic do not cause shock," most clinicians would consider this at the least too dogmatic a statement. Indeed, few clinicians could doubt that severe pain can initiate, accelerate, or aggravate shock.

Of the many theories put forward there are some which have little clinical support. Hyperventilation and acapnia could not apply to the majority of cases; acidosis is more likely to be the result than the cause of shock, and could not account for the immediate variety; the same remark could be made about the increase of blood potassium, which some, especially Scudder, regard as an important causative factor of shock. Fat embolism may produce symptoms almost indistinguishable from those of shock, but clinically it cannot be supported as a common cause of the condition. The suprarenal gland seems to play a part in causation of the symptoms, but as a rule those symptoms do not become evident until serious circulatory changes have already occurred.

All experimentalists agree that in cases of shock there is a serious diminution in the volume of blood in effective circulation, or, as Moon puts it, the volume of blood is relatively inadequate to fill the vessels. This fact is daily verified by the clinician, who constantly sees that a rapidly diminishing blood volume caused by severe haemorrhage will produce symptoms of shock, so that he is often in doubt whether he is dealing with haemorrhage or shock, or a mixture of both. Now, the volume of blood in effective circulation may be diminished in one or more of three ways: first, by gross internal or external haemorrhage; secondly, by escape of plasma or the fluid part of the blood directly into the tissues (as in trauma) or on to the surface (as in burns), or indirectly by the loss of fluid externally by the secretions (sweat) or excretions (cholera and dysentery); and, thirdly, by loss of blood to the effective circulation owing to its stagnation in dilated capillaries. This capillary dilatation might be induced by reflex nervous influence, by local trauma, or by the action of toxins on the capillary walls. The second and third methods would account for shock when unaccom-

panied by haemorrhage. It is indeed impossible to account for the different clinical types of shock without invoking vasodilatation and transudation of fluid. Immediate shock may be the result of an immediate cause, and it is difficult to see the view that this is due to a nervous reflex producing vasodilatation in some part of the peripheral circulation, as in the flaccid muscles, as suggested by Starling. How the reflex may act is well seen in the speed with which the cheek may be mantled by a blush. The importance of the nervous reflex has been minimized by many, yet there is no doubt that strong nervous afferent stimuli will of themselves cause shock. Crile's view that this was due to exhaustion of the vasomotor centre is no longer tenable, but we must assume inhibition or incoordination of this centre to account for the onset of symptoms of immediate shock.

Can the clinician help to decide the vexed question as to the way in which the volume of blood in effective circulation is diminished in secondary or delayed shock? Is it due to the loss of fluid into the tissues of the damaged part, as asserted by Blalock; does it depend partly upon a nervous reflex initiated by the barrage of nervous impulses ascending from the injured part, as claimed by O'Shaughnessy and Slome; or may it be due to absorption from the injured part of substances which may injure the epithelium of the capillaries and permit the transudation of fluid from the peripheral circulation? The clinician must surely answer that the whole truth does not lie with any one of these views. There is no doubt that much blood and much plasma are lost into the tissues of a traumatized part, but severe shock may occur in cases in which it would be impossible for enough fluid to have escaped to cause serious symptoms; and there is no reason why constant and powerful afferent stimuli from the injured part should not reflexly contribute to shock as they appear to do in cases of immediate shock.

The view that toxins from the breaking down of tissues in the injured part might produce shock was widely held during the last war but gradually lost favour and received little experimental support. Recently, however, H. N. Green obtained a shock-producing substance from fresh voluntary muscle; he found that it was rapidly destroyed in the muscle after death and therefore might easily be missed. Given intravenously, this substance had a powerfully depressant action on the blood pressure. Clinically one can judge little as to the likelihood of shock-producing substances in muscle, but no one who has seen the occasional rapid development of shock following the relief of obstruction of a coil of small bowel will be likely to doubt that toxins absorbed from the small gut may occasionally have a shock-producing effect. How such a toxin may produce shock is a subject for speculation.

It is a matter of common clinical experience that some cases of shock fail to respond to treatment or respond only for a time. The pathological process goes so far that it cannot be reversed. Mere haemorrhage can be rapidly made good by transfusion, but with some cases of severe shock no amount of blood or other fluid infused into the vessels will maintain pressure: either the fluid constantly transudes from the vessels, or the vasomotor centre cannot maintain the pressure in the vessels.

#### Conclusion

Our clinical scrutiny of the pathology and symptoms of shock leads us to conclude, therefore, that there are several mechanisms which may produce the same result—failure of the peripheral circulation—and this failure may be indicated by several differing clinical pictures.

A fifth edition (1944) of the Orthoptists' Section of the National Register of Medical Auxiliary Services has now been published by the Board of Registration of Medical Auxiliaries, B.M.A. House, Tavistock Square, London, W.C.1. Orthoptists whose names are included have qualified according to a standard approved by the Board. The Board also maintains registers of physiotherapists, radiographers, dispensing opticians, chiropodists, and speech therapists; and a register of dietitians is being prepared. The Board is anxious that the fullest possible use shall be made of all sections of the Register, and copies of any or all sections will be supplied free to medical practitioners, hospitals, local authorities, etc., on application to the acting secretary.

# THOUGHTS ON FOUR YEARS OF WAR SURGERY—1939 TO 1943

BY

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to me that one may now profitably look back and assess the value of the surgical procedures carried out during the four years of war. Enough time has elapsed and casualties have been treated, both overseas and at home, such an assessment to be made of whatever progress has been achieved and to draw conclusions as to the value of the methods adopted. In this respect it is a great pity that surgeons and would-be surgeons had not acquainted themselves with the Official History of the War of 1914-18 concerning the Medical Services and the principles and practice of that period or even troubled to read and digest one or two of the smaller books (Mitchiner and Cowell, 1941, and Slesinger, 1943) epitomizing the essentials of the general work and experience so admirably set forth in the Official History.

It is a great deal of the improvement in the medical service during this war but I cannot help feeling that in spite of the progress of surgical units, more rapid ground and aerial transport, and congratulatory medical broadcasts this progress is not as one would like to believe, especially in the prevention of sepsis, for the number of limbless patients from the Middle East and North Africa is by no means small. It would appear, therefore, that the self-congratulatory attitude into which some of our "specialist" colleagues have allowed themselves to lapse is almost without justification. There is some failure to understand that while the ultimate aim of all surgery is the restoration of health, the primary aim by which this aim is attained are essentially different in war and in peace. The objective in peacetime surgery is the eradication of disease, in war surgery it is the prevention of infection.

I propose here to deal seriatim with some of the surgical conditions more commonly seen and the types of wounds and to indicate salient points in the treatment where agreement has been made and where agreement has been reached.

## Some Common Surgical Conditions

*Septic skin conditions* are frequent and by no means yield readily to sulphanilamide powders and ointments. A certain amount of residual dermatitis is seen after the use of sulphonamide drugs.

Scalds, major and minor, are—as might be expected—not infrequently seen especially among those whose work in the trenches, in the front, in the rear, in the hospitals, in the shops, etc. exposes them to minor injuries of the hands and feet. On the whole, progress of these cases is satisfactory though many crippling results are seen. There is no doubt that the rule that all such cases should be admitted early to hospital—where they receive adequate and early treatment combined with immobilization—is productive of the best results.

*Epididymitis* is often seen in its acute form, but presents no special problem. It is well known that 70% of pathological changes are retrocaecal in position, the transition therefore frequently static life to the strenuous physical exertion of the Services probably accounts for the large number of these seen in the first few months.

*Haemorrhoids* form a large and important class of case. It should be stressed too strongly that unless pain or discomfort is present, no treatment—other than reassurance of the patient—is called for, while the injection of such cases in the absence of valvular incompetence without previous operation is often productive of injection ulcers due to leakage. *Morruoids* are quite common in recruits and occur at very young ages so that I have no doubt that interference with personal sanitary routine consequent on Army life is a cause of this disease. While injection is excellent in its effect if bleeding alone is present under the stress of Army

life I have no hesitation in advocating operative intervention (excision of the piles) in any case in which prolapse is present irrespective of whether this is reducible by itself or not.

*Perforated gastric and duodenal ulcers* are also of common occurrence, and where prompt surgery is possible good results usually accrue. It is certainly inadvisable to do more than close the perforation.

*Carcinoma of the Stomach and Rectum*—The number of cases seen in young men is rather alarming and gives food for reflection.

*Hernia cases* mainly inguinal, are often seen, and it would appear—judging from Army statistics—that some 10 to 15% of the male population of this country suffer from hernia. Alarming figures have been produced about the recurrence rate after herniotomy. Judging from my own personal experience, fully 50% of these "recurrent" herniae are the result of inadequate surgery at the original operation, in many cases congenital hernia sacs still exist *in toto* while inadequate removal of the sac is also frequently observed. It cannot in my opinion, be stressed too strongly that in a young male with good lower abdominal musculature no operation beyond complete removal of the hernial sac is advisable or necessary, repair operations in these cases will lead to deterioration of muscle and a tendency to recur because the natural barrier to herniation is interfered with. Furthermore, in cases with weak lower abdominal musculature, exercises for the strengthening of these muscles should be carried out under proper supervision for three to four weeks before operation. This procedure undoubtedly lessens the recurrence rate in such cases and makes many—otherwise quite unsuitable for operation—fit to undergo it with a reasonable chance of non-recurrence. Do not operate when for various reasons recurrence is obviously to be expected. Operation in such cases helps neither patient nor surgeon.

*Chronic epididymitis* of dubious origin is quite frequent in the Forces. It usually affects young males aged 18 to 25, in whom there is often no history of sexual intercourse. Bacteriologically, the condition is not regarded as gonococcal in origin, but in some cases this organism has been obtained from the lesion as have also staphylococci, streptococci, and *B. coli* though in the majority the condition is culturally sterile. Clinically, there may be a thickened nodule usually situated on the lobus minor or part of the epididymis but the whole epididymis may be thickened and smooth. Congestive pain and some tender swelling of the testis are sometimes met with. Very seldom can a hydrocele be detected clinically—a point of some importance in the differential diagnosis. The condition is very generally unilateral only, but now and then the epididymides of both sides are almost simultaneously affected. The treatment is conservative, and the condition is of no immediate importance, except for the danger of misdiagnosis which often results in an unnecessary orchidectomy. The differential diagnosis which apparently causes most misunderstanding is that of neoplasm but the absence of any hydrocele makes one hesitate to diagnose a testicular neoplasm, and in such a case conservative treatment by supporting the testicle is always justifiable. The second alternative diagnosis which may be erroneously made is that of tuberculous epididymitis, but in the chronic condition under discussion there is a smooth feeling epididymal swelling and though the cord as a whole may be thickened there is never nodulation of the vas or of the epididymis while rectal examination will reveal no abnormality in the prostate or vesicula seminalis.

*Sciatica*—A large number of cases of sciatica many of which come on suddenly after strain or accident seem to be traumatic in origin. All such cases must be treated first or complete rest for 14 days when if pain occurs on leaving bed they should be treated in a plaster of Paris bed for 6 to 8 weeks and operation for the excision of the herniated nucleus pulposus undertaken only in patients feeling pain when they move about after leaving the plaster of Paris bed. Further delay in surgical intervention is deleterious whereas the results of operation are usually most satisfactory, and many of the patients are able to return to full duty.

*Operations for Internal Derangement of the Knee*—From conversations with many surgeons and medical officers I gather a general impression that the results of operation for this

condition are frequently and rather unexpectedly disappointing, both in the long time such patients remain in hospital after operation and from the fact that apparently only about one-third are restored to full Service duty. A careful investigation into these facts by Hedley Whyte shows that of 1,100-odd patients 50% returned in Category A1, after an average stay in hospital and convalescent depot (for rehabilitation) of from 80 to 100 days, according to whether the treatment was given in a military or an E.M.S. institution. In the remaining 50% down-grading had to be carried out in a large proportion of cases. Thus it appears that results of operation for internal derangement of the knee are statistically better than the general opinion suggests, but it must be remembered that those graded A1 may not have been able to carry out their full duty on return to their unit. Anyway, perfection has obviously not yet been reached. It is for consideration, therefore, whether the complete removal of the meniscus, so generally practised by my orthopaedic colleagues, is not a rather too drastic operation, and whether a return to the removal of the damaged part of the cartilage alone would not be advantageous.

*Tonsillectomies and operations on the nasal septum* undoubtedly constitute scalpels for the operating surgeons, but how often do they make the patient any more fit for full duty in the rough and tumble of Service life?

*Broken Hypodermic Needles.*—I would offer a word of advice to my medical and dental colleagues on the subject of treatment of broken hypodermic needles within the human body. It must be remembered that operation should be undertaken only after careful radiographs, stereoscopic if possible, have been obtained, and that any operation—whether successful or not—is certain to be followed by a painful scar, disability, and often suppuration, while not more than 1 in 500 of these broken pieces of steel causes subsequent trouble if left alone. It is therefore in most cases inadvisable to attempt any surgical intervention for the removal of a particle of a hypodermic needle left in the tissues, and the deeper this is situated the less advisable is operation.

### Treatment of War Wounds

The outstanding problem of this war seems to me to lie in adequate and early surgery of the slightly wounded cases, which, after all, still constitute 60 to 70% of war wounds. It is surely economical and advantageous to the national effort that these men should be fit to return to the fighting line in as short a time as possible. I would suggest, therefore, the revision of our methods in this respect, so that precedence of treatment, with a view to securing early healing and prevention of infection, should be given to these more lightly wounded cases. It is furthermore necessary that they should be adequately dealt with by efficient surgeons as near the battle front as possible, and an early return to the front line ensured by active rehabilitation, mental and physical, in an atmosphere of battle.

In contrast to what was seen in the last war, when a large number of wounds were from bullets, those seen in the present war are mainly lacerated wounds of a severe type, and the mortality from these—as might be expected—is much higher. Indeed, in the bombing casualties of aerial warfare it would appear that some 50% of the patients die either as a result of the actual injury plus blast or very soon after from haemorrhage and shock due to the severity of the wound inflicted.

It follows, therefore, that in the treatment of wounds resuscitation plays an important part. This must be carried out early and consistently by the application of warmth, the giving of hot drinks and morphine, and the transfusion of serum or, better still, whole blood. The Blood Transfusion Service has undoubtedly played a great part in reducing the mortality from wounds of all types. At the same time, however, one cannot help feeling there is a tendency to over-evaluate blood transfusion to the detriment of older and simpler methods of resuscitation and wound treatment. Hot sweet fluids by mouth, warmth, and morphine are simpler methods of combating and preventing shock which are applicable under all conditions and by any first-aid worker or doctor, and, moreover, they frequently suffice to restore a patient without resort to blood transfusion, the injudicious administration of which is not free from risk of fatality.

It cannot be too strongly emphasized, in my opinion, that risk of septic infection from administering blood on the field battle and in the street during an air raid is extremely great and I have no hesitation in saying that blood or serum should not be given intravenously further forward than the advanced dressing station on the field of battle, the sick-bay where it is functioning adequately in a ship, and the first-aid post during an air raid. Moreover, there is, I think, a tendency to give large quantities of blood unnecessarily and wastefully. As a general rule, one pint should be administered fairly rapidly in cases of haemorrhage, and a further pint or possibly two by drip method; in the case of shock without haemorrhage, plasma or whole blood should be given by drip method alone and run in rapidly, otherwise the risk of pulmonary oedema is very real.

It has been universally agreed that thorough removal of damaged tissues as soon as possible after the infliction of a wound is essential in securing rapid healing, preventing infection, and ensuring quick return of the patient to health and utility as a fighting unit. It is also agreed that excision need only involve a narrow margin (at most 1/4 in. of skin) but that all damaged muscle must be carefully removed until contractile tissue, the vessels of which are spurting and not oozing, is reached. Furthermore, when this treatment has been carried out at adequate drainage ensured from the most dependent part of the wound, no primary suture is to be contemplated.

Notwithstanding, cases in which success has followed primary suture are from time to time reported in the medical journals; no mention is ever made in these articles of the number of cases so treated by the author in which infection, disaster, loss of limb, and even death have resulted. Primary suture of such cases cannot be condemned too strongly; secondary suture can often be carried out with safety in a few days.

These are no new principles to have been learned, though in many cases they have been arrived at after painstaking work on the part of the surgeons and considerable suffering, doubtless, on the part of many patients. All of them emanated from the practice of surgery not only in the war of 1914-18 but in earlier wars. Even the closed-plaster technique, now universally accepted as the best treatment for all types of wounds in the field subsequent on excision, had its devotees and advocates (admittedly few in number) in the war of 1914-18, and even in the Crimean War, though all credit is due to Trueta, who popularized it during the Spanish War.

The dusting of wounds with sulphanilamide (5 to 10 g.) is advisable, both as a first-aid measure prophylactically against septic infection and as a routine after the excision of all wounds. So used, the sulphanilamide is seldom harmful provided that ample fluid intake can be assured to the patient, but it must be remembered that even with the treatment here advised, and more often when packing the wound with a mass of sulphanilamide has been resorted to, severe, even fatal, complications have occurred.

### Special Types of Wounds

*Abdominal Wounds.*—Here early and rapid surgery is essential if life is to be saved, and in spite of advanced surgical centres and rapidity of transport it would appear, from the writings of Gordon-Taylor and conversations with surgeons whom I have met, that the mortality is about 50%, as in the last war, where owing to the static trench warfare such cases were more easily and quickly transported to an operating centre. The mortality from abdomino-thoracic wounds is distressingly high, and indeed is likely so to remain.

*Thoracic Wounds.*—As in the last war, the surgery of haemothorax from a penetrating wound is conservative, or by aspiration alone where pressure would induce cyanosis and respiratory distress, while in the larger lacerated wounds first-aid and front-line treatment to effect closure is safest and best carried out in the majority of cases by the application of a large and efficient dressing rather than by front-line surgery of a hurried and unsatisfactory type.

*Facio-maxillary Wounds.*—These should be treated in conjunction with a dentist and a facio-maxillary surgeon; and here the amount of bruising and the extreme disfigurement may suggest that the damage is far more extensive than is really the

ase. Excision must be reduced to a minimum, and mucous membrane should be sutured to skin in every case when the services of a facio-maxillary surgeon are not immediately available. If the wound has disrupted the symphysis menti and detached the tongue, the tendency of this organ to fall back and suffocate the patient must be counteracted by pulling it well forward and, if possible, transfixing the tip with a stitch which should be hooked round the ear, holding the tongue in that position. All such patients should be carried, or should walk, tooping forward, and be instructed to insert the index finger down the throat and press the tongue forward should difficulty in breathing arise. Tracheotomy should never be necessary in these cases.

*Peripheral Nerve Injuries complicating Lacerated Wounds.*—It is now generally agreed that attempts at primary suture involving extensive dissection of tissues in recent wounds, especially where infection is present, are injudicious, but in cases in which the ends of the nerve are cleanly cut and easily accessible, and suture can be carried out without tension, primary suture should be performed even if there is a risk of infection. The earlier a nerve is sutured after its division the quicker and more complete will be the recovery of function.

*Injuries of the central nervous system* call for no special comment except that no prolonged search for buried foreign bodies should ever be undertaken in the front line, while drainage of the meningeal cavity is at all costs to be avoided.

*Vascular lesions* involving the great vessels are as a rule rapidly fatal, but one or two cases of suture of these vessels, and even of the heart itself, have been successful. Here, as in the last war, empyema is a frequent, and sometimes fatal, complication.

### Fractures

Both simple and compound fractures are probably greater in number in proportion to wounds than was the case in the last war. The outstanding fact in all fracture cases is the delay in union which is occurring as compared with that war. The official view is that this is due to the severity of the disrupting force and the complexity of the accident causing the injury. I cannot help thinking, however, that the greater and more drastic manipulation of fragments which is taking place in order to secure perfect anatomical position is in some ways responsible for the delay in union, and it is questionable whether such drastic methods of reduction are justified in view of this delay and the functional result ultimately obtained. It cannot be too strongly stressed that in compound fractures the early excision of the soft muscle tissues is of more importance than the meticulous replacing of the bony fragments to obtain perfect alignment. In those cases in which damage to the great vessels of a limb accompanies severe compound fracture with extensive laceration of muscles, it is still best to amputate promptly if the patient's life is to be saved, and this applies especially if, in addition, joints have been laid open into the wound.

*In through-and-through joint wounds* expectant treatment is often justifiable, but this should be accompanied always by immobilization of the limb and extension applied to keep the bony surfaces of the joint separate. Moreover, a careful watch must be kept for the first signs of clinical effusion occurring in the joint, while aspiration of any appreciable effusion is necessary daily to ensure the free circulation of synovial fluid within the joint cavity.

*Amputations* have frequently to be carried out, and even in this war it is a sound principle to amputate in the first instance, leaving as long a stump as possible below the joint above the site of amputation. Subsequent amputations should be performed only through the upper third of a leg, the lower third of the thigh, the lower third of the arm and forearm; but one cannot help feeling that Syme's amputation has been abandoned more at the behest of the instrument-maker than at the discretion of surgeons; for one can recall many Syme's amputations performed in the last war which enabled the patient not only to continue in Army service but to march many miles without undue fatigue or to the detriment of the amputation stump. It is essential that after-treatment of an amputation should be carried out and the limb fitted by those accustomed to the work, and it is an excellent thing that all such are now undertaken by

the Ministry of Pensions, whose surgeons further ensure that amputees are taught to use their limbs properly.

### Burns

It can be said truthfully that the treatment of burns has returned to chaos. It would appear that the Royal Navy, the Army, the Air Force, and the E.M.S. all have their own special problems, as the conditions under which these burns have to be treated differ considerably; the results obtained from the various methods are difficult to contrast, and it is therefore not easy to assess the value of any treatment except under special conditions. It is probable that the resulting chaos is due very largely to the inability—under war conditions—adequately to clean the burn and its surrounding tissues soon after its infliction. It is also probable that in many cases lack of experience contributes largely to the failure of certain lines of treatment which are successful elsewhere. Be that as it may, undoubtedly much work has to be done and a great deal has to be learned about the treatment of burns.

Generally, it can be laid down that the first-aid treatment of burns, certainly of severe ones, is a life-saving measure, and though the official Army treatment is vaseline or vaseline and a sulphonamide, one cannot help feeling that the method of tanning advocated as a first-aid measure by the Royal Navy has its place in the saving of life in severe burns. Sulphonamides dusted on burns in the early stages are liable, unless fluid is given in large doses, to be followed by severe toxic complications. Intravenous serum transfusion should be started early and be continued for prolonged periods by the drip method in all cases of severe burns, while it is an established fact that early skin-grafting, even in the presence of infection of a mild type, greatly facilitates healing and lessens scarring.

### Blast

The results of blast are far more severe than those seen during the last war, and, owing to bombing, many more cases are coming under notice. Much has been written about the effect of this destructive element both on land and as a result of underwater injuries. Many fatalities have occurred, and the damage inflicted is in the nature of extensive haemorrhage and, in some cases, rupture of the lung and intestine. Treatment, except in those cases of hollow viscera or haemorrhage indicating operation, is rest and avoidance of movement as much as circumstances permit. It is far better to move such a patient well back in the early stages than submit him to several subsequent short moves.

### Wound Infections

Apart from travelling with an extremely high velocity, fragments of shell and splinters of bomb are smoking hot and often cauterize the flesh at the point of entry, which place may be extremely difficult to detect from its small size and small burned area. Moreover, such projectiles are inclined to cut the clothes cleanly, and the tendency to force clothing material into the tissues is extremely small compared with that seen in the last war. For these reasons, surely infection should be less severe than in previous wars, but this does not mean that it is not to be both expected and counteracted in every wound.

*Sulphonamides.*—Infection of wounds has been much modified and the terror greatly reduced by the introduction and early use of the sulphonamide group of drugs. It is not suitable in an article of this nature to enter into details of such treatment, particulars of which can be obtained from the Medical Research Council War Memorandum (1943) and the works of Colebrook and other authors. I must, however, sound a note of warning against the excessive and indiscriminate use of these drugs, which are by no means without risk. Many patients show an idiosyncrasy to drugs of this group, while certain organisms react only to certain types of them. It is essential, therefore, that treatment be carried out in close co-operation with a bacteriologist. Moreover, any dosage over 15 g. applied externally may produce toxic and even fatal results, even in cases where the fluid intake can be kept up by both intravenous and oral administration for two to three days subsequent to the use of the sulphonamide. In this respect attention is drawn to the value of the simple test advocated by Fuller (1942), which is accurate enough to serve as a guide that the requisite blood



concentration of sulphonamide has been reached. Remember that the sulphonamides, far from constituting a panacea for all infections, may be actually deleterious and even dangerous, and as a general rule their use should be discontinued promptly in cases which show no constitutional improvement or fall of temperature in 48 hours.

**Penicillin.**—It seems certain that in its effects against sepsis due to certain organisms penicillin far surpasses all other anti-septics. It is non-toxic to the patient, and one can assert confidently that its future use is likely to be extensive and very successful. Its action is most dramatic on the staphylococcus and gonococcus, and it is not without effect, especially in combination with sulphathiazole, on most streptococci, meningococci, and some types of pneumococci, as well as the clostridia of gas gangrene, *B. tetani*, and anthrax and other Gram-positive bacilli. It has, however, no potency against, and is indeed apparently destroyed by, the Gram-negative bacilli of the *B. coli-typhosus* group. It is obvious from this fact that the drug can be used only in close association with a bacteriologist unless discredit is to ensue. Furthermore, from the surgeon's point of view it would appear that its use will entail a drastic revision of surgery of wounds; for penicillin acts at its best in a puddle of pus, and in cases in which it is applied locally—the most economical and satisfactory way of using it in wound surgery—it seems that drainage will have to be avoided.

**Tetanus.**—Thanks to the prophylactic and regular use of tetanus toxoid, and the possibly unnecessary prophylactic injection of antitetanus serum in the case of severe wounds—perhaps only unnecessary in those cases where three or more doses of tetanus toxoid have been administered—tetanus is a disease of which we have seen little in this war, and in the few cases which have occurred it has been only of a mild and often non-fatal type.

Gas gangrene has also occurred less frequently and on the whole less virulently than in the last war, possibly because of the nature of the country in which most of the fighting has taken place. To be of prophylactic value, anti-gas-gangrene serum and sulphonamides must be employed immediately after the infliction of the wound; they seem to have little value if employed later and next to no value if the disease is established. It cannot be too strongly emphasized that adequate excision (especially of all damaged muscle) of a wound in the early stages after its infliction is the best prophylactic against all types of this infection. Credit is due to J. D. MacLennan (1943) for his excellent article on the clinical characteristics of the infections resulting from the various anaerobic clostridia and streptococci.

#### Rehabilitation

Rehabilitation is a new word to many of the profession, who have been all too prone to patch up a case in hospital and take no further interest in its progress or to ascertain whether the patient is fit to return as a working unit in the national effort. The shortage of man-power has directed attention to the necessity for restoring every patient possible to full working capacity in the shortest time. To this end rehabilitation has appeared—indeed, become popularized—and has come to stay. Active rather than passive exercise, mental occupation, and stimulus play an important part in the return of the patient to full work, and it cannot be too strongly emphasized that the psychological outlook of every patient is as important as his physical re-education. The psychiatrists, by-product of the necessities of the war, have come in for much undeserved—and some deserved—criticism, but their value in the war effort is undoubted, and their future as a specialist branch of the profession is assured.

#### Venereal Disease

A word should be said of the treatment of venereal disease. The introduction of sulphonamides has so simplified both the cure and the time taken to effect it in the case of gonorrhoea that the vast majority of cases of this disease can be treated safely and satisfactorily as out-patients and a cure be assured in a few days.

Syphilis continues to be a problem in regard to treatment, and the large number of cases of jaundice following the administration of arsenical compounds show that none of these drugs in the treatment of this distressing malady; while the

conditions consequent upon war and the movement of the bulk of the population make it difficult to follow up and to administer efficient treatment to many of the infected cases—a fact which must have a deleterious effect on the health of members of the community born and yet to come.

The war has produced a very authentic and connected description of lymphogranuloma inguinale, for which we are indebted to Stammers (1943).

#### Anaesthesia

I would like to add a word in praise of the anaesthetists, who are doing a magnificent work to assist their surgical colleagues in all parts of the world. Many forms of anaesthesia are practised and advocated, and on the whole the majority are satisfactory in the experience of the surgeons for whom and of the patients to whom they are given.

#### Conclusions

An endeavour has here been made to assess the value of surgery in the past four years of war and to draw such conclusions as may be possible as to where ground has been gained or possibly lost, in comparison with surgery as practised in the war of 1914–18. It would appear, by and large, that surgical procedure has not altered greatly, though the type of wound has altered somewhat owing to the use of more lethal explosives and missiles.

On the whole it seems that my surgical colleagues have reason to congratulate themselves on the work they are doing, but have no grounds for halting or feeling complacent in this world wide struggle, not yet concluded.

I wish to thank my colleagues on the staffs of many E.M.S., Naval Military, R.A.F., and Allied hospitals, who have received me with much kindness and courtesy on the many occasions on which I have visited them.

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## NEUROPSYCHIATRY AT A ROYAL AIR FORCE CENTRE

### AN ANALYSIS OF 2,000 CASES

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This centre is situated in a large R.A.F. station and also provides neuropsychiatric out-patient service on a regional basis for R.A.F. and W.A.A.F. personnel from surrounding stations of Technical Training, Flying Training, and Operational Commands, together with the associated R.A.F. hospitals within the area of its regional distribution. The proportion of air-crew cases coming direct from Operational Commands is low, being less than 15% of our series.

#### Hospital Facilities

Beds are available at the Centre for the observation of cases of psychoneurosis, psychosis, and psychopathic conduct disorder before disposal by return to duty, admission to hospital, or invaliding. Facilities are also available at neighbouring R.A.F. hospitals for in-patient investigation of organic neurological cases, while these hospitals are visited regularly for consultation, as many cases are admitted to them with symptoms which require psychiatric investigation before making a psychotherapeutic approach to their problems. Of such cases, the nervous dyspepsias, and the indefinite headaches vaguely attributed to ear, nose, and throat conditions, are numerous enough to be worthy of special mention.



An adjacent R.A.F. convalescent depot provides a large number of patients with psychoneurotic manifestations, either of a constitutional type or, more often, of a type complicating convalescence from physical injury or disease. In conjunction with the valuable physical methods of rehabilitation employed, psychiatric supervision and psychotherapy of a simple type have proved a valuable factor in shortening the period of incapacity and hastening return to duty.

#### Recruits Centres

A considerable part of the work is concerned with recruits centres, where the primary problems are those of diagnosis and selection as regards Service trades, the recasting and recategorization of misfits, and the exercise of an advisory function in respect of psychologically adverse aspects of training, together with the more difficult problem of correct disposal. This may be defined as placing the individual in the highest medical category in which he is capable of giving efficient service, and in recommending his employment in a trade in which he is most likely to be of the greatest value. The latter requirements are neither easy to fulfil nor indeed always possible, but nevertheless much can be done in this direction. It is to be emphasized, however, that only cases selected by Unit Medical Officers are referred to the neuropsychiatrist, and nothing in the shape of a routine examination of all cases is undertaken.

#### Analysis of Case Material

The 2,000 cases here discussed represent the work carried out at this centre in a period of just over twelve months ending in Aug., 1943. They are consecutive cases, and are new ones seen at the first interview. Cases attending on subsequent occasions for investigation or treatment have not been included.

TABLE I.—Analysis of 2,000 New Cases

Diagnosis	No. of Cases
Psychoneurosis .. .. .	1,366
Organic nervous disease .. .. .	439
Mental defect .. .. .	62
Psychosis .. .. .	45
Malingering .. .. .	2
Miscellaneous medical conditions .. .. .	56
No evidence of significant neuropsychiatric disorder .. .. .	30

TABLE II.—Analysis of 1,366 Cases of Psychoneurosis

Diagnosis	No. of Cases
Affective disorder, including anxiety states, reactive depressions, and fatigue syndromes .. .. .	739
Hysteria .. .. .	330
Obsessive—ruminative and compulsive states .. .. .	7
Psychopathic states .. .. .	290

TABLE III.—Analysis of 45 Cases of Psychosis

Reaction Type	No. of Cases
Schizophrenic .. .. .	23
Manic-depressive .. .. .	11
Paranoid .. .. .	3
Organic { Toxic-confusional .. .. .	5
{ Traumatic .. .. .	2
{ Presenile .. .. .	1

TABLE IV.—Analysis of 439 Cases of Organic Nervous Disease

Diagnosis	No. of Cases	Diagnosis	No. of Cases
Head injuries: acute .. .. .	37	Peripheral nerve lesions .. .. .	7
sequelae .. .. .	88	Post-encephalitic Parkinsonism .. .. .	6
Nocturnal enuresis .. .. .	63	Poliomyelitis: sequelae .. .. .	5
Epilepsy .. .. .	39	Cerebral thrombosis .. .. .	5
Sequelae of meningitis .. .. .	36	Narcolepsy .. .. .	4
Meningitis .. .. .	28	Subarachnoid haemorrhage .. .. .	4
Sciatica .. .. .	21	Encephalomyelitis .. .. .	4
Bell's palsy .. .. .	13	Cerebral tumour .. .. .	3
Brachial neuritis .. .. .	11	Adie's syndrome .. .. .	3
Disseminated sclerosis .. .. .	10	Other neurological and miscellaneous conditions, including air sickness and non-epileptic loss of consciousness .. .. .	43
Neurosyphilis .. .. .	9		

Of the sequelae of meningitis 33 cases followed meningo-coccal and one pneumococcal meningitis, and two followed benign lymphocytic choriomeningitis; of the four cases of encephalomyelitis, two followed primary vaccination, one

mumps, and one was unassociated with recognized preceding illness. Two of the peripheral nerve lesions (inferior gluteal and partial sciatic syndromes) followed the intramuscular injection of sulphapyridine into the buttock, and were slow to resolve. The cerebral tumours were respectively frontal glioma, parasagittal meningioma, and colloid cyst of the third ventricle. Among the 22 other neurological cases were included cases of subacute combined degeneration, amyotrophic lateral sclerosis, Little's disease, paraplegia from Pott's disease, spinal arachnoiditis, optic atrophy, and occupational cramp.

#### Discussion

Table IV is self-explanatory. It would seem that few fully developed neurological syndromes now evade the Recruiting Boards; the cases which slip through are those in which diagnosis depends chiefly or entirely upon the history, as in epilepsy and migraine. This applies also to many of the high-grade feeble-minded who may appear normal and plausible enough on superficial examination. Most of the cases of systemic nervous disease occurred in the older age groups, and were referred largely from recruiting centres after only a short period of service. One difficulty in organic diagnosis is the fact that cases are usually referred at a very early stage in their development—not infrequently before the appearance of any unequivocal organic signs. In some cases it is difficult, on the evidence available, to reach the clear-cut decisions as to diagnosis and disposal demanded by Service conditions: this is perhaps particularly so in the case of epilepsy without eye-witness accounts of an attack, where diagnosis may depend on a careful assessment of probabilities.

A lesson learned from the full routine neurological examination of large numbers of cases is that minor organic abnormalities may be found in the complete absence of symptoms or significant aetiological clues.

A notable and apparently increasing tendency is evident in the reference of patients suffering from sciatica with a diagnosis of prolapsed intervertebral disk. Such a diagnosis is sometimes made in cases of first attacks of recent onset without significant signs, a convincing traumatic history, or an adequate trial of conservative treatment, and it may lead to the invaliding of an airman who might, by patient medical treatment, be restored to full effectiveness. In our experience few cases of this type do not respond to rest in bed, and chronic cases are often those in which the exhausted patience of the doctor and the patient has led to premature resumption of activity. The fact that absence of the ankle-jerk may persist for months or years after an attack of sciatica, and that such a finding may be associated with hysterical perpetuation of symptoms, should also be more generally appreciated. Another noteworthy feature among these organic cases is the high incidence of brachial neuritis. The danger of intramuscular injection of sulphapyridine in the neighbourhood of important nerves is also illustrated.

The majority of the cases of mental defect were referred because of hysterical symptoms, frequently bizarre and baffling to the organically minded investigator, or because of general ineffectiveness or petty disciplinary offences. In the assessment and disposal of these cases the executive report on the airman's efficiency and usefulness which is forwarded with every neuropsychiatric case referred is often invaluable.

**Predisposition.**—A significant past history indicating predisposition was a positive feature in over 80% of 250 unsorted cases of psychological disorder in which routine case records were analysed in retrospect. Significant findings in the history of these cases were neurotic character-traits (70%), manifest psychoneurotic symptoms leading to medical attention in civil life (62%), chronic invalidism (39%), and previous "nervous breakdowns" (28%). There was a positive family history of psychological disorder in 51% of cases, 17% coming from broken homes, while 29% showed a poor civil work record and 15% significant educational backwardness.

**Predominance of Affective Disorder.**—A striking feature of the 1,366 cases of psychoneurosis is the high proportion diagnostically grouped as "affective disorder" (54% of all psychoneuroses, 37% of all cases seen). In the production of these conditions we would stress the importance of predisposition, and of boredom, monotony, and separation from home, rather than real or anticipated exposure to physical danger.

### Recognition of Psychosomatic Illness

Another feature of these cases of psychological disorder is the frequency with which extensive and repeated investigation for the presence of organic disease, and not infrequently lengthy and fruitless courses of treatment directed to ill-defined organic conditions, had been carried out for psychosomatic complaints; the origin of which in personality difficulties rapidly became apparent on the taking of a psychiatric case history. This had occurred more frequently in civilian life than in the Service.

We would particularly stress two points. First, the importance of a personality assessment before carrying out surgical treatment not urgently indicated. The surgery of election for minor disabilities under Service conditions, performed on those severely disposed to neurosis, especially when they are unwilling conscripts, or on the high-grade feeble-minded, is more than usually conducive to hysterical sequelae, and this appears to be particularly frequent when spinal anaesthesia is used. One case of gross hysterical ataxia, unusually resistant to treatment, dated from casual statements overheard under such conditions in the highly suggestible atmosphere of the operating theatre. Indeed, the whole question of what is said to and in front of these patients is extremely important and often neglected. To tell a highly suggestible neurotic that there is a "brain adhesion," "a block in the cerebrospinal fluid," or "a tired heart" is apt to fix his symptoms, in some cases possibly for life, and this type of diagnosis appears to have been made in many of our cases in the complete absence of signs of organic disease, in order to satisfy the demand made by the patient and by the doctor for some physical explanation of his condition.

On the positive side we would stress the importance of psychological preparation for surgery—of a clear, simple, and reassuring statement of what the position is, what it is proposed to do, and what result can be expected. Surgical intervention may be the beginning of years of neurosis, more disabling than the condition which it sets out to relieve: this could often be avoided by explanation and reassurance, which would pay a rich dividend in functional results.

### Malingering

The small number of cases of flagrant malingering is noteworthy, but exaggeration of subjective symptoms is relatively common, and is difficult of substantiation in a court of law, whether military or civil, while it is commonly associated with constitutional instability or psychopathy of such degree as to render the individual of little value from the Service point of view. In our experience the genuine, deliberately calculating malingerer presents a clinical picture of symptoms without signs, ruthless egocentricity with little sense of social responsibility, little evidence of emotional instability, and an absence of recognizable indications of psychoneurosis, psychosis, or intellectual defect. In these qualities such a malingerer is not far removed from his next of psychopathic kin, the more intelligent criminal of the non-violent type.

In many of our cases of psychopathic conduct disorder a fabricative component has been recognized, and, while the psychopathy has been recorded for future guidance, the man has been returned to duty for executive action. Such cases have therefore been shown under the heading of "psychopathic states" rather than as malingerers.

### Recommendations for Disposal

Of the 2,000 patients 71% were returned to duty with or without change of employment or category, 14% admitted to hospital, and 15% invalided. Table V indicates the comparative disposals of R.A.F. and W.A.A.F. organic and functional cases:

TABLE V.—Comparative Disposals

	R.A.F. (1,765 Cases)		W.A.A.F. (235 Cases)	
	Functional (1,352 Cases)	Organic (413 Cases)	Functional (209 Cases)	Organic (26 Cases)
Duty	72%	75%	42%	46%
Hospitalized	16	12.5	10	18
Invalided	10	12.5	48	36

The considerable difference in invaliding percentages between R.A.F. and W.A.A.F. personnel in both groups is in our opinion principally due to the greater difficulty in adaptation to Service conditions experienced by women, whose cases reveal an appreciably higher degree of constitutional emotional instability and neurotic predisposition. This is shown particularly in such factors as broken homes, unduly strong attachments to home and parents, and previous evidence of lack of persistence and of social adaptation. Many are solitary, shy individuals, living at home, with few external interests, addicted to knitting and sewing, and dependent on maternal decisions. A considerable proportion have never had a civilian job. This group is a particularly unfavourable one, and tends to break down readily under conditions of community regimentation.

The tendency for women to form strong emotional attachments, either hetero- or homo-sexual, is also a potent contributory factor, and the exigencies of the Service—e.g., posting—frequently lead to neurotic conflicts, with much emotional disturbance in the temperamentally unstable, resulting in psychiatric investigation and sometimes in invaliding. A further large group in W.A.A.F. personnel comprises those referred as "problem cases." The majority are psychopathic states of the aggressive group, and of a mild type, more or less antisocial in behaviour, and episodically disturbed in conduct, usually in the face of relatively minor difficulties.

The problem of temperamental instability and psychopathy in the Service is complex, but is more particularly so in the W.A.A.F. because of the lack of appropriate disciplinary measures to deal effectively with cases of conduct disorder in the merely unstable, as opposed to the truly aggressive antisocial psychopath, on whom punishment has but little deterrent effect. This latter group is a small one.

There are, of course, numerous other contributory factors, but those given in broad outline above are the most frequent in occurrence and explain the difference in invaliding rates; for it is useless to return such women to duty, whereas men can and frequently do make a satisfactory adaptation.

### Airmen's Convalescent Depot

During the period under review 224 new cases were seen from this depot. Of these, 79% were returned to duty, 16% transferred to hospital, and 5% invalided. This figure does not include 112 cases at A.C.D. which had been seen beforehand by one of us and recommended for admission for treatment.

The new cases fall into two large groups: (1) those admitted as psychosomatic cases; (2) those admitted as medical, surgical, or orthopaedic cases, in which subsequently the psychosomatic component was shown to be of primary importance. The latter group includes psychoneurotic manifestations occurring during convalescence from physical illness or injury.

Every new case is reviewed completely and anew from the neuropsychiatric angle, whether or not the patient has been seen by a neuropsychiatrist elsewhere. This is essential, since in many cases it is necessary to counter previous medical opinions suggesting organic disease, and the patient is more likely to appreciate an alternative point of view if his story has been listened to with patience and attention. Any doubtful point of organic pathology is at once investigated, the authority of the appropriate specialist being freely invoked if necessary. Having cleared the organic ground, a direct approach is made in the form of evaluation of symptoms, with explanation and reassurance couched in the simplest of language, coupled with free suggestion, given with optimism and conviction. This simple form of superficial psychotherapy is reinforced by a system of carefully graduated exercises, games, and physical training. Occupational therapy is fully utilized, and has proved most beneficial and popular. After the first visit the patient is seen once a week by the psychiatrist, who continues to encourage him to persevere with physical exercise, and helps in solving his personal problems.

The process of rehabilitation is much assisted by the general atmosphere of the depot, where the patient sees other badly damaged men being restored to functional efficiency. In his games he develops a team spirit, helped by the fact that all ranks are treated alike. Apart from the physical side, an important factor in promoting recovery, particularly in those who have recently joined, is the relaxation of the Service

atmosphere; thus the airman lives in civilian hotels, and after the day's programme of rehabilitation he is free to go out, untrammelled by sentries, camp gates, and the like, the only restriction being the requirement to return to his billet by 10.30 p.m. Late passes and sleeping-out passes are, however, available in reasonable numbers.

A valuable adjunct to the method of rehabilitation is provided by the attitude of the physical training instructors, who, by their continued enthusiasm and high morale, form models of deportment and zest; and these qualities are reflected to a surprising degree by members of their classes.

In this atmosphere superficial psychotherapy is in many cases sufficient to clear up even chronic psychosomatic symptoms. A certain proportion do not improve because of chronicity, previous firm fixation of symptoms, lack of co-operation, or an obvious motivation in the form of a wish to leave the Service. Severe anxiety states, depressions, and obsessional states do not do well at A.C.D.; they require more prolonged and intensive psychotherapeutic measures, and conditions of life which a Service convalescent depot cannot be expected to provide. From this section of unsuitable cases are drawn those for hospital treatment or for invaliding. The rate for return to duty is somewhat higher than that for the whole series of cases analysed, despite the fact that the A.C.D. cases are of a more severe type.

We are convinced that many patients returned to duty after a period of rehabilitation at A.C.D. would otherwise have been invalided or have remained ineffective for a very prolonged period, and that such results indicate the urgent need for similar facilities in relation to the civilian general hospital. In such circumstances both the patient convalescent from severe illness and the chronic neurotic can be handled under optimum conditions and a partial solution, at any rate, of the out-patient problem be achieved. In our opinion psychiatric facilities are an integral part of such a scheme.

#### Summary

Two thousand consecutive cases seen at an R.A.F. neuropsychiatric centre are analysed into diagnostic groups, and the organic and psychological cases briefly discussed. Among the points raised are the high incidence of affective disorders and the role of predisposition, the importance of psychological factors in surgical treatment, psychiatric aspects of malingering, and the value of rehabilitation in psychoneurotic cases.

We wish to thank Air Vice-Marshal C. P. Symonds, C.B., Air Commodore H. L. Burton, and Air Commodore R. D. Gillespie for advice in the preparation of this paper, and we are indebted to Group Captain P. H. Young, senior medical officer of the station, for help and encouragement.

## SPONTANEOUS RENAL APOPLEXY WITH RESUSCITATION AFTER CARDIAC ARREST

BY

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Very few cases of spontaneous renal apoplexy are to be found in the literature. Two years ago George Crile jun. reported three cases, and at that time a survey of the literature revealed 17 instances. We wish to add one which came to the surgical service of one of us (S. L. G.). It is of additional interest because of the cardiac arrest during operation, which was relieved by an intracardiac transfusion of 300 c.cm. of blood followed by 500 c.cm. of saline solution.

We consider intracardiac or intraventricular transfusion worthy of trial when all other avenues of intravenous infusion are ruled out because of collapse. Such cases may be encountered in collecting stations, casualty wards, or emergency rooms of civilian or military hospitals.

#### Case Report

In May, 1939, a woman aged 36 was seized with severe abdominal pain in the right upper quadrant while sitting in a cinema. The pain came on suddenly, just after she started to laugh at an amusing episode in the film. She became weak and was taken home by taxi. A medical man was called in. He stated that she had a large tumefaction in the right upper quadrant of the abdomen. The area was rigid. She had vomited on several occasions. Morphine was given and local ice packs were applied.

About 16 hours after the onset of the pain she was examined by one of us and admitted to hospital. The examination disclosed generalized abdominal tenderness and the presence of a large tumour mass in the right side of the abdomen, which extended from the right subcostal region to the iliac fossa. The right rectus and the right lumbar muscles were rigid. Kernig's sign was positive on the right. Her face was pale and there was evidence of "air hunger."

Laboratory examination revealed 2,000,000 red cells, 12,000 white cells, and 50% Hb. The urine contained an occasional hyaline and granular cast, a few red cells, and albumin+. The patient's temperature on admission was 97.6° F., her pulse 120-130, and blood pressure 80/50. After treatment of shock and observing the patient for 14 hours an operation was performed. A right pararectal incision was made, the peritoneal cavity did not contain free fluid. A large dark mass arose from Morrison's fossa and could be seen to extend caudally to the right iliac fossa, thus completely obliterating the right paracolic gutter. The posterior peritoneum was incised and many black clots evacuated. There was slight oozing in the region of the right renal pelvis. The right renal artery was not identified.

At this juncture the anaesthetist announced that the patient had died. The operator (S. L. G.) massaged the heart through the diaphragm and was able to restore and maintain the heart-beat as long as the massage was applied. Nikethamide (coramine) and metrazol were administered intracardially by means of a Pitkin spinal needle. These injections, plus massage, resulted in cardiac activity as manifested by a to-and-fro movement of the visible part of the needle.

Attempts to transfuse blood via the venae comitantes of the brachial artery and saphenous veins were unsuccessful. The situation was critical, and since an entrance to the patient's circulation was established by the Pitkin needle, the Baxter bottle containing the blood for transfusion was attached to this needle. 300 c.cm. of blood was infused by this route, followed by 500 c.cm. of intravenous saline. The patient's condition improved and the heart began to beat again; the wound was packed and closed in layers, and the needle removed.

The patient died 18 hours after operation and 48 hours after the onset of spontaneous renal apoplexy, from a secondary or recurrent right renal haemorrhage.

#### Conclusion

The apoplexy was the result of a long-standing malignant hypertensive cardio-renal disease, as brought out by the patient's history, the episode narrated above, and the post-mortem findings of contracted kidneys, nephrosis, and atheromatous degeneration of the aorta and renal arteries.

#### Summary

A case of spontaneous renal apoplexy due to malignant hypertensive cardio-renal disease has been presented.

The patient's heart stopped during operation.

Cardiac resuscitation was accomplished by cardiac massage, intracardiac injection of stimulants, and intraventricular infusion of blood and saline.

Life was restored for a period of 18 hours after the operation.

Death ensued from secondary or recurrent right renal haemorrhage.

Perusal of the literature does not disclose any previous reported case of intracardiac or intraventricular infusion.

Relapsing fever is one of the infections that follow in the path of war. For example, it is estimated that in the year after the 1914-18 war over a million and a half persons in European Russia were affected with this disease. In the big epidemics the louse has been the vector of the infecting spirochaete, first observed by Obermeier in the blood of a patient in 1873. Various species of ornithodoros ticks are known to transmit the disease in many parts of the world. Among normal reservoirs of the infection are several species of rodents, foxes, dogs, and monkeys. Relapsing fever can be satisfactorily treated with arsenic, but F. R. Heilman and W. E. Herrell (*Proc. Mayo Clin.*, 1943, 18, 457) have demonstrated experimentally in mice that the disease can be brought under control with penicillin.

GONORRHOEA IN NORTH AFRICA AND THE  
CENTRAL MEDITERRANEAN

BY

DOUGLAS J. CAMPBELL, F.R.C.P.Ed., D.P.H.,

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During recent years the lay public, and even members of the medical profession, have come to look upon gonorrhoea as a condition in which "one just takes some tablets for a few days" and all is well. The danger of such complacency has become increasingly obvious as the campaign has progressed through North Africa into the Latin countries.

While the Army was situated in Algeria and Tunisia the response to chemotherapy ran a course similar to that experienced in the United Kingdom, and failures were usually attributable to irregularity of the treatment, insufficient fluid intake through shortage of drinking-water in very hot conditions, and the hardships of battle resulting in delay in starting treatment. In the last category metastatic complications, such as gonococcal arthritis, were common. Throughout the first months of the campaign sulphapyridine was the drug in general use, administered as a course of 20 to 30 g. in 5 days. Towards the end of the North African phase sulphathiazole, 10 g. in 2 days, was introduced. This was given in forward medical units, so far as was possible, to obviate evacuation. While the response to this form of therapy was not as good as the 90% claimed in the United Kingdom, the 70 to 75% satisfactory results materially conserved man-power and hospital accommodation.

A very different picture presented itself when the campaigns in Sicily and Italy began. Forward treatment of gonorrhoea failed almost completely, and as at first the venereal diseases expansions were still with general hospitals in North Africa, these unsuccessful cases had to be evacuated, and filled the beds of the expansions, which were thus retarded in their movement forward.

A well-staffed and experienced V.D. treatment centre opened in Sicily and, in conjunction with units of field ambulances, endeavoured to stop the need for evacuation to general hospitals. It was immediately evident that short courses of chemotherapy were useless. Less than 25% were responding, and of these a large proportion relapsed on the way back to rejoin their units. Dosage was increased to 25 to 30 g. of sulphathiazole or sulphapyridine in 4 to 5 days, there being apparently little to choose between the drugs. Second courses were necessary in 70 to 80% of cases after 5 to 7 days' irrigation treatment, and as the disease progressed, with lengthening lines of evacuation, more chemotherapy was given, till large numbers of men reached the main V.D. units still showing gonococci in their discharges after receiving as much as 130 g. of various sulphonamides.

In these early days there was some irregularity in the administration of the tablets, but even when this was rectified the same dismal picture of failure continued. The economic conditions in Sicily and Italy which drove women to prostitute themselves for food and chocolate constituted a menace never encountered by our troops before, and the incidence of venereal diseases increased.

As the campaign has progressed northwards in Italy and expert venereal diseases treatment units have moved forward there has been a slight improvement in the picture, but considerably less than 50% of acute gonorrhoea cases respond to an initial course of 25 to 30 g. of sulphathiazole, and relapses are common. Irrigations for the succeeding 5 to 7 days, followed by a second course of sulphapyridine or sulphadiazine, have proved successful in a few cases, but resort to pyrexial therapy by means of intravenous T.A.B. vaccine during this second course of chemotherapy has become almost a necessity. Some success has followed the use of the standard Army gonococcal vaccine.

Gonorrhoea has become a disease requiring a long stay in hospital. Clinically there is a profuse urethral discharge, containing large numbers of gonococci, persisting for many weeks despite the treatment described. Involvement of the posterior urethra occurs early, with considerable incidence of prostatitis

and epididymitis. Epididymitis often occurs when the patient has been in hospital for several weeks under optimum conditions of rest and treatment, and is usually severe. Metastatic conditions such as gonococcal arthritis and iritis are rare. It has been freely suggested that we have met a sulphonamide-resistant gonococcus, due to inadequate treatment of the civilian women, but the shortage of the drugs in Sicily and Italy and the complete lack of treatment of infected civilians over a long period make this idea somewhat unacceptable. The restoration of adequate civilian treatment under the auspices of A.M.G. is progressing rapidly, but it is too early to evaluate results. Rather does it appear that the gonococcus now encountered is a non-reactor to chemotherapy and, further, that it does not stimulate natural antibody responses in the victim. Venereologists with wide experience in the United Kingdom, North Africa, and the Middle East are working together now, and none have previously met similar conditions. Our American colleagues have found the same conditions among their troops, and have had to enlist penicillin as alternative therapy, with considerable initial success. If throughout Europe similar difficulties are to be met in future campaigns, gonorrhoea will be an immense scourge, with resultant strain on medical personnel, hospital accommodation, and man-power. There is no longer reason for complacency.

## Summary

Since the invasion of the Latin countries gonorrhoea has proved intractable to the former accepted methods of treatment by chemotherapy.

Treatment must be given regularly and prescribed with ingenuity. Adjuvant methods are necessary in a high percentage of cases.

Experienced venereologists and special treatment orderlies are required in greater numbers than before.

Every endeavour to prevent infection must be made.

## Medical Memoranda

## Fixation of Tissues from Cases of Malaria

It is common knowledge among pathologists that formalin reacts with lysed blood to produce a dark-brown deposit, and that this occurs both with blood lysed before death (e.g., in an extravasation) and with the intravascular blood which soon after death begins to undergo progressive lysis. This formalin blood deposit unfortunately closely resembles the pigment produced in malaria, and it is thus important, as Lignac (1924) warned, to avoid the use of formalin as a sole fixative for malarial tissues.

Barrett (1944) has recently shown that formalin deposit can be easily removed from sections by immersion for two hours in picric alcohol, and hope was aroused that this might, after all, allow the use of formalin in cases of malaria. To test the effect of picric alcohol on malarial pigment, sections of various viscera (fixed in 95% alcohol and in Zenker's fluid) were treated for one and three-quarter hours; the malarial pigment was almost completely dissolved away. Thus treatment with picric alcohol does not differentiate between malarial pigment and formalin deposit. (Melanin, a possible source of confusion was found in a section of a cerebral metastasis from a melanoma of skin to be apparently unaffected by picric alcohol.)

Formalin is in general not a satisfactory fixative by itself for tissues that are to be embedded in paraffin (Mallory, 1938) but it has one advantage that makes it of particular value to those interested in malaria: it is less lytic towards the fragile post-mortem erythrocyte than is any other common fixative. This property is utilized, formalin deposit largely prevented, and the tissues rendered suitable for paraffin embedding by the following procedure:

Primary fixation is carried out in formalin (10 parts with 90 of water) for 3 to 6 hours (or in formal sublimite if the tissues be less than 6 hours dead), followed by direct transfer to 5% aqueous mercuric-chloride, in which fixation is continued for 5 to 20 days (Lendrum, 1941).

This method, which is the ideal routine fixative for human post-mortem material, is suggested for malarial tissues because of the minimal lysis and the clarity of the microscopical picture; but, since there is still a slight risk of deposit, it is essential that tissues from suspected malaria should also be fixed in formalin-free fluids. The two methods of this kind commonly used in the past were fixation in 90% alcohol (ethanol) or in Zenker's fluid. Both of these unfortunately cause lysis of

erythrocytes in post-mortem human material, although with Zenker's fluid this can be partially avoided by omitting the acetic acid.

The following method is suggested as the best formalin-free fixation for human malarial tissue:

Fix in an aqueous solution of 2.5% potassium bichromate and 5% mercuric chloride for about 6 hours, and then transfer the tissues directly to aqueous 5% mercuric chloride; in this, fixation continues without the danger of spoiling the common methods of staining, as may result from the prolonged action of bichromate.

This method gives the minimum of lysis of erythrocytes other than by the use of formalin, preserves the malarial pigment, and of course avoids the fallacy of formalin deposit.

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### Obstructed Labour with Complicated Presentation and Exomphalos

The following case, which was treated in the London Mission Hospital, Neyoor, Travancore, South India, may be of interest.

#### CLINICAL HISTORY

An Indian Christian woman aged 23 was admitted to hospital on Nov. 25, 1942. She was a multipara, in labour. She had previously had two normal full-term deliveries, and one child was living. Labour pains had begun 24 days earlier, in the evening of Nov. 22, after spontaneous rupture of the membranes.

On examination at 11.30 a.m. on Nov. 25 her condition was only fair—temperature 100.6°, pulse 96—and she showed signs of exhaustion. The uterus was contracting strongly about every three minutes. The organ was rounded in shape, with the fundus lower than usual. It was difficult to make out the position of the foetus, but it was thought it might be transverse. Vaginal examination was made by the Indian doctor (many such examinations had been done by the barber—"midwife" with no aseptic precautions), who reported that there was full dilatation and the presenting part was a foot with either the head or a buttock, and high up. I then examined the patient and found a vertex presentation with a foot prolapsed on the left side.

In view of the patient's general condition it was decided to deliver her at once, and chloroform anaesthesia was administered. Podalic version was performed with difficulty, and in feeling for the second leg my hand came in contact with soft material, which felt like intestine or membrane. Although version was performed, the baby could not be born beyond the buttocks. The abdomen was to the mother's left, and coils of intestine could now be seen. There was no proper cord formation, but the umbilical vessels could be seen and felt. They were divided close to the child's body, which was then delivered without difficulty. The placenta and membranes followed almost at once. There was no undue bleeding. The patient's condition was no worse, and 1 c.cm. of ergotamine was given intramuscularly. That evening her temperature was 102.6°, pulse 98. Sulphanilamide 1 g. four-hourly was started, and 12 doses were given. She made an uneventful recovery, and was discharged well on Dec. 1, six days after admission, at her own request.

The baby was a full-term male and weighed 64 lb. (a normal weight for a South Indian baby). The head was microcephalic, and deeply grooved on the left side where the leg had lain alongside it. There was a large exomphalos, with an opening in the abdominal wall 3 in. in diameter. Parts of the intestines, the liver, and spleen were prolapsed, and the heart also was lying outside the chest wall, enclosed in the pericardium. This was beating at a rate of 60 a minute. The child started to gasp as soon as it was born, at a rate of about 6 a minute. It lived altogether three-quarters of an hour, the respiration and heart rate gradually becoming slower.

**Placenta, Membranes, and "Cord."**—The placenta was large, diffuse, and thinner than normal. The chorion was oormal. The amnion was adherent to the thin wall of the sac of the exomphalos. In this the umbilical vessels could be seen running separately to and from the placenta. They were slightly tortuous, but the distance from the placenta to the edge of the abdominal wall was not more than 6 in. There was no cord formation at all. It was unfortunate that in order to effect delivery the vessels had to be divided. The cut end of the umbilical vein could be seen entering the body on the lower surface of the liver, but the points of emergence of the umbilical arteries could not be seen.

#### COMMENT

In this case of obstructed labour delay appeared to be due to the absence of formation of an umbilical cord, and to the shortness of the vessels which ran to and from the placenta in the wall of the exomphalos. A foot had prolapsed, making a complicated vertex presentation. Delivery was effected by podalic version and division of the umbilical vessels. In spite of extreme exomphalos and moderate microcephaly the "monster" lived for three-quarters of an hour.

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## Reviews

### RESPIRATORY DISEASES

*Diseases of the Chest.* By Robert Coope, M.D., F.R.C.P. (Pp 524; illustrated, 25s.) Edinburgh: E. and S. Livingstone, 1944.

In his preface to this book Dr. Coope states that it is an essay in medical education, and it certainly represents a departure from the standard modern technique of medical writing. The work is indeed an essay on the respiratory diseases rather than a textbook, and it is not intended to be a manual of reference. The author has deliberately subordinated the facts to the broad principles, and he has added a wealth of practical advice which is not usually found in standard medical works. In many ways this volume is more reminiscent of the wise, leisurely publications of fifty years ago. Occasionally his enthusiasm for giving advice leads the author to underestimate the common sense of his disciples: for instance, the comments upon the type of clergyman who should be allowed to visit a patient with pneumonia might well have been omitted. But, on the whole, this book succeeds in teaching a sense of proportion which is not to be found elsewhere.

The chapters on clinical examination and physical signs are particularly excellent and should be read by all students. The signs which are of real practical importance are carefully described, and the statement that many of the so-called classical signs "might now be considered of interest only to medical historians" will be accepted readily by clinicians, but perhaps less eagerly by those who are examiners. Unlike many writers on this subject Dr. Coope is free from idiosyncrasies, and there is nothing to bewilder the learner in his account of physical signs, while there is much that will clarify his ideas. The section on tuberculosis is fairly typical of the general method of approach to individual diseases. It is distinctly sketchy as regards the facts, but it lays down the broad principles of treatment with sound sense and human understanding. Other books may give more about the treatment of the disease, but this one will teach the student how to treat his patient.

Insistence upon fundamental principles has led to a certain light-heartedness with regard to detail, and there are some small inaccuracies which require correction: for example, the anatomy leaves much to be desired, and, again, the student reading about lung abscess would gain the impression that an empyema is a more common complication than an adhesive pleurisy. But to lay undue stress upon these small points would be unfair to the work as a whole, because the facts can be obtained from other sources, whereas this book teaches many valuable things that cannot be learnt from encyclopaedias. In fact this volume is to be commended to all students; they will find it easy to read and will not fail to profit from its wisdom.

### THE U.S. DISPENSATORY

*The Dispensatory of the United States of America.* By H. C. Wood jun., M.D., and Arthur Osol, Ph.D., assisted by H. W. Younken, Sc.D., and L. Gershenfeld, D.Sc. 23rd edition. (Pp. 1,831. £5 5s.) London: J. B. Lippincott, 1943.

The *United States Dispensatory* has now reached its 23rd edition. It is a useful reference book, divided into three parts. In Part I are found drugs which are official in *U.S.P. XII*, the *National Formulary* (7th edition), and the *B.P.* of 1932 with its addenda. The method of dealing with each drug is very similar to that followed in the *British Pharmacopoeial Codex*; there is a description of the drug, with details of methods of standardization and a short account of action and uses. Part II deals in a similar manner with drugs which are not official. The compilers of the *Dispensatory* have solved the problem of the very large number of drugs which they might describe by restricting severely their choice of unofficial drugs. Thus, while they take 1,237 pages to discuss official drugs, they confine themselves to 348 oo unofficial drugs. The book would be more valuable if this proportion were reversed. Part III is concerned with processes and reagents and similar details referred to in the *United States Pharmacopoeia* or the *National Formulary*.



It is to be feared that the book in its present form loses much of its usefulness. Details of official drugs are available in many books. Details of unofficial drugs are harder to find, and the reduction of the space allotted to them to so small a proportion of the book seems a pity. The other serious drawback from the point of view of British readers is that the original papers referred to are throughout American. There are very few references to British papers and still fewer to Continental ones.

The book is well printed and easy to read, and is probably as satisfactory as such works can be expected to be in these days when there is so much material to be considered for inclusion. It is inevitable that much is included of little interest, and much is omitted which some would like to see there.

### THE SUBNORMAL GIRL

*The Subnormal Adolescent Girl.* By Theodora M. Abel and Elaine F. Kinder. (Pp. 215. 52 50 or 16s. 6d.) New York: Columbia University Press; London: Oxford University Press

This is an excellent and comprehensive study of the subnormal girl of from 10 to 19—the period when problems of adjustment are most difficult for the normal and doubly so for the subnormal. The authors justly point out that there is no interruption in the series from the imbecile to the normally endowed, and consequently the level at which the State can legally take control is an arbitrary one, and there must always be a large number who must remain in the community for better or for worse. It is becoming more and more evident that the certifiable group is almost less of a problem than the dullards. The trouble with the subnormal is that her rigidity makes it so difficult for her to adjust to unexpected situations, and the unreliability of her behaviour results in most unexpected and inappropriate actions.

The subnormal girl is studied in her home, at school and in industry, and in the institution, and cases are quoted to illustrate how these children behave. Such behaviour is by no means always bad, and in favourable circumstances these girls may make good and even come to earn good wages. But even when it occurs this successful adjustment is only achieved at a price, for dullards need prolonged and careful training and much patience and perseverance. When we come to the seriously maladjusted girl we find a record of delinquencies, unwanted pregnancies, and disease which costs the community dear and often militates against the interests of the patient's normal sisters. In a final chapter the origins of abnormality are discussed, and it is admirably argued that since there is no one simple cause for this misfortune there can be no single simple remedy. Sterilization, social betterment, education, and the like may all have their uses, but much research is still needed before a real understanding of the problem and a constructive solution can be reached. A valuable bibliography is appended. This book can be thoroughly recommended to all those interested in medicine, psychiatry, education, and sociology.

### Notes on Books

*Industrial Nursing: its Aims and Practice*, by A. B. Dowson-VEISSKOPF, is published by Edward Arnold and Co. at 5s. It is an excellent little book, full of information suited to industrial nurses, both those who have the added weight of a doctor's knowledge and authority to support them, and those who have to work without his backing. In the chapter on training it is admitted that the ideal scheme for the training of industrial nurses has yet to be worked out. The one-year courses so far arranged are necessarily expensive, while the three-months and six-weeks courses sponsored by the Ministry of Labour are far too short. Among the ten chapters of which the book consists we find detailed information on the scope and conditions of service of the industrial nurse, on the running of a health department, and on industrial emergencies and routine treatments. The environmental hygiene and the personal hygiene of industrial workers are discussed in other chapters, and there is a detailed chapter on record-keeping, illustrated by numerous sample records. The final chapter discusses co-operation with organizations inside and outside the factory.

Prof. F. J. BROWNE's well-known textbook *Antenatal and Postnatal Care*, first published in 1935, has now reached a fifth edition (J. and A. Churchill; 24s.). The text has been thoroughly revised, and though less than two years have passed since the fourth edition appeared, many changes have been found necessary. There is a new

chapter on the Rh factor and erythroblastosis. An account is given of recent work on diet and pregnancy, especially on its possible effect in preventing various diseases and accidents of pregnancy; and after a critical evaluation of the Toronto experiment and of that carried out in London by the People's League of Health the author writes: "It is impossible after reviewing all the literature on the relation of diet to the disorders of pregnancy to do other than conclude that, while much careful work has been done, many more large-scale, carefully planned, and statistically controlled experiments are necessary before final decisions can be reached."

*The Chemistry of Synthetic Substances*, by Dr. EMIL DREHER (Philosophical Library Inc., 15, East 40th Street, New York; \$3.00) is a dissertation on a series of substances of unusually high molecular weight and on their production by the chemical coupling of smaller molecular units. Such substances include rubber, plastics, enamels, paints, and other materials which are finding an increasing economic employment, some as substitutes for the products of Nature, others for their possession of special qualities not previously available. The discussion shows how the properties of these products vary according to the chemical nature of the units from which they are built and according to the kind of reaction by which the units become linked. It is a useful summary of the work that has been accomplished in this field.

A third edition of Dr. EVELYN E. HEWER's *Textbook of Histology for Medical Students*, which first appeared in 1937, has now been published, three years after the second edition of 1941. This is good evidence of the continued popularity of the work, and of the demand for a student's book which provides all the more essential facts of human histology without these being obscured by the inclusion of unimportant structural details. A considerable number of excellent low-power photomicrographs have been added; also valuable notes bearing upon the physiological changes which normally take place during processes of activity and return to a resting condition, and of the changes in the life-history of a cell from its formation, through maturity to senescence, to its final degeneration and absorption. Little need be said in the way of constructive criticism. One would like to see an improved technique in the original drawings of some of the high-power magnifications, and in the drawings for reproduction of some illustrations derived from other sources; also a fuller account from the histological standpoint in the description of the sense organs is desirable. The work as a whole may be commended for the use of medical students as a clearly written textbook by an experienced teacher. It is published by Heinemann at 17s. 6d.

## Preparations and Appliances

### STERILE SULPHANILAMIDE FOR LOCAL USE

Sulphonamide powders for local application to wounds, burns, etc., should be absolutely sterile, and their sterilization in small amounts by users is troublesome. Unless the powder is initially quite 'dry' and temperature accurately controlled, caking may occur, and discoloration is also common. Boots Pure Drug Company Ltd. have now produced a sterile sulphanilamide for local application. This is a free-flowing crystalline powder with no added ingredient, and is supplied in 15-g. bottles and in 5-g. sifter envelopes. The latter have three coverings of different colours, the innermost of which should be removed with sterile forceps; if the edges are then pressed together at marked points the powder can be shaken from it.

### TETANUS ANTITOXIN

Recent Ministry of Health recommendations indicate 3,000 international units of tetanus antitoxin as the minimum prophylactic dose. Burroughs Wellcome and Co. announce their intention of discontinuing the supply of the 1,000-unit packing of "Wellcome" brand refined tetanus antitoxin globulins. As a further safeguard against the use of inadequate prophylactic dosage, multiple-dose packings containing 1,000 units per c.cm. are also to be discontinued. The suppliers recommend that existing stocks of these packings should be used in accordance with the new dosage.

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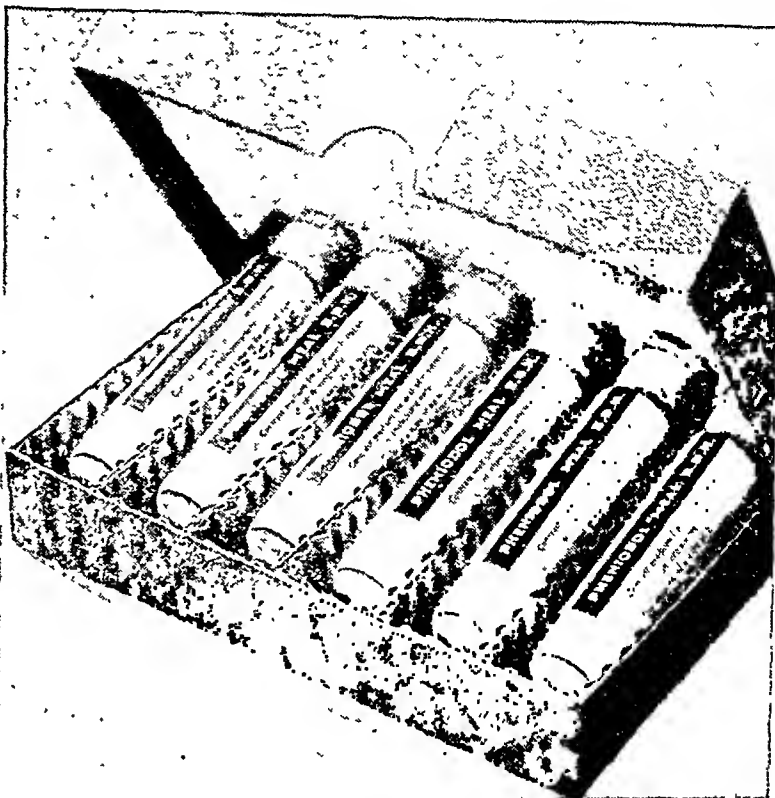
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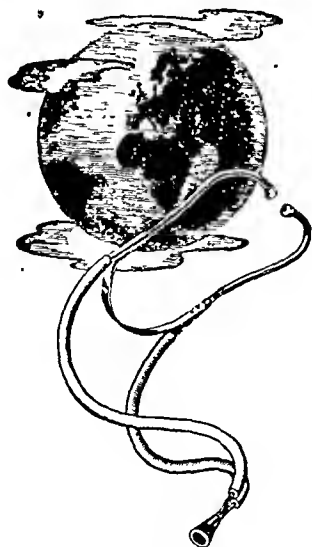


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## THE PLANNERS OF MEDICINE

PEP, which as most readers by now know stands for 'Political and Economic Planning,' has been quick off the mark to describe and discuss the White Paper on a National Health Service and the reactions of the medical profession to the paper. In 1937 the same organization produced what has with justice been called a "valuable and mainly factual report" on the existing medical services. In its present anonymous publication it comes out as an ardent advocate of the measures for a National Health Service proposed in the Government's White Paper, and in perusing the document the reader becomes increasingly aware of the significance of the words "Political and Economic Planning." The NHI Scheme, it states, is out of date and 'must be replaced', the wartime reorganization of the hospital system "must be consolidated", the Government 'must' see that 'no individual is obliged to pay a fee' and "must solve the problem of the geographical maldistribution of medical resources", the new Joint Board "must take their planning functions seriously", "the Government is right in insisting that doctors in Health Centres must be remunerated by salary or some similar alternative excluding competition", "a hospital participating in the service... will have to conform and it will have to submit to inspection." The imperative words we have italicized show clearly enough without further argument the attitude of PEP to the White Paper, and more especially to the medical profession. The dictatorial stress throughout this ably written document rouses uneasy feelings in a profession which by the nature of its work knows full well the value of a second opinion. It may not always be fair to judge a man by the company he keeps, but when the reader looks at the kind of organizations which also join with PEP in its enthusiastic acceptance of the Government's scheme—demurring only because it does not go far enough—he may get some enlightenment on the meaning of the word "political" in PEP. For example, the Communist Party has recently published its views in a pamphlet entitled "Good Health for All," and on page 2 makes this statement "The Government's proposals have been published after a very great deal of pressure from the Labour and Communist Parties, Co-operative Organizations and Trade Unions, and health workers' organizations, such as the Socialist Medical Association." Of hospitals the Communist pamphlet writes "Control will be in the hands of the State and the Local Authorities... standards will be laid down. The inspectors will judge whether these are observed. If not, the offending hospital will receive no money from the Government." At the same time as this pamphlet was published the Socialist Medical Association

issued a press notice with this statement "The Socialist Medical Association warmly welcomes the White Paper on a National Health Service as a step towards a socialized health service and part of a general programme of social security. The Government is urged to introduce the necessary legislation at an early date... all doctors should be employed by the Joint Health Authority of the area in which they work."

The Ministry of Health may well regard the Communist Party and the Socialist Medical Association as strange bed fellows, but we believe we shall be doing a disservice to the cause we have in common with the Ministry—namely, the provision of a first class and comprehensive medical service to the country—if we do not give expression to the grave disquiet felt by the majority of medical men who are aware of the need for reform and are genuinely anxious to promote it. At the risk of distorting the position by summarizing it briefly, we would say this fear is for the loss of professional freedom and the reeasting of medical services according to political dictate. When a project has the blessing of the Communist Party a liberal profession may well feel apprehensive about the future. The Council of the BMA has already publicly voiced its fears of political influence in medical matters, and as each week passes it becomes clearer just what the political influence is. The present PEP broadsheet gives the reasons for these fears in admirable language.

"Inflexible and pettifogging lay control of doctors out of date methods of appointing and promoting hospital medical staffs, narrow-mindedness and lack of imagination are still far too prevalent among local health authorities. The doctors practising in municipal hospitals are still usually denied the full measure of freedom in their professional work which is the rule in voluntary hospitals, chiefly because local authorities like one man—in this case the medical superintendent—to be clearly responsible for all that happens in each of their institutions whether hospitals, workhouses, or schools. Local authorities still commonly expect their doctors to seek their councils' permission before publishing papers even of a purely medical character, and they do not often invite expert technical advice from practising doctors or other health workers."

"Similarly the Ministry of Health has too often allowed the non health functions which it inherited from the Local Government Board to overshadow its public health duties, it has too frequently combined a meticulous attention to details with a disheartening disregard for fundamentals, in many respects, until recently, it has tended too easily to forget even the outside expert advice which it invited and to shelve proposals for reform, the smugness of many of its pre war reports on such matters as malnutrition and the health of children still rankles. Too many Ministers have been more interested in party politics than in the nation's health or in the welfare of doctors, nurses and other health workers. Both the Ministry and local authorities not to mention the Treasury, have given too little thought to another of Newsholme's principles—that 'health is worth whatever expenditure is efficiently incurred in its maintenance or to secure its return'."

In citing the Assistance Board as possibly a model form of organization "for some at least of the medical services," the broadsheet goes on to explain that the success of the Board is largely due to the fact that its members are drawn from outside the Civil Service, that they hold office only for limited periods, and that they give only part of their time to the Board's work. PEP observes that the Ministry of Health is largely to blame for the suspicion with which the doctors of the country regard it. Again we will allow PEP to give in its own words the reasons for the

profession's rooted dislike and distrust of the influence of politics in medicine :

"Unfortunately the only real safeguard is the frame of mind of the Minister and his chief officers, which in the last analysis is bound up with politics. No form of consultative machinery can oblige a Minister or a Government to seek and follow expert advice if they are indifferent to 'long-term planning.' The White Paper indicates a change of heart at the Ministry of Health. Doctors will do well to recognize it."

This change of heart has not escaped the attention of the medical profession. But if the change is an enlargement to the left the prognosis is serious. The above quotations from the PEP broadsheet clearly explain why the majority of doctors in the country are afraid of the introduction of politics into medicine. The real objection is not to the party politics of right, left, or centre. If any political party were to introduce a measure of reform that had the support of the majority of doctors then it would be a matter of indifference to the profession whether it was the Labour, the Liberal, or the Conservative Party. Politics are, however, inseparable from both central and local government. A Minister of Health, as we know, is as likely to form his policy on the pasteurization of milk on political grounds as he is on the grounds of the safety of the public health. We even fear that the views of a medical M.P. on such a matter may be as much influenced by the particular interests of his constituents as by the scientific truth of the situation. We know, too, that party politics play just as baleful an influence in local government and in guiding the decisions of local authorities on health matters. What is more, local authorities have been known to judge a medical man's fitness or unfitness to hold a medical post on the ground of his political beliefs. Some recent critics—and these include some doctors—have had the effrontery, in order to gain their own political ends, to accuse the medical profession of being ignorant of the society in which they are living, of having no social sense, of taking no part in the life of the community at large, of being disinterested in "positive health"—a term incidentally coined by one of the most able spokesmen the B.M.A. has ever had. The enemies of the medical profession eagerly seize upon these parrot cries and are at no pains to discover the facts. To take one single example—and we take it because of its supreme importance for the public health—we may cite the activities of the B.M.A. in the field of nutrition. Both the public and the profession need to be reminded that when the Ministry of Health between the two wars appointed a Committee on Nutrition the report never saw daylight—presumably because the contents of the report were politically unpalatable. In 1933 the B.M.A. set up a Nutrition Committee, and made its report available to the public in printed form in the same year. There were political implications in this document, and as one may fairly assume that the majority of the members of the Council at that time did not belong to the Labour Party the public might profitably draw a lesson from this incident. When the Council discussed the report it was not blind to its political implications, but it decided that it was concerned with one issue only, and that was the medical one. The publication of the B.M.A. report did more than anything else in between the two wars to rouse

public opinion on nutrition. In between the two wars a the B.M.A. started a campaign through advertisements the Press on such public health issues as the pasteurization of milk. The publication of its report on physioeducation was yet one more sign of its profound awareness of the socio-medical obligations of the profession. This is what we mean by professional freedom, a freedom publicly to advocate measures of health undeterred by the political considerations that have always hampered the medical man working under the control of central and local government and depending on them for his livelihood.

These remarks are relevant to the PEP broadsheet "Practising doctors," it is stated, "generally are far too isolated from public life. . . ." But PEP then advocates a line of development of policy which will exclude doctors from full participation in public life, as in fact Civil Servants are so excluded. Both PEP and the *Times* leader writer<sup>1</sup> quote with approval the late Sir Arthur Newsholme's saying: "Skilled medical work cannot be controlled by laymen, but in all business arrangements the representative lay power must be supreme." Medical men are not seeking to be supreme in "business" arrangements but they want to secure that "business" supremacy does not interfere with professional freedom. Recently, yielding to pressure, the L.C.C. removed its ban upon the publication of scientific articles without previous censorship, but at the same time so altered the wording of its standing orders as to make it clear that it would not allow the publication of criticism of administration and organization of services without censorship. Throughout the PEP broadsheet the writer has the honesty to admit the contradictions of fact which are stubbornly in the way of the doctrinaire theory to which he is attached. On the one hand he wishes to see the profession put under complete control, and on the other admits that chiefly by combining in the B.M.A. medical men have succeeded in securing "an appropriate measure of recognition and remuneration as a profession." Approving the enormous increase of central control foreshadowed in the White Paper proposals, he nevertheless writes: "Professor T. Simey has shown that 'political control led to irresponsibility of the permanent official, and to inability to formulate a policy for the administration of a service,' and the 'the problem of reconciling political control with administrative courage and efficiency' still awaits satisfactory solution." He repeats the criticisms already made by the B.M.A. of the present inadequacies of central and local government, but backs up the official line of pursuing what he describes as a "make-do-and-mend" policy for the health services as well as for education, without remedying the existing chaos of local government. Yet the broadsheet admits that Canterbury, with a population of 26,000 will be separately represented on its Joint Board, but no Bexley, with a population of 77,000. The counties of Rutland and Radnor, with populations of 18,000 and 20,000, will rank as major authorities, while Wandsworth (340,000), Islington (292,000), and Harrow Urban District (184,000) will be minor authorities unable to run their own Health Centres. All this seems to be an illustration

<sup>1</sup> *Times*, June 28, 1944.

of the compelling force of what it is contemporary fashion to call an ideology. The facts are ignored so that the theory may remain unstained. In spite of the anomalous exclusion of large authorities from the Joint Boards, PEP sees in the Joint Board the key partner in the area plan. The Joint Board, the broadsheet observes in time, "should never forget its partner—the local health services council." It believes that there would be "little harm and a great deal of benefit from the co-optation to the Joint Board of a few professional members," but "the real place for the expert" is on the Health Council. PEP nevertheless recognizes the risks of local inactivity and central timidity, and in one significant sentence makes this statement: "Much will depend upon the attitude of the Treasury, the effectiveness of the Central Health Services Council, the personality of the Minister, the alertness of his officials, and the political complexion of Parliament." Is it really upon these that the health and well-being of the country is to depend? The individual medical man, be it noted, is not mentioned.

The new doctor will, according to PEP, find his proper place in the Health Centre, which should "be pervaded with an atmosphere of friendliness." "Doctors," it says, "would learn to treat their patients not as irresponsible children but as adult fellow-citizens, and the old-fashioned mystery man would gradually disappear." The doctor in the Health Centre will also have to give lectures on "health topics," and this discipline "will equip doctors and other health workers with that intimate knowledge of the 'consumer' of the health service which they often lack to-day." This is the kind of nonsense to which the medical profession is at the moment being subjected. The medical profession has every reason to suspect the motives of people who write like that. If there is one man in the community who has a real conception of the intimate needs of his fellow creatures it is the practising doctor.

We print in the opening pages of this week's *Supplement* the summary of the broadsheet. The full document should be read widely, as it is an important commentary on the White Paper. It brings to a head a number of issues with which the profession is now confronted, and often, we believe, breathes a spirit which is inimical to the medical profession. It is the spirit which can see no other solution to any problem except through the rigid confining of the individual in an official-bound administrative structure. It is planning—both Political and Economic.

## A NATIONAL MATERNITY SERVICE

There will be general agreement that the foundation of a national health policy must be a good maternal and infant health service. The maternity and infant health services committee of the Royal College of Obstetricians and Gynaecologists has prepared a report in which a National Maternity Service is dealt with in its widest aspects, the care of the infant and social and economic conditions being given their rightful place.<sup>1</sup> The practice of obstetrics

must be considered on a broad national basis, in the light of the ideas and needs of to-day.

In the introduction the shortcomings of the present service are considered. It is true that the three obstetric mortalities—maternal, foetal (stillbirths), and neonatal—have steadily fallen during the past few years, and for this due credit must be given to the health services of the country and the way they have been kept going during the difficult years of war. Nevertheless the report states that the pace has been by no means commensurate with advances in general medical science, and is much more likely to have come about from the more prevalent use of blood and plasma transfusion, the use of sulphonamide drugs, and recent bacteriological technique in preventing and tracing contact infection, than from a rise in the average standard of obstetric practice. There can be no doubt, too, that the maternal and other rates could be forced considerably lower by making better use of our present resources. The attention paid in the report to social and economic conditions in relation to a maternity service reveals an outlook not usually found in documents of this kind. It cannot too often be urged that no form of medical activity can be effective if these conditions are poor. The variations in the stillbirth and neonatal death rates, and to a less extent in the maternal rate, according to social class and geographical area, are not well enough known, though the information is clearly set out in the Registrar-General's reports. It is not a pleasant truth that adverse social and economic conditions materially lessen the chances of a child's being born alive and materially increase its chances of dying in the first year of life. Before the war a large proportion of the population suffered from deficiencies in the quality of their diet, and evidence has now been adduced to show that malnutrition is associated with increased abortion rate and premature-birth rate. Moreover, malnutrition may profoundly influence the skeletal development of the foetus *in utero*, leading on to rickety pelvis which twenty years or so later may affect the safety during childbirth of a new generation of mothers. Other socio-economic subjects dealt with in the report are the family unit, the encouragement of early marriage, the mother in industry, home helps, nurseries, and education in sex and parenthood.

The technical section of the report opens with planning, for the best technique loses power unless directed by plans to bring together patients, workers, and equipment at the right time and in the right places. Planning must be based on areas of adequate size. The present system of multiple authorities—there are more than 400 sovereign independent maternity and child welfare authorities in England and Wales—must go, for a small authority has neither the means to provide nor the material to make use of a complete service for itself. The report considers that the maternity and infant health needs of an area with a population of about a million, yielding about 15,000 births a year, would be big enough to make full use of a complete service and, on the other hand, would not be too large for economical administration and central leadership and guidance. At the same time the country should be divided into large health regions based whenever possible on a

<sup>1</sup> The report is published by the College, 55, Queen Anne Street, London, W.1, at 1s. 6d. The summary and conclusions appeared in the *Journal* of June 17 (p. 823).

university medical centre, the aforementioned areas becoming constituent areas of the large regions.

The service, under this plan, would be based on maternity "centres," of which three grades are specified. A key or primary centre would be the regional centre, associated with a university and attached to a medical school for undergraduates, and "of such size, status, and repute that it would be the chief consultative and research centre of the region, as well as the source of leadership and inspiration for all the other workers in the service, whether specialists, general practitioners, midwives, nurses, or lay workers." There would be a whole-time director, of professorial status, living in the precincts. The centre would comprise a unit of 100 or more beds, a department for infants under a paediatrician, an associated gynaecological department, laboratories, ante-natal and post-natal clinics, and it could be the co-ordinating centre for all the maternity work of the region. "Divisional" or secondary centres in large towns and in small towns in rural areas would not necessarily be smaller or less well equipped and staffed than the key centres. At the periphery would lie the outposts of the service, small "local" centres, the focal points in rural parts for midwives and health visitors, with a few beds in charge of selected general practitioners. The relative merits of domiciliary and institutional midwifery are discussed, and the Registrar-General's figures, and figures supplied from large towns, are quoted to show how strong during the past few years has been the trend towards the latter. It is suggested that maternity accommodation should be provided for 70% of all births, the needs of town and country being different. On this basis an area yielding 15,000 births a year would require about 700 lying-in beds and ante-natal beds. As at least one-third of deaths in childbirth are due to shock or haemorrhage, the immediate availability of blood and plasma for transfusion confers at all events one great advantage on institutional midwifery. It is rightly stated that ante-natal care affords only a partial protection to child-bearing women, for no amount of ante-natal care can compensate for poor care during labour—quite apart from the fact that certain dangerous complications of labour are unpredictable. The report discusses why ante-natal care does not yet come up to expectations. One of the chief mistakes has been that many local authorities regard ante-natal care as an end in itself, isolated from the labour room, whereas the truth is that pregnancy and labour are all of a piece and should have continuity of supervision from the same doctor. The inadequate provision of ante-natal beds even in modern maternity hospitals is to be deplored; they should be at least one-third of the total bed complement. The report appeals for post-natal hostels and proper rehabilitation after childbirth. In carrying out this ideal there are doubtless domestic difficulties, and that is where home helps and nurseries would come in. Rightly, in so far as the mother is the central figure in the family unit, "plans directed to the improvement of national health must give careful attention to maternal welfare."

The personnel of the service would consist of obstetric specialists, paediatricians, general practitioners, midwives, health visitors, home helps; and all these are considered

in turn. There are at present on the roll of the Royal College of Obstetricians and Gynaecologists 167 Fellows and 285 Members, and even if these were uniformly spread they would scarcely suffice. Here is a problem that demands early solution, for it takes a good five years of postgraduate training to make an obstetric specialist. The Committee of the College states in unequivocal words its belief that, though general practitioners should take an important part in a national maternity service, only those with special midwifery experience and interest should be employed in it. General practitioners with special experience are of two kinds: those who for years have been particularly interested in midwifery practice and have become skilful in that way, and those who after qualification have held a resident post in an approved hospital. The College grants a diploma to general practitioners, and regards the prescribed training as more important than passing the examination. There are at present 332 diplomates (D.R.C.O.G.), a number far short of requirements. "The share that general practitioners would take in the service would be: to have charge of the local maternity centres, to do ante-natal work at clinics and health centres, to do domiciliary midwifery and take medical aid calls from midwives." To encourage the true and desirable team spirit general practitioners should, if they wish, be given opportunities to associate themselves for periods of time with the work in the large maternity centres. It is pointed out that the present system of midwifery practice often places general practitioners in impossible situations where, unsupported by a maternity institution or a consultant or a resuscitation team and in unsuitable surroundings, they may have to deal with complications that would test the promptness and skill of the most able specialists.

Throughout the whole report one theme recurs again and again—co-ordination, integration of all the components of the service, from top to bottom. The weakness of the present system of maternity work in this country is not so much a lack of knowledge as inability to make use of what is already known. And that is where, looking into the future, the report, when discussing administration, ends with a note of disappointment over the White Paper plan of putting the hospital and consultant services under one authority, and the clinics, the general practitioners, and the midwives under another. What is asked for is a service under a single administrative authority.

## VARIATIONS IN OUTPUT OF WAR MATERIAL

In order to obtain further information about the vital problem of output in war production factories S. Wyatt and his collaborators, working on behalf of the Industrial Health Research Board, have been making investigations in seven large factories, and they have embodied their conclusions in a report.<sup>1</sup> They planned to measure the individual output of groups of about 200 women workers for a period of four to six weeks before a reduction was made in the hours of work, and for at least twelve weeks after it. Unfortunately the change of hours was not very substantial,

<sup>1</sup> Emergency Report No. 5 of the Industrial Health Research Board 1944 H.M. Stationery Office. (4d)



as they fell only from about 54 hours a week to 51 hours ; but this relaxation of working time was followed by an average increase of 3% in the output during the first and second four-week periods after the change, rising to 6% in the next four weeks. If the observations had been continued for a longer period the rise would no doubt have been greater still, for the occupations studied by the Health of Munition Workers Committee in the last war showed that three months or even more were required before the workers achieved the full production brought about by a shortening of hours. In the present investigations a close inquiry showed that the changes in output often depended, in part, on other factors than the effect of shorter hours, but in three of the groups studied it was possible to infer with some degree of certainty that the shorter hours genuinely increased the hourly output. The effects of various disturbing factors are illustrated in the pamphlet by a series of charts, and they include modifications in design, mechanical and material difficulties, variations in supplies, and technical improvements in the methods or conditions of work. Arguing from the results obtained in this and a previous investigation (Emergency Report No. 2), the inference is drawn that, of all the factors studied in numerous war factories, technical improvements and re-organization are the most likely to lead to an increasingly high level of efficiency.

The effect of hours of work on absenteeism is well shown in two series of data. When the women were working 59 hours a week the average absenteeism was at a maximum of 19%, and when hours were reduced to 55 it fell to 11%. In the men, as a whole, the absenteeism was only half that of the women, and it reached its maximum of 11% when their hours of work were 65 a week. It fell steadily with reduction of hours, till it reached a minimum of 6% when they were 56 a week.

### GOOD LIGHTING

The "black-out" and the need for economy in power have interrupted the steady developments of pre-war years in the proper use of lighting as an essential aspect of vision. This interruption in developments and the temporary relapse to lower standards of visual comfort have, however, made people light-conscious who previously took lighting, like many vital but familiar things, for granted. The rebuilding of our cities and towns offers opportunities for the introduction of good lighting as an integral part of civic life, while the vast housing schemes that are inevitable likewise allow for the planning of adequate lighting. The stringency that the war years imposed can but add to the recognition of the need for such innovations, and the Illuminating Engineering Society has done well in clearly formulating desiderata for the future. The general principles underlying illumination are brought out in an introductory pamphlet, and special aspects are dealt with in two separate publications on the lighting of schools and of public buildings.<sup>1</sup> The introductory pamphlet rightly stresses the point that by good lighting is meant lighting that is ample and adequate for the particular task in the particular environment, and that by this standard a vast number of people are still working and living under "appallingly bad" conditions. If it be true that seeing is a partnership between good lighting and vision, it is also true that good lighting is not merely a question of ample quantity. The lighting system has to harmonize with the general architecture, so that abrupt contrasts

between light and shade are avoided. The sickle-like sharpness of the edge of shade and shine of sun-drenched woods and fields is highly undesirable in the home and workroom, and this emphasizes the difficulties of the illuminating engineer trying to enliven an unsatisfactory building. Yet different buildings are planned for different purposes, and the lighting requirements of, say, a picture gallery and a classroom are obviously different. In the one a suitably placed concentrated light, shading off gently into the background, is necessary ; in the other a more general and diffuse lighting system is required. Public buildings can add to or mar the natural dignity of a town, and illuminating engineers are right in insisting that the exterior lighting of such buildings and the adequate lighting of their backgrounds are civic problems that deserve consideration. The flood-lighting seen in our cities in the Jubilee Year remains as a pleasant memory and gives an indication of things to come.

### CONTINUOUS CAUDAL ANALGESIA

Progress in anaesthesia consists in something more than changing a tap on a piece of apparatus in order to give it a new name. Few really new principles in anaesthesia in recent years are standing the test of time. Continuous spinal analgesia, which may be one of these, was introduced by Lemmon<sup>1</sup> in 1940, and the principle of continuous regional analgesia has since been applied to extradural analgesia administered through the sacral hiatus.

Single-dose caudal analgesia has never been popular in this country because of the occasional difficulty of inserting the needle, coupled with a high rate of failure, even in expert hands ; and it has largely given way to spinal analgesia. To these difficulties the continuous method has added the necessity for keeping the needle in place for periods of, maybe, hours, in a site where infection is difficult to eliminate in a patient lying on his back. The possibilities of infection, broken needles, and inadvertent subarachnoid injection are ever present, and in the literature of continuous caudal analgesia form a disagreeable though prominent triad casting a discouraging shadow over otherwise enthusiastic reports. Hingson and Edwards<sup>2</sup> were pioneers in working out the technique of continuous caudal analgesia for obstetrics. Anaesthesia in labour still leaves much to be desired, and in spite of the technical difficulties enumerated further work on this method is justified, in order that its value may be assessed in relation to other methods of relieving pain in childbirth. A more recent application of continuous caudal analgesia is to abdominal surgery generally.<sup>3</sup> Though there is always plenty of room for improvement, present methods of analgesia for upper abdominal surgery can fairly be described as satisfactory—a description one could not apply to analgesia in obstetrics. It is therefore difficult to justify complicated techniques such as extradural analgesia, paravertebral analgesia, or other unnecessarily complicated means of blocking the intercostal nerves for upper abdominal surgery when the end-result is practically indistinguishable from straightforward spinal analgesia achieved by means of the simple injection with which we are familiar. Southworth and Hingson have published their results of 903 operations, most of them on the lower abdomen, in which continuous caudal analgesia was used. This technique is not for the novice, and it is doubtful whether it will commend itself to the expert who already gets good results from simpler methods.

<sup>1</sup> *Principles of Good Lighting. The Lighting of Schools. The Lighting of Public Buildings.* Published by the Illuminating Engineering Society. 32, Victoria Street, S.W.1. Price 1s. each.

<sup>1</sup> *Ann. Surg.*, 1940, 111, 141.

<sup>2</sup> *Anesth. & Analges.*, 1942, 31, 301.

<sup>3</sup> *Ann. Surg.*, 1943, 118, 945.

# AN INDUSTRIAL REHABILITATION CENTRE

BY

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*Consulting Physician in Physical Medicine to the Army*

The Ministry of Labour has opened a Centre at Egham for the industrial rehabilitation of male patients. This represents a new experiment in the general field of rehabilitation, and the object is to combine the functions of reconditioning, physical development, restoration, vocational guidance, and purposeful training. It is constructed on the lines adopted in Army practice, which has emphasized the importance not merely of finding a job for a man but of finding the right job for him. It has been realized that the complete employment of available man-power, so essential in total war, demands the complete utilization of the individual. He must be placed in an occupation which fully exercises all his available faculties and not in one which is within the easy compass of his competence. While this holds good for the fit man, it is equally important for the disabled. The Centre is constructed on the lines which the Army has evolved to meet these problems.

## Description of Centre

The Centre is situated  $1\frac{1}{2}$  miles from the village and railway station of Egham, in 54 acres of park-land. It is under the control of a manager, appointed by the Ministry of Labour, chosen for his wide knowledge and experience of industrial occupations and training. It is equipped with first-class workshops for various building and engineering occupations, and there are also courses for handymen and gardeners. These facilities, which are all under a highly qualified teacher, are used to test suitability for various occupations, and further provision will be made in the light of experience.

The Medical Officer, who has undergone a course of special instruction, discusses the aptitude and potential capacity of each man with the manager. He co-operates with him in the choice of employment, and regulates progression of training on medical grounds—a most important feature in all forms of rehabilitation. He has a staff of medical auxiliaries, including fully trained physiotherapists, and the remedial gymnastics are in the hands of a senior Sergeant Instructor of the Army Physical Training Corps, released for the purpose from a military convalescent depot.

The Centre contains an excellent gymnasium, a physiotherapy department, and a recreation hall. Provision is made for entertainment, and particular attention is paid to the proper use of leisure. The kitchen and catering are under the supervision of a qualified dietitian. Special care is given to the manner in which meals are served, as the psychological effect of this is considerable.

The course is normally of six to eight weeks' duration. It is of an active character and is therefore not suitable for men who are still in the earlier convalescent stages of recovery from illness. The Centre does not provide medical treatment or nursing. The following cases are not accepted: (1) men suffering from infectious or contagious diseases; (2) cases of psychosis or severe neurosis; (3) epilepsies; (4) the totally blind. On completion of the course the men go either direct to employment in their previous or in some other occupation, or are transferred to a vocational training centre for a full-time course in the new occupation chosen for them.

The types of case which it is considered would derive benefit by transfer to Egham may be roughly described under the following headings.

## Rehabilitation

After all debilitating illness or injury, even when restoration to full functioning capacity is envisaged and will be attained, there is a period between the cessation of active treatment and full employment during which working efficiency remains impaired and accident-proneness is increased. Simple convalescence is not enough. This interval should be bridged by skilfully graduated remedial exercises, directed not only to the restoration of function in the disabled part but also to the mental and physical demands of the future employment. The patient must be progressively and adequately trained so that he can take up a full day's work without fear of relapse or ill effect. This stage can be pursued satisfactorily only when undertaken away from the hospital atmosphere.

Rehabilitation involves the study of the whole man. The physical, psychological, social, educational, and environmental aspects must all be borne in mind. It is one continuous process, beginning at the moment when the patient is deemed to be able to take an active interest in his recovery, progressing through the ambulant stages, and ending with his final hardening to the requirements of his prospective job or of a full-time course of training.

There comes a time, however, in the convalescent stage of all serious disease and disability when an assessment must be made as

to whether the patient can return to his former employment, whether some modification of his original work is necessary, or whether a new vocation must be found for him. Men sent to Egham for reconditioning to the demands of their old employment have, in addition to the remedial measures employed, the advantage of graduated vocational retraining in its various workshops. When, on the other hand, the disability is of such a nature as to preclude continuance of previous occupation or some modification of it, another and more suitable job must be found. Here also the centre at Egham offers a unique opportunity of deciding, during the period of reconditioning, the type of occupation a man could usefully fulfil and to which he could gradually be trained. Early reinstatement and training for a definite and specific purpose carries with it an added psychological impetus.

## Vocational Guidance and Purposeful Training

The more favoured members of the community are able at an early age to make up their minds as to which trade or profession they wish to adopt, and have the opportunity of pursuing it or of taking up another before it is too late. The less fortunate, because of social or environmental circumstances, or because of a short-term policy of economic return, are often lured into a vocation entirely unsuitable. The disabled man is particularly in need of guidance in the choice of his career, and for this he requires the advice both of a doctor versed in the many-sided aspects of rehabilitation and of an expert conversant with the varying demands of the different branches of industry. It is surprising how inept is even the normal but uninstructed individual in the simplest tasks, such as digging, jumping, lifting, and climbing. When dealing with the substandard, correction of faulty technique may not only prevent further disability but may be productive of considerable economy of energy—a point of great importance to the handicapped man.

The attainment of these objects demands a catholic outlook and a wide appreciation of the responsibility entailed, in accurate and careful selection of employment, assessment of recovery, graduation in training on the physical side, and appraisal of the essential psychological and environmental background. Enthusiasm must be engendered, and the whole-hearted co-operation of the individual must be ensured. These objects can only be attained under the twin guidance of a technician who appreciates the nature of the task and of a doctor capable of assessing functional capacity on anatomical, physiological, and psychological grounds.

Skilled vocational guidance is of particular value to the ex-Serviceman who has been discharged from the Forces with some residual disability. He may have been a skilled worker before the war; or his Service experience may have kindled an ambition for progressive and skilled work of a kind he had not previously contemplated; or he may have gained some technical knowledge in one of the recognized Service trades. For such a man a disability may appear the end to all his hopes, and, left to himself, he may drift into unsatisfactory employment, with the danger that later on, when opportunities are not so easy as at present, he will become a disgruntled citizen. The psychological factor in such cases is all-important. The atmosphere and expert advice provided at Egham should restore confidence and help the man on the road to a useful place in the working life of the community.

## Research

The experiment should provide excellent material, collected and controlled by a follow-through mechanism, for group research on a considerable scale into problems of rehabilitation and re-vocation generally. Much information could be collected with regard to restricted function in a wide field of medicine and surgery that would be helpful as a general guide to occupational placement. It is hoped that the Ministry of Labour will develop a service of this kind in co-operation with industrial medicine—which has already contributed so much—by compiling statistics into the occupations open to individuals with specific disabilities, into the aetiology of minor medical conditions which lead to ill-health and reduced efficiency rather than to disease, and into many and varied problems of common interest.

## Admission

The Centre was planned to receive patients direct from hospital or within two to three weeks of their discharge. All hospitals in England and Wales have been circularized by the Ministry of Health. A simple certificate (on a form known as R.D.11) from the hospital authorities is all that is required; it is the duty of the Ministry of Labour representative who attends the hospital to explain the details of the course to the patient and to arrange his journey. Application can also be made at any local office of the Ministry, in which case a certificate (on the form R.D.11) is required from the man's private doctor.

The scheme is a voluntary one. The cost, including full maintenance and instruction and fares to and from the Centre, is borne by the Ministry of Labour. In addition each man receives an allowance

of 24s a week for himself with a supplement of 10s a week for his wife and 4s a week for each child. An ex-Service pensioner continues to receive his full pension.

Further information can be obtained from any local office of the Ministry of Labour. The manager of the Centre will be glad to receive medical officers and other members of hospital staffs. The address is the Egham Industrial Rehabilitation Centre, Wood Lee, Egham, Surrey, and the telephone number is ECH 880.

It is hoped that both hospitals and industrial doctors will take advantage of this Centre, for the benefit of their patients.

## PREVENTIVE MEDICINE: TEACHING AND PRACTICE

INAUGURAL LECTURE BY PROF J M MACKINTOSH

An address on teaching and practice in preventive medicine was given at the London School of Hygiene and Tropical Medicine on June 23 by Dr J M MACKINTOSH, the newly appointed Professor of Public Health, University of London. The chair was taken by Lord WOOLTON, Minister of Reconstruction.

Prof Mackintosh, who was introduced by Prof Major Greenwood, began by repeating a definition of social medicine given by Gordon Smith in 1824—"The application of medical knowledge to man in his social state." But the history of public health teaching he said went further back than that. In 1786 Johann Peter Frank was appointed director of public health of Austrian Lombardy, and his international fame led to the creation of the first chair of public health in a British university (Edinburgh). Andrew Duncan, sen., who became professor of the Institute of Medicine in Edinburgh in 1789, began in 1795 a series of lectures on medical jurisprudence, including "medical police"—a term quite familiar to Scottish ears—in which he dealt with both personal and environmental health. In 1798 Duncan presented a memorial as the outcome of which in 1807 George III granted a commission creating a professorship of medical jurisprudence and medical police "as taught in every university of reputation on the Continent."

### The Diploma in Public Health

The next landmark was the action of the General Medical Council in drawing attention in 1869 to the desirability of inserting in the *Medical Register* a qualification in State medicine which eventually received sanction in 1886. The action of the GMC was due largely to four men—Henry Acland Stokes of Dublin, E A Parkes, and H W Rumsey. But even so opinion was divided. Billroth in Germany in order to emphasize the value of the basic sciences in medical education confessed that he was not interested in the struggle for public health and Welch took this view to Baltimore when he became professor of pathology in 1884. Though later when Welch set himself to organize his new school of hygiene, he said that he was trying to stress the humanistic aspect of medicine because in the past the whole emphasis had been—and he thought the times had demanded that emphasis—on the scientific side.

In England the institution of the DPH arose in response to a specific public need for officers of health when bacteriology opened up a new field of study. A generation ago it was reasonable that medical officers of health should be expected to supervise bacteriological and chemical work. As recently as 1925 one or two medical officers of health were still public analysts for their areas. The immense broadening of the fields of bacteriology and applied chemistry inevitably led to specialization and medical officers of health burdened with increasing administrative duties, were forced to leave laboratory work to experts—a tendency accentuated by the provisions of the Local Government Act 1929, and by the various Housing Acts.

The changes in health policy which took place up to the end of the last war were only feebly reflected in the diploma course. As recently as 1920 British universities, speaking broadly, took no cognizance of the DPH. To gain experience in public health administration the student was usually left to shift for himself, the course was not as a rule well knit,

and in some cases the teaching fell lamentably behind the needs of applied practice. It had often been said that there was a great gap between the establishment of scientific knowledge and its application to human needs. This was partly due to economic causes, partly to lack of administrative machinery, and partly to insufficient diffusion of knowledge.

### Colleges of Preventive Medicine

The primary importance of a school or university department of hygiene Prof Mackintosh continued, was to make good practitioners of health to send out competent men and women with a high sense of their calling and a scientific outlook. It was easy to speak these brave words and difficult to translate them into organized teaching courses, but there were certain guiding principles.

(1) No school or university can create a scientific outlook in its students unless it is actively engaged in research in the basic sciences—that is to say sciences for the advancement of knowledge irrespective of immediate practical considerations.

(2) The department should direct the application of scientific work to problems of public health—for example through surveys, routine laboratory investigations, statistical and epidemiological studies, and field experiments.

(3) The department should be strictly associated with current administration, including housing and sanitation institutions and hospitals, and the everyday duties of the practising M.O.H.

(4) The department should co-ordinate the postgraduate course for the DPH by means of direct teaching of the principles of preventive medicine in order to weld the course into a coherent whole. It was the duty of the professor of preventive medicine to see that the course as a whole was complete, sound in structure, balanced in emphasis, and sufficient as a framework on which to build experience.

The earliest examples of schools designed as colleges of preventive medicine were the School of Hygiene and Public Health at Johns Hopkins University, the University of Toronto School of Hygiene, and the London School of Hygiene and Tropical Medicine. All these drew much of their inspiration from a report prepared in 1915 by W H Welch and Wickliffe Rose and presented to the General Education Board of the Rockefeller Foundation, and none of them could have achieved success without that Foundation's support. A school of this kind, especially when it catered for the needs of graduate students, must necessarily have a large staff for teaching and research. It must enlarge its borders far beyond the ordinary university school or department. It should aim at offering exceptional opportunities for graduates, but it should not offer diplomas in special subjects nor should it directly provide clinical instruction, although it might make arrangements to that end.

### Organization of Teaching Courses

The type of organization which best provided for intensive study and research and general instruction was the system of basic and elective subjects which obtained at Johns Hopkins University. This had the advantage of flexibility. As for clinical instruction the right approach to clinical medicine was through the training of a physician, and this applied equally to tuberculosis, venereal diseases, infectious diseases, maternity and infant welfare and child health. The health officer must of course have enough knowledge of these matters to enable him to administer with understanding the community services which dealt with them. A term of residence in a fever hospital was a valuable experience for a health officer, but it did not of itself make him an expert in infectious diseases, for which he would require a background of medicine and paediatrics. Similar considerations applied to tuberculosis and venereal diseases. The course should be chosen in order to train men and women to be competent administrators both of institutions and of public health services generally, but the course was merely an introduction to administration and must be followed by practical experience in institutions and health departments. There was a feeling in this country that administration could not be taught academically, and that only what was called practical administration was of any value to the student, but it would be a poor preparation for a career in preventive medicine if students acquired knowledge of a subject without any background of the wider principles of administration.

With regard to teaching, he contented himself with the following headings:

- (1) The historical background of the public health and social services.
- (2) Central and local government.
- (3) Elements of national health policy, including both environmental and personal health.
- (4) The law relating to public health.
- (5) Principles of medical administration, both institutional and departmental.
- (6) Public education in the promotion of mental and physical health.
- (7) International health relations.

After describing the White Papers on the National Health Service and on the Government employment policy as "valuable prescriptions from the pharmacy of social medicine," Prof. Mackintosh said that those concerned for the future of public health must be "fearless in devising, ready to cast out intolerance and partisan advocacy, and unafraid of new plans for co-operative action, even when they ran counter to traditions."

#### Lord Woolton on the White Paper

LORD WOOLTON, from the chair, speaking of the White Paper on a National Health Service, said:

"I understand from the newspapers that certain practitioners in the [medical] profession have some doubts about the conditions of their service under the new plan. I beg them not to be unduly fearful. Terms are a matter of negotiation, but the end at which we are aiming cannot be a matter of controversy. The aim is that to every man, woman, and child in this country all that is best in medical science shall be available. Medical need can have no concern with capacity to pay. The medical profession has a long and glorious career of benevolence in the public service, but in spite of all their best endeavours there remains in our midst much suffering and physical incapacity which I am given to understand is preventable. Common humanity demands that we should address ourselves to this problem and seek and find a solution to it. On grounds of sentiment—which are not to be despised—and on grounds of the economic health of the nation we must deal with this issue of physical ill-health. We cannot afford the loss of capacity or the loss of time that comes from physical disability, and, with great respect, I invite practitioners of this great profession to refrain in discussion from anything which brings about that friction that leads to heat rather than to light. I invite them to join with those of us who are in public office and who are seeking that the way shall be open to an even larger field for their healing skill. For we must succeed. The public good must be served, and the doers of good must have both opportunity and just reward."

## Reports of Societies

### HOSPITAL PROVISION FOR SMALLPOX

At a recent meeting of the Fever Group of the Society of Medical Officers of Health Dr. ANDREW TOPPING, the President, opened a discussion on smallpox, with special reference to hospital provision.

He said that memories of the ravages of variola major in this country 50 years ago led to the perpetuation of innumerable small *ad hoc* smallpox hospitals, although improvements in ordinary sanitation and control of infection made it unlikely that the disease would ever sweep the country again in epidemic form. As the theory of aerial convection had proved untenable, an occasional case of smallpox, actual or suspected, could justifiably be admitted to a single-bed ward in any modern fever hospital if staff and patients in contact were protected by vaccination. But administrative difficulties might be considerable, and public opinion would weigh against such a practice. The number of reserve smallpox hospitals was needlessly great, and he favoured self-contained units of 4 to 20 beds, with accommodation for observation, within the curtilage of larger hospitals. If an outbreak assumed epidemic proportions all or most of the hospitals could be taken over temporarily for cases of smallpox. A service of experienced consultants was necessary (as already existed in London), also a reserve of vaccinated nursing and ancillary staff bound by

their terms of service to undertake duty in smallpox cases if required.

#### Method of Spread

These views might appear controversial, Dr. Topping continued, but in his view every case of smallpox could be accounted for by ordinary methods of spread if a complete and accurate history of contacts and movements could be obtained. Earlier supporters of the theory of aerial convection in the neighbourhood of smallpox hospitals too often ignored the possibility of a breach of control regulations by a member of the hospital staff. On the question of whether vaccination did protect, he said, it had to be admitted that with single-insertion methods they were on less sure ground, but recent experience of major smallpox showed that even minimal vaccination exercised a definite protective or modifying effect. He favoured a return to adequate vaccination standards in the presence of the major disease. Small units in the curtilage of larger hospitals on the lines he had suggested could be used for other purposes when not required for smallpox cases. A larger hospital as second-line or reserve accommodation would be necessary, such as a fever or convalescent hospital whose ordinary patients could be evacuated without serious dislocation. It might be argued that the moment was inopportune to suggest changes of this nature, and that war and the rapidity of modern travel added to the risks of a smallpox outbreak, but he saw no reason to think that an epidemic serious enough to cause a breakdown in public health control was likely. It was preferable to have a comparatively small number of beds ready at short notice with staff and equipment rather than a thousand beds on paper, the majority of which were unstaffed and unusable.

#### Clinical Picture in Recent Outbreaks

Dr. A. JOR, describing the Edinburgh outbreak of 36 cases, said they fell into two groups: (1) 23 institutional cases, and (2) 13 city cases, of which 5 were direct contacts of other city cases. The source of infection of the institutional cases was never disclosed, nor was the association of these with the city cases or the primary city cases with each other. The rash in its early stages in the first case had much in common with chickenpox, and it was not until it was fully out that a confident diagnosis of smallpox could be made. The second case was sent in as of cerebrospinal fever, and in the first few hours after admission was clinically more characteristic of that condition than quite a number of the 600 cases he had seen since 1940. The clinical types were: haemorrhagic 6, confluent 5, semi-confluent 3, discrete 10, and discrete sparse 12. All the haemorrhagic and 2 of the confluent cases were fatal. The commonest symptoms of onset were headache, chill, nausea or vomiting, backache, and malaise. Pyrexia was usually well marked in the initial stage, and only one definite prodromal rash was seen. The true rash appeared most commonly on the 4th and 3rd days, although it was delayed in some cases until the 5th or even the 6th day, and in certain patients it came out on the sides and root of the neck. The disease followed the usual textbook course. Of 9 unvaccinated patients 2 died, and of 18 vaccinated 6 died; there were no deaths among a further 9 who had been vaccinated or revaccinated. In four of the fatal vaccinated cases more than 50 years had elapsed since vaccination, more than 40 years in another, and at least 24 years in another patient who was suffering from bilateral hydronephrosis when he contracted smallpox. There were 15 cases of successful vaccination or revaccination during the incubation and initial periods of smallpox, 2 of these occurring 12 days before the outcrop of the true rash, thus disposing of the textbook statement that vaccination in the first three days after exposure would always protect. Successful revaccination in one case 7 days before the true smallpox rash failed to avert a fatal haemorrhagic attack. Sulphonamides were used in the treatment of 14 cases. No spectacular results were obtained at any stage of the disease, though there was a relative absence of eye and lung complications, and raw surfaces healed rapidly. When the Glasgow outbreak started every member of the hospital staff was revaccinated, and within a few days of the confirmation of the Edinburgh cases practically all patients except the seriously ill were protected, refusals being only 0.5%.

At one stage of the epidemic the smallpox hospital was nearly full so it was decided to put the female patients in a separate small pavilion in the fever hospital. This consisted of two modern four-bedded wards with the usual annexes, and the highest number of patients housed at any one time was 6 the nearest building being a fully occupied two storied diphtheria pavilion 80 feet away. The staff were isolated and accommodated separately from the main hospital so that the conditions were comparable with those suggested by Dr Topping. The experiment was completely successful so far as it went but the number of patients treated was limited, the nursing staff were of the highest order, while the specific immunity against smallpox was kept at a very high level in the patients and staff of the fever hospital. Recent experience of the results of haemorrhagic and confluent smallpox had convinced him that this last condition must be rigidly fulfilled if smallpox isolation was to be carried out within the curtilage of the fever hospital.

### Discussion

In the discussion which followed, Dr W. G. PATERSON said that one advantage of attaching smallpox hospitals to the larger fever hospitals would be ease in providing expert medical supervision. The offensive odour normally associated with severe smallpox was not a feature of recent cases in his care nor had there been extensive scarring. Dr A. F. CAMERON thought that treatment in small units inside fever hospitals was feasible provided there was (a) a reliable staff, and (b) complete separation of staff, but the human factor required careful watching. Dr C. A. BENTLEY'S experience in India was that the erection of *ad hoc* smallpox hospitals far removed from the villages made it impossible to control irregular visiting. In Calcutta the smallpox hospital consisted of two pavilions in the grounds of a general hospital. There was no evidence of spread in the vicinity, but much depended on vaccination and revaccination of patients and staff. A single insertion, he said, could not be relied on to protect against Asiatic smallpox, three or four insertions were required. Vaccination up to 3 days after exposure gave a high, but not absolute, protection.

Dr H. S. BAYES described a toxic illness of high infectivity among smallpox cases. If this was primary smallpox it did not appear to be transmissible, and he wondered if this meant that infectivity was not high before the focal rash appeared. There would be obvious advantages in attaching smallpox hospitals to fever hospitals, but he thought nobody would wish to treat variola major near a fever hospital without vaccinating all the fever patients. Dr J. PICKFORD MARSDEN pointed out that Ricketts had never promised immunity to those vaccinated early after exposure to smallpox, preventive vaccination was always to be preferred. The value of sulphonamides was difficult to assess because partial immunity had the same effect on the behaviour of the rash as was often attributed to these drugs. They could add to difficulties because they occasionally produced a rash mimicking pustular smallpox. He stressed the importance of an adequate observation unit which need not form part of the smallpox hospital. He thought the arguments for and against aerial convection were unimportant, what mattered was that the disease tended to spread in the vicinity of smallpox hospitals. Still, a strong case could be made for attaching smallpox hospitals to fever hospitals, but such units should be made completely self-contained.

At the last meeting of the Manchester Medical Society Dr EDITH PATTERSON demonstrated by cinema film the technique of growing *in vitro* bone cells from fragments of avian embryo bone. The behaviour of the cells which emerge from the explant—macrophages, monocytes, osteoblasts and osteoclasts—was demonstrated at low and at high magnifications. The similarities of round mononuclear cells to osteoclasts was shown by the similarities of movement and of staining and the possible relation between these two types of cells was discussed. A group of mononuclear cells, it was shown, could fuse together to form a multinucleate cell and multinucleate osteoclasts shed small mononuclear cells. Mitosis was easily demonstrable in osteoblasts, but had not in the author's experience ever been seen in an osteoclast. The life of an osteoclast *in vitro* was short. Osteoclasts could "eat" their dead or dying fellows; they could also ingest the protein of the plasma and foreign matter introduced to the medium. *In vitro* they could not be shown to attack bone fragments.

## Correspondence

### Treatment of Wound Shock

SIR.—In view of the immediate practical importance of diffusing rational ideas on the treatment of wound shock, Dr. Martinez Alonso's letter (July 1, p. 21) calls for comment.

1 *Technique of Blood Transfusion*—Dr. Alonso suggests that rapid transfusion may be harmful and thinks that slow drips give better results. This is entirely contrary to experience in civil and military casualties in this war. When the blood pressure is low as a result of haemorrhage the sooner it is restored to normal the better, and rapid transfusion is eminently desirable. It is only after the blood pressure has been restored to normal that the transfusion is slowed to a drip.

2 *Definition*—The second paragraph implies that haemorrhage may complicate shock. Most clinical workers are agreed that haemorrhage is the major cause of shock in wounded men (Whitby, Wilson, Grant, and others).

3 *Pharmacological Remedies*—Recent research in this school (*Lancet* 1943 I, 637, *Clinical Science*, 1944 in press) indicates that the human body has mechanisms which maintain an adequate circulation when the blood volume has been slowly reduced. The mechanisms probably involve constriction of the peripheral venules to restore an adequate pressure in the great veins near the right heart. A pharmacological substance which would act thus on the venules would go a long way to the solution of the problem of shock. So far such a substance has not been found.

Clinical work, however, is well known to produce remedies before the scientific pharmacological laboratories, and Dr. Alonso's experience is of great interest. In the case he describes the obviously low blood pressure, the "occasional heart-beat" suggesting a slow pulse, and the accompanying unconsciousness make it almost certain that this was an example of vasovagal fainting after haemorrhage. As has been shown in this school (*Lancet* 1944, I, 489), this is a special type of reflex collapse with profound muscular vasodilatation. In this type of "shock" vasoconstrictor drugs such as pholedrine and methedrine may well be of therapeutic value.

In acute oligæmic shock with a low blood pressure and a rapid pulse it seems dangerous in our present state of knowledge to recommend pharmacological remedies when the value of adequate transfusion has been so abundantly proved. The excellent transfusion arrangements provided for the Services and for the civil population can be relied on to meet almost any demands—I am etc.,

JOHN MCMICHAEL.

British Postgraduate Medical School London W 12

### Results of Colles's Fracture

SIR.—In his analysis of Colles's fracture (June 17, p. 807) Mr S. C. ROGERS makes no allusion to the influence of sex upon the prognosis. It has fallen to my lot to see a large number of these injuries in their later stages, and it has been noticeable that the most unfavourable results have all been in women, owing to their special liability to arthritis of the fingers and metacarpophalangeal joints. In the worst cases the impairment of grasp was so great as to involve a complete loss of the function of the hand. In all such cases the women had been treated by immobilization of the fracture in plaster-of-Paris for several weeks, usually five or six.

The type of arthritis so common in the hands of women is aggravated both by trauma and by restriction of movement and disuse, and there is evidence that the absence of movement is a more potent deleterious factor than the trauma. I have seen quite a number of cases in which the fracture had not been diagnosed till long afterwards, and in which the only fixation employed had been the household application of a bandage. All of these women escaped the crippling arthritis, so that the hand remained a useful member, notwithstanding the deformity and the impairment of pronation and supination and of the movements of the wrist.

The bad results of prolonged immobilization do not occur in the practice of skilled orthopaedic surgeons, but that they



occur at all makes it desirable to point out that in the presence of Heberden's nodes or other signs of arthritis fixation by plaster-of-Paris should be used with great caution, and only for short periods; five weeks in my opinion is far too long. This warning is not confined to the treatment of Colles's fracture, for a minor injury to the hand in a woman with Heberden's nodes may readily be converted into a grave and permanent disability by the use of a plaster-of-Paris bandage. Above all, complete freedom of movement should be assured to the metacarpophalangeal joints, for these joints are liable to a rapid and destructive arthritis without example in any other region of the body.—I am, etc.,

Edgar Allen Institute, Sheffield.

R. G. ABERCROMBIE, M.D.

### The Site for Intramuscular Injection

SIR,—In one of the latest memoranda from the War Office the writer mentions, almost with tacit recommendation, the injection of penicillin "into the gluteal or other suitable muscles in the usual way." In the *Lancet* for Oct. 16, 1920, I drew attention to "the site for intramuscular injection," and I feel it a duty once again to point out that the gluteal region is a very unsuitable place for this purpose. After the last war several soldiers were the victims of very severe and persistent neuritis or paralysis affecting the great sciatic as a result of the injection of quinine solutions into the nerve instead of into the mass of gluteal muscle. A case in which death resulted from sloughing also came to my knowledge. After the malaria epidemic in Ceylon there were at least two cases of severe secondary haemorrhage from the superior gluteal artery complicating abscess due to the injection of quinine into the buttock and requiring ligature of the main trunk of that vessel.<sup>1</sup> In 1941 A. W. Frankland stated in your columns (*B.M.J.*, 1, 33) that if solutions of sulphapyridine are administered deeply into the gluteal region there is grave danger of injury to the larger branches of the sciatic nerve. He quoted six cases of foot-drop with varying degrees of anaesthesia, also cases of gluteal paresis so that the patients were unable to fix the pelvis. Quite recently one of our larger provincial hospitals was mulcted in damages amounting to several hundred pounds because a patient developed sciatic paralysis after an injection made into the gluteal region.

May I again urge that the outer side of the thigh is the proper place for such injections. The vastus externus is a very large muscle; it is protected by the fascia lata and is not traversed by any important vessels or nerves. The muscular mass is of large capacity, and as much as 500 c.cm. can be introduced into its substance at a sitting provided the injection is made slowly and deliberately. The technique is very simple.

Point on the middle of the outer side of the thigh is selected, the hollow needle is thrust in at right angles to the surface. It is enough to insert it just beneath the fascia lata—a point which can readily be determined by the sensation of the yielding resistance after its penetration or by introducing the needle to an average depth of about an inch from the skin surface. If the needle strikes the bone no harm is done provided always that it is withdrawn for about half an inch before the injection is made. Should necessity demand, injections of small bulk may be repeatedly made into this situation. It would seem reasonable to vary the area of injection by starting near the top of the thigh and working down to about three inches above the knee; or the outer side of the opposite thigh may be used alternately. Of course if a particularly irritating solution is injected or if infection is introduced an abscess may result; but that is about the worst that can happen, and at all events I am unaware of any other complication. As my former house-surgeons B. R. Billimoria and E. E. Dunlop point out<sup>2</sup> the risk of phlebitis and generalized systemic infection associated with rigors is eliminated. I frequently refer to this matter in teaching, whether by word of mouth or in writing, and I feel sure the profession ought to pay some little attention to the problem, for it is of much importance at the present time, when numbers of young men are called upon to assume unwonted responsibility.—I am, etc.,

G. GREY TURNER.

British Postgraduate Medical School, London, W.12.

<sup>1</sup> Paul, Milrov, *Mé. Pr.*, 1935, 191, 365.

<sup>2</sup> *Lancet*, 1940, 2, 65.

### Unusual Ear Conditions

SIR,—I have seen several ears that have been treated with glycerin of carbolic drops in which there have developed large perforations not due in my opinion to any middle-ear disease, and I have suspected a destructive action due to the drops. It has occurred to me that the glycerin, which inhibits the destructive action of the carbolic, may have been omitted or diluted on account of the difficulty of getting it now. Unless it can be certain that the glycerin is in full strength perhaps it would be as well to prescribe drops containing camphor.

Another type of ear trouble seen a lot to-day is that due to gunfire, and this is largely due to no ear protector being worn. The solid rubber plug is not worn because the wearer cannot hear orders, etc., when it is in the ear and cotton-wool is inadequate. A cotton-wool plug loaded with grease is better, but of course a valve protector coming into action only with blast as used in the Spanish War is best.—I am, etc.,

London, W.1.

C. HAMBLEN-THOMAS.

### Sulphonamides in Otitis Media

SIR,—I am grateful to Mr. G. H. Steele (June 24, p. 854) for his comments on my article of June 3 and for ventilating the subject. I am in agreement with most of his statements and in disagreement with some others, so perhaps the matter requires further clarification.

Much confusion arises from the use of the terms "acute ear" or "inflamed drum"; they really mean nothing at all, and give no indication of the nature, severity, pathology, or site of the otitic involvement. External haemorrhagic bullous otitis or herpes oticus on the one hand, or acute suppurative otitis media on the other, can all be called "acute ears" or "inflamed drums," but in their pathology and indications for treatment they are poles apart. The use of the correct label for each of the many otitic infections clarifies the indications for giving sulphonamides, and there was no intention in my article to convey the impression that they were contraindicated in all types of otitis. If my article is carefully read it will be seen that my remarks applied to acute suppurative otitis media, and my contention is that pus locked up in any part of the ear requires drainage first and foremost, and possibly the sulphonamide drugs later.

You may have acute otitis externa, acute catarrhal otitis media, acute otitis media, or acute suppurative otitis media; you may have some of the fulminating types found in influenza or the acute specific fevers. Are all these types to be included under the label of "acute ears," as if they were one clinical entity? Hence my statement that "wholesale use of sulphonamide drugs in otitic infections is to be deprecated," and this I in no way retract.

Many cases of the catarrhal and acute types are never going on to suppuration and may safely be aborted in the earliest stages by sulphonamides. In such cases the patient may have a fairly severe earache, a raised temperature, no appreciable degree of toxæmia, and is not acutely ill. Examination of the drumhead reveals a much-reddened membrane, possibly with bullae, but usually no bulge. Such cases usually resolve with sulphonamides, and sometimes without them. If they progress unfavourably and the general and local condition deteriorates, then the dosage may have been inadequate or the use of the drug as a first line of attack has been incorrect.

On the other hand, many cases are suppurative almost from the start or will rapidly become so; the patient is ill, the temperature is higher, the pain often very severe, and the evidence of toxæmia obvious. The drumhead bulges or pulsates and the usual landmarks are obliterated. Pus may be seen through the bulging drumhead. I feel that it has been the attempt to abort such infections by sulphonamides that has caused Mr. Steele to be disappointed in myringotomy, which I think should have been the first and not the second line of attack.

One of the reasons why the number of mastoid operations has decreased in recent years, and even before the introduction of sulphonamides, is that otologists are, almost without exception, much more conservative in opening the acute mastoid than they were ten to fifteen years ago. Very many mastoids done at that time would have got perfectly well if they had



been left alone for a few weeks, and I will certainly concede that many other operations of the same nature have been avoided by a judicious use of sulphonamides.

I cannot altogether agree with Mr Steele that the general practitioner should be the real authority on the value of chemotherapy in these cases. Most otologists require at least a year of otoscopic experience in the department before they are competent to diagnose all the different varieties of acute otitis via the speculum, and valuable as the general practitioner's contribution will always be in his knowledge of his patient and the constitutional aspect of the illness, I do not feel that his opinion on the otoscopic appearances, which are, after all, all important can be of greater value than those of the otologist, in just the same way the ophthalmologist's opinion on the fundus oculi must be of greater value than that of the general practitioner—I am, etc.

London W 1

A R DINGLEY

SIR—Mr Dingley's able article on the dangers of sulphonamide therapy in middle-ear infections (June 3 p 747) prompts me to ask certain questions.

Much has been said recently about sulphonamides "masking the symptoms and distorting the clinical picture." What symptoms does a sulphonamide mask and how does it do it? The important symptoms of otitis media and mastoiditis are pain and symptoms due to toxæmia. The important signs are the appearance of the drum and the mastoid process, the degree of tenderness over the mastoid process and the temperature. Surely any drug which relieves pain will do so irrespective of the cause of the pain. Morphine will relieve the pain of a ruptured peptic ulcer and so mask the picture but I don't think anyone will suggest that sulphonamides will do this. So sulphonamides are not analgesics *per se*. If sulphonamides can mask toxæmic symptoms in otitis media why are they powerless to do this with a virus-pneumonia for example? If sulphonamides are antipyretics they should have this effect irrespective of the cause, as a true antipyretic would—e.g., a tepid bath.

To sum up surely sulphonamides act as analgesics, antipyretics will relieve toxæmia and reduce all signs and symptoms of disease by destroying the cause—i.e., the bacterial cause. That is why these drugs are so wonderful—because of their bactericidal effect. This does not constitute "masking symptoms and distorting the clinical picture" but curing the disease. Following this line of thought, when the redness of the drum, the mastoid swelling and the pain and toxæmia are diminished by sulphonamides the infection is necessarily being overcome. Bone infections are notoriously prone to recrudescence, and mastoiditis is no exception. But it is one of the few bone infections which is generally due to the streptococcus and therefore can be influenced by sulphonamides.

If sulphonamides are given in full doses 48 hours will suffice to know whether any benefit can be derived from this therapy. The presence of pus will always indicate surgical treatment, and sulphonamides will not prevent the symptoms and signs due to this pus. I have been giving 1 g of sulphathiazole every 4 hours, even to the youngest child with otitis media, for 48 hours, and, if the condition is subsiding, a smaller dose until the temperature has subsided and been normal for 3 days. No case which under my care has completely subsided with this treatment has as yet recurred, and operation has been avoided. It is the early otitis media which will respond well to sulphonamide therapy, if in adequate dosage. If Mr Dingley persuades practitioners to abolish all chemotherapy with these cases he will undoubtedly give the ENT surgeon more work.

I put forward these views humbly, knowing that my experience is as nothing compared with that of Mr Dingley, but nevertheless hoping my remarks may arouse some criticism and comment—I am, etc.

South Eastern Hospital for Children Sydenham

CYRIL JOSEPHS

### Timing of Schafer's Method

SIR—Study of first aid manuals brings to light the surprising fact that the timing of Schafer's method is given differently by different authorities. I refer not to the actual rate of respiration but to the ratio between the duration of the expiratory and inspiratory phases.

In the Royal Life Saving Society's booklet the following instructions are given: "Each such double movement will occupy about 5 seconds two of which may be taken up by pressure (expiration) and three by relaxation (inspiration)." *First Aid to the Injured* (the St John textbook) also states, "The rhythm is, pressure 2 seconds and relaxation 3 seconds." A different timing is given in *R.A.M.C. Training*, 1935, chap 37, para 677, as the following extract shows "Lean forward and so produce a firm downward pressure on the loins this part of the operation should occupy the time necessary to count slowly one two three. By this means the air is driven out of the patient's lungs. Immediately after this, swing backwards, rapidly releasing the pressure, when air will enter the lungs this part of the operation should occupy the time necessary to count slowly one, two."

No doubt either method of timing might be equally successful in practice, but surely there should be uniformity in teaching! I consider that the timing given in *R.A.M.C. Training* 1935, is to be preferred for two reasons. First, it reproduces the normal respiratory rhythm, in which a pause of about one second occurs at the end of expiration. Secondly, it is practically identical with the timing given for Eves' rocking method, in which the head-down phase (expiration) is longer than the foot-down phase (inspiration). The advantage of having one timing for both methods will be obvious to all who teach first aid—I am, etc.

Growthmore Berks

E F CHAPMAN

### Chemoprophylaxis of Gonorrhoea

SIR—With reference to Dr Forgan's letter in your issue of June 24 (p 855) two points arise.

(1) If "a warning is wisely uttered against the use of oral sulphonamides for this [prophylaxis] purpose" does not mean much the same as "this method of prophylaxis is not without danger words have no meaning though perhaps 'concerning' would have been a more suitable word than 'against'."

(2) If medical practitioners are not dissuaded from prescribing on the day following exposure 6 g of sulphathiazole or sulphadiazine one is led to wonder how many individuals will become sensitized to these drugs and how much latent gonorrhoea there will be amongst the population—I am, etc.

YOUR REVIEWER.

### Industrial Dermatitis

SIR—Dr Howard Mummery in his memorandum on the prevention of industrial dermatitis (May 13, p 660) states "Barrier creams, for which so much is often claimed, have their uses, but in my experience they are disappointing, and necessarily depend too much on the intelligent co-operation of the workman." Barrier creams hitherto available have been disappointing but modern creams can and do afford an efficient barrier against causes of industrial dermatitis.

The washing facilities which he claims are available in his factories appear to be greater than those available in most industrial organizations. This company employs in its machine shops many hundreds of workers who come into daily contact with cutting oils, soluble oils of various types, and organic solvents and as the result of methods employed to prevent dermatitis even when facilities for washing were not perfect and including the many thousands of workers in our assembly plants who come into contact with such dermatitis causes as plastic varnishes and cements, alkalis, acids etc., there have been only two cases of notified industrial dermatitis during the past year. There have been a number of rashes of various types due to sensitization from industrial products and also exacerbations of exogenous dermatoses due to varying causes. These have all been treated on modern dermatological lines with no loss of working time.

Dr Mummery's method of cleaning demands just as much co-operation from the workers as does the use of a barrier cream, and I feel that had the correct barrier creams been employed there would have been no need to use any special cleanser beyond the ordinary methods available in most engineering shops. The suggestions made by Dr Sybil Horner, H.M. Medical Inspector of Factories, for the prevention of

industrial dermatitis are in my opinion the best to date—i.e., (a) selection, (b) protection, (c) inspection, and (d) cleanliness—and until all of these are adopted in industry the position with regard to industrial dermatitis will not improve.

I am keeping a record of those cases of industrial dermatitis which present themselves to the skin department of the Royal Northern Hospital, and it is interesting to note that practically all come from small factories with few employees, and in many of these no facilities are provided for washing beyond a bucket and some cold water. All types of reagents are used, and there appears to be no selection of the operator for the work in question and no prevention is adopted as cases recur in these factories. There appears to be little or no co-operation between employer and employee. Industrial dermatitis should hardly exist in large factories, because with adequate supervision and prevention the problem is not a difficult one to overcome.—I am, etc.,

London, N.5.

L. B. BOURNE,  
Medical Officer, A. C. Cossor, Ltd.

### Inquiry into Diabetic Care

SIR,—The Diabetic Association has recently circularized many hospitals in Great Britain with the object of discovering the nature and extent of the facilities at present available for the care of diabetics in this country. The association is eager to make this survey as complete as possible. May I, therefore, through your columns, ask any individual practitioners, clinics, or hospitals who provide such facilities and who have not already received the association's circular to write to the secretary, the Diabetic Association, 9, Manchester Square, London, W.1, so that the circular may be sent to them.—I am, etc.,

C. M. FLETCHER,  
Secretary, Medical Subcommittee, Diabetic  
Association.

### The Cat's Milk

SIR,—A month ago our cat had kittens, and this event set me pondering again about the increasing failure of women to suckle their babies. Breast-feeding has always been more easy among the poorer classes, and usually in domiciliary than in hospital practice, though everywhere it is decreasing in spite of propaganda, increased food, vitamins, expert attention, etc. Why? The cat certainly had no difficulty in establishing adequate lactation. Once again, Why?

The thing that struck me most forcibly was the instinctive way in which the kittens, almost as soon as they were born, found their way to the cat's nipples and began to suck. Is it possible that the close nestling of the kittens against their mother and the frequent stimulation of her breasts had an important influence in promoting lactation; and is it possible that the relatively modern practice of removing the baby at once to a cradle is really the main reason for the present difficulty in breast-feeding? We all know how palpation of a breast will cause stimulation and erection of the nipple, and we also know that tactile stimuli in other areas will cause all sorts of emotions and alterations of function. It is, therefore, not inherently improbable that our modern methods of treating parturient women are actually removing those very stimuli which Nature has depended on for the efficient establishment of lactation. I am not asking for the vituperation of obstetricians for this suggestion (though I may get it), but I should like to know whether there are any reliable data on the subject, for in view of its importance and the recently proposed national maternity service our leaders should surely be able to give an unequivocal and scientifically supported answer.—I am, etc.,

W. N. LEAK.

### Progesterone

SIR,—Mr. D. G. W. Clyne seems to suggest (June 24, p. 856) that I claim for my own the progesterone causation theory of vomiting of pregnancy. In my necessarily short note on that subject (June 3, p. 772) I made no such claim, nor on re-reading it can I or my colleagues see that any claim is implied. I was taught as a student that one of the many theories on causation of vomiting in pregnancy was excess progesterone/deficient

oestrin. Since then I have tried the effect of progesterone on isolated rabbit's intestine. Relaxation was produced, but as I was unable to persuade the gut to regain its tone I could not be sure that the effect was physiological rather than toxic, and therefore did not pursue the matter.

I acknowledge the value of personal communications from Mr. Clyne, in one of which he pointed out the further ramifications of the progesterone theory. If I did not then assume that he claimed it as his own, why should he now impute the claim to me? That this inference from my note is not universal is proved by Dr. W. I. Hardy (June 24, p. 862). He says: "Dr. Calvert supports the theory . . . etc." (my italics).

It emerges that Dr. Hardy also supports the theory, of which he was obviously previously aware. So apparently does Mr. Clyne. If, as he says, Mr. Barton Gilbert originated it, then we all, no doubt along with many others, support Mr. Barton Gilbert.—I am, etc.,

Stockport.

WALTER CALVERT, D.R.C.O.G.

### Why Tie the Cord?

SIR,—In answer to Dr. E. W. Price (June 3, p. 772) I would say there is no need to tie the cord if the scissors are blunt. Animals nip the cord with their teeth; many native races pinch it off with their nails or use a shell or bit of tin. It is the crushing of the tissues that stops the bleeding. In France (Benouville Maternity) a small clamp was used for 24 hours only.

I should like to ask Dr. Price if he does not find leaving the maternal end to bleed an advantage. In the natural position, squatting or kneeling, this diminishes the bulk of the placenta and should lead to early expulsion and good uterine contraction.—I am, etc.,

London, N.W.11.

KATHLEEN VAUGHAN.

### Marriage and Parenthood

SIR,—In saying that 'contraceptive advice may very rarely have to be given to a couple before the birth of their first child, Dr. Saklatvala (April 29, p. 603) raises an old hare which I do not propose to follow except to say that contraception having come to stay it is our duty to see not only that the public use it with discretion and purpose but that they know what to use, when to use it, and how to achieve maximum security—the possibility of which is now extremely high. Thus, as almost every young couple consider these matters and are always trying to get adequate information, it is our duty as doctors to give them the best advice we can, and, if they require further help, to see that they get it from the best sources.

Incidentally, when are doctors going to discontinue the habit of advising women about contraception without examining them, or of fitting them ineffectually when they do examine them? They would never treat an eye condition so haphazardly. Why do they, therefore, the sex organs? If they cannot do the job properly why not send them to people who can? The misery and unhappiness that follow from ineffective advice are often profound and quite unnecessary. But the problems of contraception are only part of marriage preparation which, besides considering matters of general health and eugenics, must concern itself with the state of the hymen, effective technique, and the removal of various fears and anxieties in one or both partners. These are the important things and they take time.

When Dr. Saklatvala says "because coitus is being practised for some aim short of its natural purpose" and that there are "psychological barriers to the full play of the instincts which, in the last analysis, will be a sufficient guide to the young couple" he is on more interesting ground. What is the "natural purpose" of coitus? In animals it is an instinctive process necessary to reproduction. Human beings, however, have minds and spirits, and so to them, in its highest development, coitus is something far more profound. It is a means of expressing mental and spiritual unity, as well as a means of continuing the race. Both have equal importance in marriage. It is extremely important to make sure that there is a true release of emotional tension, and it is because this is so rarely achieved that so much disharmony develops later on. To my mind, the "psychological barriers" to which he

refers are precisely these anxieties and fears which must be removed before full emotional relief is obtained. The instincts by themselves are not "sufficient guide to the young couple. They must learn how to use them properly. This takes time, varying from a week to six months and it is essential to achieve this before the first pregnancy is well established. I agree, of course, that a couple should prove their fertility early, but if they have established a real emotional rhythm early they will have something valuable to return to twelve months later, and the women are not 'put off' or 'frigid'.

The way in which we handle these matters is the crux of the whole thing. It is because so many doctors will not accept these facts or deal with them so unsatisfactorily that the troubles arise to which Dr Wrathall Rowe (May 6 p 636) draws attention—namely, that people will not ask doctors about their sex problems. I hardly ever address a meeting of young people at which I am not asked "What is the use of advising us to go to doctors if the doctors will not help us?" They have tried so often and been given such poor or unsympathetic advice that they naturally go elsewhere. This is hardly to be wondered at when we realize that the problems of sex and marriage are scarcely touched upon in our medical schools. Is it not true that we put our house in order and concerned ourselves with the prevention of disharmony and frustration? This can only be done by a consideration of the practical and the psychological. If the problem is important before marriage it is even more so after the birth of the first child, when so many difficulties need adjustment, especially in the sexual sphere.

Dr Rowe is right when he draws attention to sex education, because it is here that we have an opportunity for really constructive work. The teaching of facts—the giving of sex instruction—however, is not enough. The education must be progressive and the parents must be encouraged to help. It must start in the home and proceed by gradual stages from factual information to a consideration of emotional development and end with the presentation of certain principles of sexual behaviour designed to help the individual in his personal life and also in the wider sphere of citizenship. Its purpose must be directed towards the strengthening of the family unit. Here is a field of work which the profession should enter more fully. Now that the authorities and especially the Board of Education, have given encouragement to the work we should seize the opportunity of putting across some really constructive information. I know from personal experience that such efforts are welcomed by young people provided the teaching is adequate and unemotional. Dr Blackett Jeffries (May 27, p 730) sums up the situation admirably when he says that knowledge does not ruin romance in marriage any more than does the study of technique spoil the artistic joy in self-expression. I would merely add that it enhances it.

Can we not begin to visualize the family as an entity and treat it as such? Friction between husband and wife, often having its origin in sex maladjustment, frequently transfers itself to the children and stimulates discord and delinquency. If we paid more attention to reconciliation we should not have to give out so many bottles of medicine to so-called neurotics.—I am etc.

London W 1

EDWARD F. GRIFFITH

#### Migraine simulating Appendicitis

SIR—During the past few months I have seen two patients who complained of symptoms which clearly indicated that they were suffering from migraine. Both, peculiarly enough, had had their appendices removed at some time or other. On careful inquiry into their previous history I am convinced that both were suffering from early attacks of migraine when they were diagnosed as appendicitis and the organ in question removed. I have heard of attacks of migraine starting after appendicectomy, but have not heard or read of early migraine simulating appendicitis. The case histories are as follows.

A Male aged 29. About 9 months ago had an attack of lassitude, nausea, abdominal discomfort, constipation and dull headache. Next day he had several attacks of vomiting. Symptoms cleared up in about 24 hours. A few weeks later a similar attack occurred, and on abdominal palpation by his doctor he stated that he was slightly tender all over and more so in his right side. He was operated on a few hours later and his appendix removed. No clue to the findings

could be obtained. Since then similar attacks have occurred at intervals with headaches becoming more pronounced.

B Male aged 47. Gave a very similar history to Case A. He had his appendix removed some 20 years previously, and stated this was done after either one or two attacks identical with those from which he still suffers at intervals and which are undoubtedly migrainous.

It would seem quite easy to mistake an early stage of migraine for an acute or subacute appendicitis. The headache which was evidently not the patient's chief complaint before operation, was presumably due to the constipation from which he was suffering. The slight or marked abdominal tenderness could be explained by the repeated attacks of vomiting—I am, etc.

J S BOYD M.B. BCh  
F.L.S. R.A.F.A.R.

#### Heat Hyperpnea

SIR—Referring to the note by Dr F. R. W. K. Allen in the *Journal* of Jan. 22, 1944—"Resuscitation by Rocking for Heat-stroke"—I would like to refer to an abbreviated article you kindly published for me on June 12, 1920. In this article the procedure as suggested by me was carried out in all cases treated by our unit during the campaign in Mesopotamia, 1916. There were no fatal cases so treated.

In heat hyperpnea the respiratory centre is seriously affected. If this centre cannot be made to function then the patient will die—irrespective of whatever other treatment is carried out. The utmost speed is essential in this treatment. Briefly, it was this:

Syrichine 1/60-1/15 gr was injected hypodermically immediately. This was given to start the functioning of the respiratory centre, and so indirectly keep the heart going. Immediately after this Schafer's method of artificial respiration was carried out. This was not stopped until the patient vomited. This symptom was invariably the sign of recovery. External lavage of the patient was then carried out—the patient resting on a stretcher across a trench—and river water poured on him so that he eventually became half submerged. The temperature was taken in the rectum every minute and the lavage was not stopped until the temperature registered 101° and remained steady at this level. After treatment consisted of wrapping the patient up in a calico sheet and keeping this wet until he was evacuated to a suitable hospital. Fruit juices and fluid diet in generous quantities were administered.

I have again mentioned this treatment in the hope that it may be of some use in tropical warfare.—I am, etc.

JOHN N. MCINTOSH  
Capt. R.A.M.C.(ret.)

Kington Jamaica

#### "Merely Dyspepsia"

SIR—For fairly obvious reasons there appears to have been a noticeable increase in abdominal cases since the beginning of the present conflict. Particularly do I refer to the "indigestion" with mild intermittent symptoms, which may seem so little and may mean so much.

Provided patients will seek medical advice in time I do not think the necessity for radiological examination can be too strongly emphasized for all patients of from early middle age onwards whose abdominal symptoms do not clear up within a month. Only so can the possibility of early malignancy be excluded and every such case must be considered "guilty" until it is proved "innocent." It is here that a great responsibility devolves upon the general practitioner who first sees the patient. No "label" must be attached to these symptoms, which, if not a cover for ignorance, indicates, what is worse still, a want of thoroughness. It is only to be regretted that so many patients strive to find a temporary relief in certain well advertised trade preparations, until the time for surgical intervention is past for ever.—I am, etc.

Romford

W. DAVAN NEILL

F. Ellinger and H. Landsman (N.Y. St. J. Med. 1944, 44, 2-9) state that among 1,250 cases of diabetes 39 cases of malignant growths were found. This cancer incidence of 3.04% agrees with a cancer incidence of 2.95% among 14,332 cases of diabetes collected from the literature. Since the cancer incidence in the State of New York was 0.46%, this means a decidedly higher cancer incidence in diabetics. As in previous observations a more virulent course of malignant growth was found with increasing severity of the diabetic condition.

## Obituary

HUGH THURSFIELD, D.M.

Dr. W. P. S. BRANSON sends the following personal tribute:

Hugh Thursfield is dead, and many of us old-timers will be conscious of the chill that marks the passage of a warm and friendly spirit from its accustomed place. "Pobo," to use the queer nickname which came with him from Oxford to St. Bartholomew's and remained with him thereafter, was unusually equipped. Having already taken a degree in classics before he turned to medicine, he was a good deal older than his time. Thus he was able to diffuse something of his greater maturity and culture into the frequent arguments by which we youngsters sought to put the world to rights forty years ago. In those days, when political temperatures ran higher than they do now, and Radicals and Tories could be told apart, he was a Radical, while others of us were not. So it can be imagined how massive, and often indignant, were the contributions to the country's betterment which we wasted upon the seagulls along the Embankment as we walked home from Bart's of a Saturday afternoon. For Pobo was outright, even to abruptness, and sincere in all he said or did: with one playful exception, when he would trail his coat in order to provoke a friendly adversary.

Things went hardly for him in the way of promotion at Bartholomew's, for, being already older than others of his year, he fell victim to a spell of long stagnation in staff movements there, and thus remained far too long (for his great deserts) in subordinate teaching offices. Yet he never grumbled, nor thought meanly of the humdrum tasks that fell to him at that time, but held on, patiently keen, and thorough, and good-tempered. Indeed he was a grand fellow to know, and to have known: a man who could read the *Odyssey* through in the original once a year and thought it the "finest story in the world"; who was a good judge of claret, and for many years the moving spirit of the quarterly dinners of the Fellows' Club of the Royal College of Physicians; who was one of London's select company of bird-watchers and a regular visitor to the varsity rugby match. Humane, hospitable, companionable, and generous, he loved everything of good report, especially "laughter and good company"; and the long record of his paediatric and other writings bears witness to his ceaseless diligence.

Mr. W. McADAM ECCLES writes:

In the excellent review of Dr. Thursfield's medical career there is one fact which does not come out clearly. Thursfield commenced his medical studies at a somewhat later age than is usual. He qualified in 1897, being 28 years old. He was elected assistant physician to St. Bartholomew's in May, 1913. By that time the retiring age for the medical staff had been reduced from 65 to 60. In 1928, when it was seen that he had no chance of being a full member of the staff, he was on July 26, 1928, by special decree, promoted to be a full physician, finally retiring on July 31, 1929, when he reached 60. Apparently these circumstances are unique in the history of the ancient hospital.

Clun and district have suffered a serious loss by the death on May 17 of Dr. HAROLD ROBERT CROSS at the age of 70. His vigour of mind and body was maintained until a few months of his decease. He was a product of the Leeds General Infirmary, qualifying in 1899, and specialized in lunacy. After serving at the Clayton and then the Wakefield Mental Hospitals he was for 19 years senior medical officer at Storches Hall. A correspondent writes: Dr. Cross's 23 years' work at Clun in Shropshire will remain a loving tradition. He was there, incidentally, attached to Holy Trinity and St. Katherine's Hospitals. Outside his medical work, which he dearly loved, he threw himself whole-heartedly into the life of the community. He was ever a student and had the gift of an encyclopaedic mind.

Dr. DOUGLAS VERCOE HAIG, who died on May 27 at Middleton St. George, Co. Durham, was born at Ahmednagar, Bombay, in 1873. He was educated at Bedford Modern School and Merchiston Castle School, Edinburgh, and at the University of Aberdeen, where he graduated M.B., C.M. in 1895 and took the M.D. in 1901. After house appointments at the Royal Aberdeen Hospital for Sick Children and the Cotswold Sanatorium for Consumption he was honorary anaesthetist to the Darlington Hospital for 10 years, and later, for a short time, honorary assistant surgeon. Before the last war he had had 6 years' service in the Territorial Force, and in 1915 went to France and afterwards to Belgium and Germany as major, R.A.M.C.(T.F.). Dr. Haig joined the B.M.A. in 1901 and

served as representative of his Division at the Annual Meetings in Liverpool, 1912, and Aberdeen, 1914. Up to the time of his death he was medical officer to Messrs. Pease and Partners, Ltd., Darlington.

Dr. MARK LOUIS MILLER THOMSON, who died at Hoddesdon, Herts, on May 31, had been in practice there for the past twelve years and had an established position both as a general practitioner and as a citizen. Born at Steppes, Scotland, in 1901, he graduated M.B., Ch.B. of Glasgow University in 1923. He was first in practice as an assistant at Shipley, Yorks, and later at Pelaw, Newcastle-upon-Tyne. In Hertfordshire he found the type of practice which seemed to him ideal, giving plenty of scope for a wide range of medical activities and enabling him to take an active interest in his patients and in the affairs of the community. He was for some time a member of the local Urban District Council and was instrumental in setting up a public library, which has been very much appreciated by the people of Hoddesdon. His practice steadily increased, and at the time of his death he was, without question, one of that group of general practitioners to whom the term "family doctor" particularly applies and to whom it meant a vital concern for every sick person under his care. His cheerfulness and charm were appreciated in every home in the district. This and his wide interest in the present and future position of the medical services were also appreciated by his medical colleagues, and he had recently been elected deputy chairman of the East Hertfordshire Division of the B.M.A. Dr. Thomson had had no illness of any kind, and his very sudden death at such an early age has robbed Hertfordshire of one whose devotion to medicine and determination to keep abreast of modern developments must be a great loss. He leaves a widow, Dr. E. M. Thomson, who is continuing in the practice, and three children. His attitude to medicine is perhaps best reflected in the fact that his two sons are already determined to follow him in the medical profession.

Dr. GEORGE BERTRAM BARTLETT, formerly professor of pathology in Capetown University, died on June 3 at Dorchester. He was born near Blandford on April 9, 1880, the second son of Arthur Bartlett of Wimborne, and from Weymouth College went to Sydney Sussex College, Cambridge, where he graduated B.A. in the Natural Sciences Tripos of 1902. His clinical course was taken at the London Hospital, and two years after qualifying in 1906 he was appointed assistant director of the Pathological Institute there and in 1912 lecturer on pathological histology in the medical college. During the last war Dr. Bartlett served first with an infantry regiment and then joined the R.A.M.C., working as pathologist to No. 21 General Hospital, Alexandria, and to No. 27 General Hospital, Cairo. Between these two appointments he was posted for some months to the malaria laboratory of the 4th London General Hospital. In 1920 he went to take up the vacant chair of pathology at Capetown University, where he remained until 1924. After retiring from active work he lived at Hove, and spent much time in open-air pursuits.

Dr. HERBERT MARTIN BERRY, well known as a radiologist, died on June 3 at Staines, aged 65. A student of University College, Liverpool, he graduated M.B., Ch.B. of Victoria University in 1902, and took the M.D. of Liverpool University in 1914 and the D.M.R.E.Camb. in 1921. Martin Berry was a pioneer medical worker with x rays. In the 'nineties he left general practice in Staffordshire to specialize in radiology in London, and he was for some years chief assistant in the x-ray department of St. Bartholomew's Hospital under Hugh Walsham. During the last war he served as captain, R.A.M.C., at the Herbert Hospital, Woolwich. After returning to civil life he held appointments as radiologist to a number of hospitals in and around London, including the Hospital for Women, Soho Square, the Dreadnought Hospital, the Mount Vernon Hospital, and the Waterloo Hospital for Women. He had joined the B.M.A. in 1912 and was a member of the Roentgen Society and the British Association for Radiology and Physiotherapy.

A veteran member of the profession in Scotland, Dr. DAVID HUSKIE, of Moffat, Dumfriesshire, died on June 7 in his 81st year. He was educated at Dollar Academy and at Edinburgh University, where he captained the University rugby XV. He graduated M.A. in 1884, M.B., C.M. in 1888, and was elected F.R.C.P.Ed. in 1926. Dr. Huskie took a keen interest in local affairs and was provost of the borough of Moffat from 1911 to 1929. He was chairman of the trustees of Moffat Cottage Hospital, and it was largely due to his efforts that the hospital was built. He was an honorary life member of the St. Andrew Ambulance Association and a J.P. for Dumfriesshire. He

joined the B.M.A. as long ago as 1890, was a past president of the Border Counties Branch, and served for ten years before this war on the Insurance Acts Subcommittee for Scotland. He retired in 1940 after 50 years in active practice.

Dr GEORGE BLACKER MORGAN, who died on June 8, aged 80, was honorary physician to the Sunderland Royal Infirmary from 1905 to 1923, when he was made consulting physician. The son of Dr G. B. Morgan J.P., he was born at Sunderland on Dec. 1, 1863, and was educated at Ayscough and Repton Schools and at Trinity College, Dublin, graduating B.A. Dub. in 1887, M.B. B.Ch., B.A.O. in 1889, and M.D. in 1907. He returned to Sunderland in 1889 as house surgeon to the Royal Infirmary, and after his appointment to the visiting staff became consulting surgeon to the Sunderland Maternity Home and medical adviser to the Durham Coal Owners' Association. During the last war he served as medical officer to the Sunderland War Hospital. He took a warm interest in the local reformatory and industrial schools, for which he acted as honorary medical consultant.

Dr WILLIAM NORMAN MAY, who died on June 12, aged 62, after an operation at Reading, graduated M.B. B.S. Lond. from Guy's Hospital in 1904 and took his M.D. in 1906. After house appointments at Guy's he was resident medical officer to the East London Hospital for Children, Shadwell. He held a commission as temporary captain R.A.M.C. in the last war, afterwards he made his home at Sonning-on-Thames and was appointed honorary physician and physician-in-charge of the skin department of the Royal Berkshire Hospital, Reading, and specialist in tropical diseases for the Reading area under the Ministry of Pensions. Dr May joined the B.M.A. in 1909 and was a past president of the Reading Pathological Society. A keen student of bird life, he was a member of the British Ornithological Union and Club.

The death occurred in Capetown on June 15 of Dr CHARLES ARTHUR WILSON RAMSAY, a well known medical practitioner in Salisbury, Southern Rhodesia, for more than twenty years. He was born in Belfast in 1894 and took the degrees of M.B. B.Ch., B.A.O. at Queen's University. After serving with the R.A.M.C. in the last war he went to the Colony in 1920 and settled at Salisbury. Dr Ramsay was honorary consulting physician to the children's ward of the Salisbury General Hospital and for two years president of the Mashonaland Branch of the British Medical Association. A keen golfer, he won the Royal Salisbury Club Championship in 1941.

Dr LEWIS JOHNSTONE WEATHERBE, who died in retirement at Workop on June 15, had been medical officer to the Rotherham Rural District Council for 38 years. Born at Halifax, Nova Scotia, on Feb. 16, 1867, son of S. F. Robert Weatherbe, he was educated at Edinburgh University, graduating M.B. C.M. in 1890. During the South African War he served with Paget's Horse and in the war of 1914-18 he held a commission in the R.A.M.C. for two years. In 1920 Dr Weatherbe gave up private practice and devoted the whole of his time to the work of M.O.H. which he relinquished on grounds of health in 1935. During his long association with the Rotherham R.D.C. the district developed from a truly rural area and he was responsible for introducing many measures for the benefit of the inhabitants.

Mr SAMUEL WILFRID DAW, who died on June 19 at Polegate, Sussex, where he had been living in retirement, was formerly orthopaedic surgeon to the General Infirmary at Leeds and consultant in orthopaedics to the Leeds Education Committee and Public Health Department. He qualified from Guy's Hospital in 1906 taking the English Conjoint diplomas and the M.B. B.S. degrees of London University. Two years later he obtained the F.R.C.S. After serving as resident surgical officer at Guy's he held the corresponding post at the Leeds General Infirmary and later became surgical registrar there and surgical tutor in the University. Besides his work at Leeds Mr Daw was also consulting orthopaedic surgeon to the Batley Hospital, the Clavton Hospital, the Wakefield and Dewsbury Infirmary, and surgeon to the Kirbymoorside Orthopaedic Hospital. He was a Fellow of the Association of Surgeons and a member of the British Orthopaedic Association. At the Annual Meeting of the B.M.A. at Nottingham in 1926 he held office as vice president of the Section of Orthopaedics.

We regret to announce the death at the age of 47 of Dr ARTHUR JOHN SMYTH, medical officer of health and school medical officer for the borough of Cambridge and superintendent of the infectious diseases hospital. Dr Smyth had his medical training at Cambridge University and St George's Hospital, qualifying M.R.C.S., L.R.C.P. in 1923. He graduated

B.Ch. at Cambridge and took the D.P.H. two years later and the M.B. degree in 1931. Before entering the Public Health Service as assistant M.O.H. for the Godalming district he had been house-physician to the Victoria Hospital for Children, Chelsea, and house surgeon, house physician, and casualty officer at St George's Hospital. He joined the B.M.A. in 1926 and was elected chairman of the Cambs and Hunts Division a year ago.

The tragic death through enemy action of Dr JAMES FETTES and his wife came as a terrible shock to his many friends. J. H. writes: I have known James Fettes intimately for many years and he became a real friend of my family. He had that cheerful happy disposition which endeared him to his patients and to all who met him. He was a sound clinician, an extremely hard worker, and was deeply interested in the future of medicine and the welfare of his medical colleagues. As chairman of the City Division of the B.M.A. he did sterling work in upholding the high ethics of the profession. His cheerfulness, ready wit, and unfailing kindness will be sadly missed.

News has reached this country of the death on April 9, at a tea estate in Dooars, Bengal, of Dr BURGESS BARNETT whose name became well known some years ago through his work on the medical use of snake venom. He was born at Camberwell on April 10, 1888, and from Marlborough College went to St Bartholomew's, qualifying M.R.C.S., L.R.C.P. in 1915. After serving as house physician at Bart's he was a temporary captain in the R.A.M.C. for two years and then practised in the Lobitos oilfields of Peru where he made a special study of snakes. In 1932 the Council of the Zoological Society of London appointed him curator of reptiles, after holding this post for five years he resigned it to devote his time to further research on snake venom and its application in medicine. In 1938 he was appointed superintendent of the Zoological Gardens at Rangoon, where a new reptile house was being built and a snake farm for the collection of venom. He wrote the article on snake-bite for the *Index of Treatment* in 1940 and published several papers on the haemostatic uses of snake venom. In May, 1943, Barnett was awarded the M.B.E. for bravery in Burma, when as principal medical officer of the Burma-China railway construction he stayed behind with refugees during the evacuation through the Chankam Pass and tended them on a long and perilous march.

## Universities and Colleges

### UNIVERSITY OF CAMBRIDGE

The following candidates have been approved at the examination indicated

FINAL M.B.—Part II (Principles and Practice of Physic Pathology and Pharmacology): T. S. L. Bewick, R. H. Boardman, D. G. Bratherton, D. Brazier, A. Comford, G. S. Crockett, P. D. Davies, P. J. De Vries, J. A. Dunder, D. A. W. Edwards, M. A. Floyer, P. H. Friedlander, J. W. Fullerton, C. R. H. Green, J. A. Harrington, C. E. Harles, S. M. Hifton, R. F. Hollick, N. S. Hoo, W. R. Henshall, G. I. C. Ine, R. E. Irvine, J. Lorber, M. B. Matthews, J. R. May, J. M. Morgan, M. Newton, K. N. V. Palmer, P. B. Philip-Smith, D. A. Pond, P. D. G. Pugh, G. F. Roberts, J. Roche, B. S. Hofield, J. A. Shiers, J. F. N. Sdebotham, C. A. Sord, J. M. Stowers, M. Smiers, R. G. Turner, D. R. D. Vanstone, B. H. Vawdrey, D. G. Vester, P. Venables, S. M. Vine, P. R. Westall, A. P. Wignate, L. Wolman, G. S. Yeoh, H. W. R. C. A. Hunter, R. S. M. Cheson, M. M. Turnbull, Behrens.

### UNIVERSITY OF LONDON

#### LONDON HOSPITAL MEDICAL COLLEGE

Essays for the Liddle Triennial Prize, value £120 must reach the Dean of the London Hospital Medical College, Turner Street, E.1, not later than July 31, 1946. The prize is open to public competition and the subject for the next award is "Epidemic Jaundice." A statement of the conditions may be had on application to the Dean.

### UNIVERSITY OF EDINBURGH

At the last meeting of the University Court intimation was made of a bequest for the establishment of a bursary, to be awarded each year to the medical student of the university who has within the year passed the third professional examination and has obtained the highest total aggregate of marks in the first, second, and third professional examinations. For this purpose the late Miss Margaret Campbell Surton left a share of the residue of her estate, the bursary to be named in memory of her father, the late James Surton, M.D. The amount of the bequest is estimated at about £2,500. The Court, in accepting the endowment, remitted to the Faculty of Medicine to prepare regulations for the award.



## The Services

Temp. Surg. Lieut. R. C. P. Aldridge, R.N.V.R., has been mentioned in dispatches for coolness and energy in dealing with the injured when a hospital ship was hit by a bomb and all the other medical officers were wounded.

Cpts. (Temp. Majors) E. F. Claridge and V. J. Dowrie, and Cpts. J. H. Brown, E. J. D'Arcy, G. E. David, W. Lamb, C. J. Mill-Irving, G. E. Pinkerton, and E. G. Turner, R.A.M.C., have been awarded the M.C. in recognition of gallant and distinguished services in Italy.

### CASUALTIES IN THE MEDICAL SERVICES

*Wounded.*—War Subs. Cpts. N. H. H. Gollidge and W. Lamb, and Lieuts. C. R. Forrest and T. Notman, R.A.M.C.

*Missing.*—Capt. W. E. Church, R.A.M.C.

*Missing, presumed killed on active service.*—Surg. Lieut. G. S. Davis, R.N.V.R.

## Medical Notes in Parliament

### Medical Research

On June 20 Mr. SALT asked the Lord President of the Council whether any plans were under consideration for expanding the research programme of the Medical Research Council in regard to medicine and all related fields as soon as circumstances and available personnel allowed, and whether he was satisfied that it had, or would have, sufficient funds available for the purpose.

Mr. ATTLEE replied that various plans were under consideration, and the Medical Research Council had already been able to initiate certain new schemes with a view to development as soon as circumstances permitted. Among other things, they had recently established a research unit in applied psychology at Cambridge; and research units in industrial medicine, human nutrition, and otology in London. The new building for the National Institute for Medical Research, completion of which had been interrupted by the war, would also make it possible to expand the Council's central establishment. The Government had already stated its intention of giving full support to research work.

### Army Casualties

On June 27 Mr. CHURCHILL, replying to Dr. Elliot, said that on February 16 he informed the House that up to February 12 the following casualties had been sustained by the British in Italy, including Dominion and Indian troops: killed, 35; wounded, 23,283; missing, 5,708—total, 36,626. Between date and the entry into Rome these Forces sustained the following further casualties: killed, 6,696; wounded 24,683; missing, 5,117—total, 36,496. Our total casualties, therefore, from our landing in Italy to the fall of Rome were: killed, 4,331; wounded, 47,966; missing, 10,825—total, 73,122.

These figures were for Army casualties only, Navy and Air Force losses being excluded. This was the basis on which the earlier figures were given in February, it having been found impossible to give a figure for the other two Services exclusively relating to operations in Italy as distinct from the other operations of the Navy in the Mediterranean and of the Air Force over the Mediterranean, Germany, Central and Eastern Europe, and the Balkans.

### Aid for Scientific Research

Prof. HILL asked the Lord President of the Council to which of the three bodies under his direction—the Department of Scientific and Industrial Research, the Medical Research Council, and the Agricultural Research Council—applications should be directed for financial assistance to research on genetics, cytology, vital statistics, biophysics, general physiology, and experimental psychology. Mr. ATTLEE said that where there was no indication to the contrary in a particular case it would be appropriate to address applications in the first instance to the Medical Research Council if they related to human genetics, vital statistics, biophysics, general physiology, or experimental psychology. The Department of Scientific and Industrial Research, the Medical Research Council, and the Agricultural Research Council aided specific projects for fundamental research when further knowledge was required in the fields for which they were responsible, even if it could be shown that

such researches had an immediate application to industry, medicine, or agriculture.

### Hospital Treatment of Normandy Casualties

Mr. ARTHUR HENDERSON announced on June 29 that for the time being casualties from Normandy would have to be treated in the hospitals which could be most conveniently reached from the port of disembarkation. As soon as circumstances permitted, wounded men would once more be sent to suitable hospitals as near their homes as possible. Patients requiring treatment in specialized hospitals would continue as before to be sent to those hospitals wherever they were located.

### Health Division of UNRRA

Mr. GEORGE HALL, in reply to Capt. Plugge on June 28, said that the divisions of UNRRA which dealt with health, nutrition, agriculture, and other relevant matters had been placed under directors and deputy directors appointed for scientific or technical qualifications and experience. Recruitment and organization of the staff both in London and Washington were still in progress. Instances illustrative of the qualifications and experience of the scientific staff generally were:

Health Division, Washington. Director, Dr. W. A. Sawyer, formerly Director of the International Health Division of the Rockefeller Foundation.

Health Division, London. Director, Dr. A. Topping, formerly Deputy Medical Officer of Health to the L.C.C.; Deputy Director, Dr. Neville Goodman, formerly Deputy Senior Medical Officer, Ministry of Health.

*Medical Auxiliaries in an N.H.S.*—In reply on June 29 to Sir Ian Fraser, Mr. WILLINK said the aid of masseurs and physiotherapists would be required in the new comprehensive service. The total demand on their services was thus likely to be considerably increased. Whether private practice in these specialties would be diminished he could not say, but there would be no interference with the right to give or receive private treatment.

*The Nursing Situation.*—Answering Mr. Sorensen on June 22 Mr. WILLINK said the strain upon nurses working in hospitals was in many cases severe. While the shortage of nurses had hitherto prevented many hospital authorities from reducing working hours to the level generally considered to be desirable, there had recently been a substantial improvement in the staffing position. He understood that 3,200 more nurses were employed in hospitals and similar institutions on April 16, 1944, than at January 1, 1944. Nursing work enjoyed the highest possible priority. Any girl who desired to become a nurse was, with negligible exceptions, given permission to enter upon the work. Women with previous nursing experience were freely released to return to the profession. Steps were taken to bring information about nurses to the notice of suitable women and the need for additional nurses was impressed on them. This need was also made known to school-girls.

*Medical Education.*—Mr. WILLINK said on June 22 that the arrangements for the future training of medical students have been fully reviewed by Sir William Goodenough's Committee on Medical Schools, and the committee's recommendations will shortly be published.

### Notes in Brief

The Statute Law Revision Committee has listed, among the subjects suitable for its consideration, dangerous drugs, lunacy, and the unconsolidated part of the Pharmacy and Poisons Acts.

On June 20 Major Lloyd George informed Mr. S. Davies that he had received the report from the Pneumoconiosis Advisory Committee which he set up last year. The report would be made available to the public.

The following have been appointed Honorary Physicians to the King for a period of three years: Andrew Davidson, M.D., Chief Medical Officer, Department of Health for Scotland; E. R. A. Merewether, M.D., Senior Medical Inspector, Factory and Welfare Department, Ministry of Labour and National Service; Prof. G. Selby Wilson, M.D., F.R.C.P., Professor of Bacteriology, London School of Hygiene and Tropical Medicine, and Director of the Emergency Public Health Laboratory Service; W. R. Thomas, M.D., F.R.C.P., Senior Commissioner, Board of Control; J. A. Charles, M.D., F.R.C.P., Deputy Chief Medical Officer, Ministry of Health (until recently Medical Officer of Health, Newcastle-upon-Tyne); H. M. C. Macaulay, M.D., Medical Officer of Health, Middlesex County Council. The following have now completed their term of office as Honorary Physicians to the King: Sir Henry Bashford, M.D., F.R.C.P., Medical Adviser to the Treasury; Sir Weldo Dalrymple-Champneys, Bt., D.M., F.R.C.P., Deputy Chief Medical Officer, Ministry of Health; R. Veitch Clark, M.B., lately Medical Officer of Health, Manchester; W. G. Clark, M.B., Medical Officer of Health, Edinburgh; James Ferguson, M.B., Medical Officer of Health, Surrey County Council.



No. 24

## INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended June 17.

Figures of Principal Notifiable Diseases for the week and 14 days for the corresponding week last year, for: (a) England and Wales (London included), (b) London (administrative county), (c) Scotland, (d) Eire, (e) Northern Ireland.

Figures of Births and Deaths, and of Deaths recorded within each infectious case, are for: (a) The 125 great towns in England and Wales (including London), (b) London (administrative county), (c) The 16 principal towns in Scotland, (d) The 13 principal towns in Eire, (e) The 10 principal towns in Northern Ireland.

A dash — denotes no cases; a blank space denotes disease not notifiable or no return available.

Disease	1944					1943 (Corresponding Week)				
	(a)	(b)	(c)	(d)	(e)	(a)	(b)	(c)	(d)	(e)
Cerebrospinal fever ..	58	4	29	2	—	59	2	27	1	1
Deaths .. ..	—	—	—	—	—	—	—	—	—	—
Diphtheria .. ..	456	23	111	82	23	540	28	159	68	25
Deaths .. ..	6	1	—	—	—	10	1	3	—	3
Dysentery .. ..	191	28	63	3	—	161	10	56	—	1
Deaths .. ..	—	—	—	—	—	—	—	—	—	—
Encephalitis lethargica, acute ..	—	—	—	3	—	2	—	1	—	—
Deaths .. ..	—	—	—	—	—	—	—	—	—	—
Erysipelas .. ..	—	—	44	8	3	—	—	58	7	3
Deaths .. ..	—	—	—	—	—	—	—	—	—	—
Infective enteritis or diarrhoea under 2 years ..	—	—	—	17	—	—	—	19	7	5
Deaths .. ..	45	10	12	10	3	52	13	9	—	—
Measles .. ..	2,623	199	423	134	43	6,472	314	432	27	27
Deaths .. ..	—	—	3	—	—	1	—	—	—	—
Orphanism neonatorum ..	63	9	24	—	—	78	5	25	—	—
Deaths .. ..	—	—	—	—	—	—	—	—	—	—
Paratyphoid fever ..	5	—	—	2(B)	—	12	1	2	—	—
Deaths .. ..	—	—	—	—	—	—	—	—	—	—
Pneumonia, influenza* ..	490	40	3	6	3	557	31	6	—	—
Deaths (from influenza) ..	6	1	—	—	—	13	—	4	—	—
Pneumonia, primary ..	—	—	199	19	3	—	17	208	13	4
Deaths .. ..	—	23	—	—	7	—	—	—	—	10
Polio-encephalitis, acute ..	2	—	—	—	—	—	—	—	—	—
Deaths .. ..	—	—	—	—	—	—	—	—	—	—
Polio-mielitis, acute ..	11	—	1	—	—	5	1	—	—	—
Deaths .. ..	—	—	—	—	—	—	—	—	—	—
Puerperal fever .. ..	—	4	18	—	—	—	—	17	—	—
Deaths .. ..	—	—	—	—	—	—	—	—	—	—
Puerperal pyrexia† ..	167	15	15	4	3	154	15	20	4	2
Deaths .. ..	—	—	—	—	—	—	—	—	—	—
Relapsing fever .. ..	—	—	—	—	—	—	—	—	—	—
Deaths .. ..	—	—	—	—	—	—	—	—	—	—
Scarlet fever .. ..	1,544	86	212	28	65	1,686	144	251	44	51
Deaths .. ..	2	—	—	—	—	—	—	—	—	—
Smallpox .. ..	—	—	—	—	—	—	—	—	—	—
Deaths .. ..	—	—	—	—	—	—	—	—	—	—
Typhoid fever .. ..	8	—	2	6	—	7	—	3	9	—
Deaths .. ..	1	—	—	—	—	—	—	—	—	—
Typhus fever .. ..	—	—	—	—	—	—	—	—	—	—
Deaths .. ..	—	—	—	—	—	—	—	—	—	—
Whooping-cough .. ..	2,628	250	197	64	17	1,918	101	210	26	53
Deaths .. ..	15	31	2	3	—	71	2	31	—	2
Deaths (0-1 year) ..	315	40	37	22	16	287	40	42	29	29
Infant mortality rate (per 1,000 live births) ..	—	—	—	—	—	—	—	—	—	—
Deaths (excluding still-births) ..	3,943	622	587	176	112	3,754	456	592	168	130
Annual death rate (per 1,000 persons living) ..	—	—	13.5	11.4	—	—	—	13.3	11.0	—
Live births .. ..	7,528	864	906	407	298	5,971	748	974	371	317
Annual rate per 1,000 persons living ..	—	—	18.4	—	—	—	—	19.9	24.4	—
Stillbirths .. ..	228	27	39	—	—	208	22	29	—	—
Rate per 1,000 total births (including stillborn) ..	—	—	41	—	—	—	—	29	—	—

\* Includes primary form for England and Wales, London (administrative county), and Northern Ireland.

† Includes puerperal fever for England and Wales and Eire.

‡ Owing to evacuation schemes and other movements of population, birth and death rates for Northern Ireland are no longer available.

## EPIDEMIOLOGICAL NOTES

## Discussion of Table

In England and Wales notifications of measles dropped by 455, and those of acute pneumonia by 248, but those for whooping-cough and scarlet fever went up by 155 and 116 respectively.

Diphtheria notifications continued to fall, there being 14 fewer cases recorded than last week's low total. The only increase of any size in the incidence of scarlet fever occurred in Essex, where the total was 31 higher than last week. Acute pneumonia was less prevalent throughout the country. Whooping-cough had a slightly higher incidence in most areas, especially in the south-east, where last week's total was exceeded by 98; in the south-west notifications fell by 65. Lancashire reported 140 fewer cases of measles than last week, Wiltshire 71, and Kent 59. In Northumberland, however, notifications went up by 58.

There were 10 more cases of dysentery reported than last week. The chief centres of infection were Lancashire 35, London 28, Derbyshire 17, Kent 14, Gloucestershire 11.

In Scotland the total diphtheria notifications fell by 52, the number of cases reported being the smallest during recent months. Dysentery continued to decline, over half the total cases occurring in three areas: Glasgow 16, Edinburgh 10, Stirling County 10. The rise of 41 in the total notifications of whooping-cough was contributed mainly by Glasgow.

In Eire measles notifications fell by 45, but diphtheria was, still prevalent, 35 of the 82 cases being notified in Dublin C.B.

## Quarterly Returns for Eire

The birth rate during the March quarter was 22.7 per 1,000, this being 0.6 above that for the corresponding quarter of last year. Infant mortality was high—101 per 1,000 births. The general death rate was 20.1 per 1,000—3.0 above the rate for the first quarter of 1943. Deaths from pulmonary tuberculosis were 852, and from other forms 242, the former being 107 fewer, and the latter 18 more, than in the first quarter of 1943. There were 521 deaths from the principal infectious diseases, almost 200 more than the average of the five preceding first quarters; 287 deaths were due to diarrhoea and enteritis under 2 years of age, compared with an average of 169.

## Week Ending June 24

The notifications of infectious diseases in England and Wales during the week included: scarlet fever 1,451, whooping-cough 2,424, diphtheria 487, measles 2,538, acute pneumonia 452, cerebrospinal fever 53, dysentery 201, paratyphoid 7, typhoid 10.

## Medical News

Mr. Desmond MacCarthy's Lloyd Roberts Lecture, announced for July 11 at the Royal College of Physicians of London, has been postponed.

The three lectures on colloid science by Prof. E. K. Rideal, F.R.S., announced on June 17 (p. 831) have been postponed.

At a meeting of the Clinical Society of the Royal Eye Hospital to be held at the hospital (St. George's Circus, Southwark, S.E.) on Friday, July 28, at 5.30 p.m., Dr. D. G. Ardley will speak on sulphonomide therapy.

At the annual general meeting of Epsom College held on June 16 Lord Leverhulme, the president, stated that at the end of the year under review the deficit of £1,500 had been entirely cleared off and there was a surplus of £1,780, a proof that the co-operation between the Council, the staff, and the boys must have continued with good effect. For the first time since 1939 the school account showed a credit balance of £700, which must prove of great help in view of the heavy expenditure that would be necessary for repairs after the war. The College as a medical foundation could not complain that both medicine and education had had a very full share of the political limelight during the past twelve months.

The Save the Children Fund has received news of the arrival in the Middle East of its third foreign relief team which, under the direction of UNRRA, is available for working in the liberated territories. This team is led by Dr. Katherine S. Macphail, medical superintendent of the Anglo-Yugoslav Children's Hospital in Yugoslavia, who has been attached to the Save the Children Fund for more than twenty years past. Dr. A. B. Howitt, M.P., chairman of the Parliamentary Medical Committee, has accepted an invitation to serve as an honorary medical adviser to the Save the Children Fund, and the British Paediatric Association has also promised to assist the fund in a similar capacity. These appointments are in addition to the existing hon. medical advisers, Dame Louise McIlroy, Dr. Matthew B. Ray, and Dr. Leslie Housden.

The annual general meeting of the British Empire Leprosy Relief Association was held at the India Office on June 29 under the chairmanship of the Right Hon. Oliver Stanley, Secretary of State for the Colonies. Sir William Peel, chairman of the executive committee, in an address reporting on the work of the Association during the year 1943, said that war conditions made it impossible to embark on any new schemes, but the work in hand had been well maintained, with some expansion along existing lines. The medical secretary, Dr. Ernest Muir, continued in charge of the Chacachacare leper settlement in Trinidad, having been lent to that Colony for the period of the war, and he had paid visits to British Guiana and Jamaica. The Association was indebted to Sir Leonard Rogers for carrying out Dr. Muir's duties at home in an honorary capacity and for continuing to edit the *Leprosy Review*. The committee much regretted the resignation on health grounds of Sir Frank Carter from the post of honorary treasurer; he had been a supporter of the Association since its inception over twenty years ago. Sir Leonard Rogers addressed the meeting on medical aspects of the leprosy problem.

At a meeting of the Executive Committee of the Scottish National Blood Transfusion Association held in Edinburgh it was stated that the number of enrolled blood donors throughout Scotland had increased by over 13,000 during the year to March 31, 1944. The extension of the mobile bleeding teams, each consisting of a medical officer and technical and nursing assistant, had proved highly successful. These teams, in specially equipped cars, had visited many outlying areas and had attended at hundreds of factories throughout Scotland for the purpose of testing and bleeding donors with the minimum of inconvenience to their work. It was reported that the plant installed for the preparation of dried plasma had operated very successfully, and the storage of dried plasma had proved of great advantage in meeting sudden demands and in acting as a reserve for the Armed Forces, the Merchant Navy, and for civilian needs.

Mr. A. B. Inglis, Dr. C. H. Kellaway, F.R.S., Messrs. L. G. Matthews and J. Russell, have been elected directors of the Wellcome Foundation Ltd. Dr. Thomas Dewar has been appointed secretary.

Lord Hailey has been elected president of the Research Defence Society. Prof. A. V. Hill is still chairman of committee, and Sir Leonard Rogers continues as hon. treasurer and acting hon. secretary.

Dr. T. V. Crichlow, D.M.R.E., assistant radiologist to the Middlesex Hospital, has been appointed radiologist to the British Legion Village, Preston Hall, Maidstone.

A mass radiography service to facilitate the early diagnosis of tuberculosis was officially inaugurated at St. James's Hospital, Leeds, on July 3. This unit will make possible the examination of between 1,000 and 1,500 persons a week, and it is proposed to take it to large works and schools, as well as to operate it at the hospital.

The British Pharmacopoeia Commission announces that the requirement for iodine value of glycerides in oleum hippoglossi, halibut-liver oil, Fourth Addendum to the *British Pharmacopoeia*, 1932, 23, is changed from "112 to 130" to "112 to 150."

1. Director of Health for the European Region of UNRRA, Andrew Topping, has invited representative members of the nursing profession to assist him in the consideration of problems arising from the demand for nurses for relief work in the liberated territories of Europe. A consultative committee has been set up to deal with questions of terms and conditions of service as well as with applications for employment as nurses with UNRRA. The committee has met twice and has selected the chief nursing officer and two district public health nursing officers for a mission over-seas. Further meetings will be held to consider vacancies in the public health nursing field as occupied countries are liberated and health missions are established.

The Royal College of Surgeons of England has acquired freehold property in Lincoln's Inn Fields, including premises that were until recently held by the College of Estate Management. The object of these purchases is to safeguard future development. To the east of the present building the Royal College of Surgeons now owns the vacant sites of Nos. 35, 36, and 37, and it also owns No. 38, which is still standing. To the west it owns the freeholds of Nos. 44 and 45. In addition to the parts of the existing College which only need restoration there remain the parts of the original site which were occupied by buildings destroyed by enemy action. The old lecture theatre and two large museum halls originally occupied this space.

Mr. F. W. Gamble, Ph.C., vice-chairman and one of the managing directors of Allen and Hanburys Ltd., has, owing to prolonged and serious illness, tendered his resignation from the Board. Mr. Gamble's fellow directors have put on record their appreciation of his earnest and devoted work in the interests of the company and of pharmacy for close on 50 years.

Dr. Emil Feer, formerly professor of children's diseases at Zurich University, was 80 on March 5.

## Letters, Notes, and Answers

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B.M.A. SCOTTISH OFFICE: 7, Drumsheugh Gardens, Edinburgh.

## ANY QUESTIONS?

### Treatment of Calcium Deficiency

Q.—What is the latest method of treating a case of calcium deficiency characterized by fragility of the bones associated with at least one spontaneous fracture? Blood calcium is low—e.g., a report dated June, 1943, gives it as 8.5 mg. per 100 c.c.m., and the accompanying x-ray report was gross calcium deficiency. Later reports say that the blood calcium is still low. The patient is a girl of 19, and the condition began about two years ago. There has been marked improvement under treatment with intramuscular calcium, vitamin D, and U.V. therapy. There is a history of abdominal tuberculosis in childhood, and presumably the difficulty in absorption of calcium is due to disorganization of the mesenteric glands. I have heard of a method in which alum acetate is given by mouth with the idea of precipitating phosphorus and allowing calcium to be absorbed.

A.—A little more information, especially about the amount of fat in the faeces, would make this question easier to answer. Assuming that the diagnosis is correct, treatment with calcium, vitamin D, and U.V.R. is quite correct, though there should be no need to give the calcium intramuscularly. The vitamin D will probably sufficiently increase the absorption from the intestine. Treatment with aluminium acetate was first suggested by A. J. Helfet in 1940 (*Brit. J. Surg.*, 1940, 27, 651). Helfet suggests that the function of the parathyroids is to control the level of inorganic phosphate in the blood, a rise in blood phosphate resulting in stimulation of the parathyroids and therefore, indirectly, in the removal of calcium from the bones. He gives 75 minims of the B.P. liquor of aluminium acetate a day. This combines with the phosphate in the intestine to form insoluble aluminium phosphate, thus lowering in turn the blood phosphate, the activity of the parathyroids, and the mobilization of bone calcium. Aluminium acetate is quite harmless even if given over long periods, and Helfet's results suggest that the method is worthy of trial. Helfet does not give extra calcium, but in the case described a continuation of a high calcium and high vitamin D intake is to be recommended.

### Sulphonamides and Deafness

Q.—Is there any definite evidence for the suggestion that sulphonamides cause deafness in infants? If so, what are the prognosis and treatment (if any)?

A.—We are aware of no foundation for this suggestion, and indeed of no mention of it in medical literature. If such a belief has arisen, presumably in the lay mind rather than the professional, it may be accounted for by the fact that the sulphonamides are largely used in treating conditions which are themselves liable to be followed by deafness, such as middle-ear disease and cerebrospinal fever.

### Mental Deficiency

Q.—I have as a patient a child of 9 years who has never been able to speak. She has no physical abnormality, although her mental capacity is, so far as I can see, somewhat subnormal. She tends to be aggressive, and her expressions are limited to such vague utterings as "bah." She is not deaf. Can you tell me what classification she falls into, and what the prognosis is?

A.—Deafness being excluded, by far the likeliest explanation is that the child is a low-grade mental defective. In that event the prognosis is hopeless, apart from making the best, by care and skilful training, of the patient's limited mental endowments. Such conditions as word-deafness, which might supply an alternative explanation, are extremely rare. A history of the child's development, together with a mental examination, should place the diagnosis beyond doubt. Thus, for example, at what age did she walk and when did she establish control over her sphincters? Can she look after herself, feed and dress herself, execute commands and carry out commands? When did she learn to do so? What is her performance, compared with the normal child of 9, on intelligence tests of a non-verbal character?

## Amoebic Dysentery in a Child

**Q.**—I would be grateful for advice on the treatment of amoebic dysentery in a child 5½ years old who contracted this disease when 15 months old, and after treatment for several months was apparently cured with stovarsol capsules. I was called to see the child the other day, and examination of the stools showed a recurrence of the trouble. The child had been in the Gold Coast up till two years ago, when she arrived in this country.

**A.**—Amoebic dysentery is extremely rare in European children. Before treating the disease it is imperative that parasites be found and identified and the diagnosis confirmed. Neither stovarsol, the emetine preparations, nor any other drug alone will eradicate the infection. It is necessary to give a combination of drugs to this end, over a period of about three weeks, and for this purpose the child should enter hospital.

## A Case of Congenital Syphilis

**Q.**—A girl of 22 was found to have interstitial keratitis 2½ years ago, and a positive Wassermann. She has had repeated courses of N.A.B. (total 4 g.) and bismuth, with mercury by mouth between. Her Wassermann is still positive and the Dreyer keeps about 1.0. (a) How long should the above treatment (if approved) be continued? (b) Can one hope to make the Wassermann negative, and if not, is she infectious, if she marries, to her husband, and to a child? Incidentally her father knew he had gonorrhoea but not syphilis, and both he and his wife have negative Wassermans and Dreyers.

**A.**—This appears to be, almost certainly, a case of congenital syphilis, in spite of the negative blood reactions of the father and mother. The first thing to do is to test the cerebrospinal fluid for Wassermann, cells, protein, and colloidal gold curve. Assuming these are negative, further treatment than that already given is indicated—a total of 4 g. of N.A.B. is a relatively small amount—and should extend over a period of at least two years; neoarsphenamine in weekly doses of 0.45 g. intravenously, and an insoluble preparation of bismuth in weekly doses of 0.2 g. of the metal intramuscularly, should be given concurrently in courses of 10 injections of each, with rest intervals of about three months between consecutive courses; a total of not fewer than 30 injections of arsenic and 40 of bismuth should be given; this includes treatment already administered. In addition, mercury in the form of colloidal mercury sulphide may be given during intervals between courses in doses of 5 c.cm. intramuscularly once a week. Vitamin E complex, combined with vitamin B complex (Stone, S., *Arch. Ophthalmol.*, Chicago, 1943, 30, 467), is said to be a valuable adjunct in treatment.

On the other hand, should the C.S.F. be positive, pentavalent arsenicals and some form of fever therapy are indicated. These should be given only by an expert. It is extremely unlikely that the serum reactions will be reversed to negative, but prolonged treatment is recommended, mainly with the object of preventing relapse. Assuming this is a case of congenital syphilis, the patient is not infectious, nor would she convey her disease to husband or child; third-generation syphilis is a very doubtful possibility, and in any case extraordinarily rare.

## Sedatives for Injured Children

**Q.**—What is a safe and correct dose of morphine to give hypodermically to a child suffering from injuries, say, resulting from a road accident, and below what age is morphine in such cases unsafe? I have seen cases of young children who, in spite of fracture of both bones of the lower leg, struggle violently, flinging the injured limb about in the air like a flail and offering the most stubborn and screaming violence to any attempt at splinting or even quietening.

**A.**—Morphine gr. 1/75 for each year of the child's age may be regarded as a safe dose. While this applies to any age, tinct. opii minimis 2 for each year of the child's age is often more satisfactory than morphine, especially in infancy. In answer to the statement in the latter half of the question, it may be remarked that in the circumstances described a sedative would prove more valuable than an anodyne—say, syrup of chloral rather than morphine.

## What is "Biotin"?

**Q.**—Is there such a thing as vitamin H? Is it true that it is essential to the growth of hair and its deficiency is responsible for premature baldness? If so, is vitamin H available in the market? How is it administered? What are its composition and origin?

**A.**—Vitamin H, now known as biotin, is a crystalline, water-soluble compound with the composition 2-keto-3:4-imidazolido-2-tetrahydrothiophene-n-valeric acid. It was synthesized last year in America by Harris. Biotin is a member of the vitamin B complex, and is therefore found in foodstuffs containing the latter, particularly liver, yeast, kidney, pancreas, adrenals, and cereals. Biotin is essential for the complete nutrition of many animals and possibly of

man, since Sydenstricker in America has produced a deficiency syndrome in volunteers on diets poor in biotin. The physiological function of biotin is unknown. Rats given diets deficient in biotin develop a scaly, greasy dermatitis and atrophy of the fur. This has given rise to the misconception that biotin is essential for the growth of human hair, and that its deficiency results in premature baldness. There is absolutely no evidence for this. The cause of human baldness is unknown, and neither biotin nor any other known vitamin can prevent or cure it.

Biotin is available commercially only in the U.S.A. It is extremely expensive, and our present knowledge of it does not warrant its use in any clinical condition. Clinical biotin deficiency is very unlikely, as biotin is widely distributed in foods. A deficiency can be produced artificially by feeding large quantities of raw egg-white—e.g., 200 g. of dried white daily. A case of biotin deficiency has been reported in an Italian who ate a large number of raw eggs a day and neglected his diet generally (see *Journal*, 1943, 2, 271). Raw eggs (not cooked) contain a principle known as avidin which inactivates biotin.

## Artificial Insemination

**Q.**—(a) Do facilities exist in this country through any organization for the induction of artificial insemination, using an exogenous donor? (b) What prospects of success attend such a procedure, if indeed it has been put into practice in this country? (c) Where ejaculation cannot voluntarily be effected, has any other procedure, such as seminal vesicle aspiration of the husband, ever been attempted? My questions arise in the case of a childless marriage where both parties would welcome artificial insemination as an alternative to adoption.

**A.**—No facilities at present exist in this country for the obtaining of donated semen. When this is available, and a proper technique is adopted, artificial insemination gives excellent results. There is no means of obtaining semen otherwise than by ejaculation, and attempts to obtain it by aspiration are useless. In America there exist special fertility clinics where all the investigations and treatment of infertility, including insemination with donated semen, can be carried out. An attempt is being made to establish such a clinic in London. At present this class of work is only being done privately by a comparatively few medical men. This is a field of medicine which needs developing.

## Keeping Properties of Syrupus B.P.

**Q.**—I find that syrupus B.P. is liable to ferment when kept in store for only two or three weeks in a room where there is an electric radiator. Some makes are more susceptible than others. If the syrups were kept in a cool cellar, would it not ferment? What is the optimum temperature for storing it?

**A.**—Fermentation is frequently seen in syrup in dispensaries, although syrupus B.P. fully up to the official standard does not itself readily ferment. Any one of a number of factors may contribute to fermentation, and some of the more important points which have to be watched are: (1) The sugar used in making the syrup must be of B.P. quality. Ordinary grades of sugar frequently contain impurities which encourage fermentation. (2) The temperature should be kept as low as possible during manufacture. High temperatures frequently used in large-scale manufacturing produce appreciable quantities of the more readily fermentable invert sugar. (3) The syrup when made should be put into dry bottles when almost cold. It has been shown that dilution with as little as 2% water renders B.P. syrup liable to fermentation, and dilution to this extent may be effected by putting syrup into wet or badly drained bottles. If the bottles are filled while the syrup is still hot, condensation of water vapour may take place and the upper layer of the syrup become likewise diluted. (4) The syrup should be stored in a fairly cool place. Temperature alone will not cause fermentation, but a warm atmosphere will naturally encourage it in a syrup already rendered liable to ferment. On the other hand, storage at too low a temperature is to be avoided, as syrupus B.P. is a saturated solution of sucrose at ordinary temperature, and lower temperatures tend to produce crystallization of this sugar.

## Types of Umbilical Hernia

**Q.**—Is there any record of the value of strapping, with or without a coin, in the case of umbilical hernia in infants? It would be of value to know the relatively immediate results, and also the results on the approach of middle age, pregnancy, etc.

**A.**—The confusion in the teaching about umbilical hernia in infants is due to failing to distinguish between the two main types. 1. *True Umbilical Hernia*.—In this the protrusion comes through the middle of the remains of the umbilical cord, and carries up with it a kind of fibrous collar from the linea alba. When the sac is empty this collar can be felt under the skin, and the margins of the hole in the linea alba from which it arises are definite and stiff. Hernias of this kind invariably cure themselves; the fibrous tissue round the neck of the sac has an inherent tendency to contract.

They are not dangerous, as, for some not very obvious reason, strangulation of an umbilical hernia in infancy is practically unknown; but they often upset an infant very much, through the discomfort. The infant cries, and the crying increases the protrusion. The spontaneous healing, which may not occur until well on in childhood, can be accelerated in two ways. The first is by strapping with a plain piece of two- or three-inch-wide zinc oxide sticking plaster, applied in such a way as to close the hernial opening by holding a fold of skin over it. Coins, pads, and the common use of elastic sticking plaster all detract from efficiency; and the most inefficient of all is the rubber belt, which is usually, as one mother said to me, worn as a brassière. However, the tendency to spontaneous cure is so strong that all methods have their successes. The second method of treatment is by a subcutaneous ligature of linen. In the roaring and struggling type of baby this will often succeed in curing the condition right away when strapping fails.

**2. Para-umbilical Hernia.**—Here the protrusion is not up the middle of the umbilicus, but slightly above, or less often below. There is no fibrous collar, and the hole in the linea alba is wide, with weak soft margins. This type of hernia is much less common than the first. It has no tendency to spontaneous cure, and an operation is necessary if a good abdominal wall is desired. Strapping and subcutaneous ligature are both useless in its treatment, but a simple longitudinal overlapping of the two rectus sheaths, performed through a transverse incision, is very satisfactory. There is no hurry about operating, as the soft margins of the hernial opening do not cause discomfort, and it can be postponed to 4 years old with advantage.

It is an interesting point whether either of these two types predisposes to the dangerous umbilical herniae of later years. Information on this point, however, will not be gained till knowledge in our profession is more systematically collected than it is now.

#### Intermittent Hydrarthrosis

**Q.**—A girl aged 19 complains of periodical effusions into various joints. These occur at irregular intervals, last about a week, and disappear leaving no joint damage. There is no pain, redness, or constitutional disturbance, and they seem to have occurred at irregular intervals since the age of 5. The heart appears normal. B.S.R. (Wintrobe) 18 mm. in 1 hour, with 45 c.cm. packed red cell volume, the blood being taken just after an effusion had occurred. There is no anaemia. She has also seen from time to time spots which look like little "blood spots" under the skin. It has been suggested that this is Schönlein's purpura. What is the most effective treatment to prevent recurrence of these effusions?

**A.**—This is a case of the condition known as intermittent hydrarthrosis and is probably an allergic response to focal sepsis. The writer has seen such cases develop true infective arthritis later, and this is a possibility seriously to be borne in mind. The slight increase in the sedimentation rate points to the probable presence of a septic focus and the most likely site is the tonsils, which should be carefully investigated. The purpura may also be anaphylactoid nature. Protein shock is probably the most promising line of treatment, using T.A.B. vaccine, beginning with an injection of 50 millions intravenously, increasing at intervals of five days by 50 millions for the second dose and 100 millions for the later doses, up to a maximum of 500 millions. Calcium with vitamin D would probably also be beneficial, administered by intramuscular injection and followed later by cod-liver oil as a means of improving calcium retention and raising the general resistance.

It would be of interest to inquire whether the patient suffered from cyclical vomiting in early childhood, which is the case in many allergic subjects. Oriel has pointed out that persons with an allergic tendency easily deplete their glycogen reserve, and the effect of reinforcement of carbohydrates in the diet when the attacks threaten would be interesting. Lichtwitz, in his recent book on rheumatic fever, regards many rheumatic conditions as allergic in nature and brings forward strong arguments to support his thesis. He calls attention to the fact that menstruation may occasionally give rise to effusion of a temporary character into a joint, and Schlesinger has stated that these intermittent hydrarthroses cease during pregnancy. Platelet counts might throw a light on the outbreaks of purpuric spots.

#### INCOME TAX

##### Depreciation of Furniture and Instruments

D. M. wishes to claim a depreciation allowance in respect of wear and tear of surgery and waiting-room furniture and instruments. The inspector objects and offers replacement costs instead of the allowance.

\* The allowance is given in respect of "plant and machinery," and that phrase has to be construed in accordance with its generally accepted meaning. We consider it would clearly cover large and expensive items of professional equipment—e.g., x-ray apparatus—but doubt whether "furniture" could be brought within it. So far as instruments are concerned, the Schedule D rule provides for the

deduction of sums expended for the supply, repair, or alteration of any implements used for professional purposes, and as both depreciation allowance and cost of replacement cannot be deducted, the inspector of taxes is right in refusing the former.

#### "Pay as you Earn"

E. P. joined one of the Services in January, 1940, and since then has suffered tax by deduction from his pay, and at the same time deductions in respect of tax on his salary as assistant M.O.H. earned prior to joining the Service. Has he any remedy, or compensation for loss of the tax holiday when he returns to his civil employment?

\* Individuals in the service of the armed Forces of the Crown are not within the "pay-as-you-earn" system as such, though tax is deducted currently. This matter was discussed in Parliament during the Budget debates, and the Chancellor of the Exchequer has promised to deal with the matter by making some cash payment to those affected. No information has been forthcoming yet as to how these payments will be calculated or subject to what conditions they will be made.

#### LETTERS, NOTES, ETC.

##### The Dilemma of the "Unclean" Nurse

"GENERAL PRACTITIONER" writes from a country district in England: I am tempted to send a note on a situation which sometimes arises, and which I am sure could be tackled by "authority" in a more understanding way. In this district we are blessed with a district nurse who is particularly intelligent and well trained. She adheres to all the rules, is very clean surgically speaking, and thoroughly knows her job. Every now and then, due to no fault of hers—but to drought, dust, and the natural uncleanness of the human species—something septic occurs; the last, and this makes me write, was a cellulitis of the breast following a cracked nipple on the tenth day after confinement. Now, the nurse, in duty bound, reports this to the "local authority" and is counted unclean while looking after this case. As she may do no midwifery this scattered district has either (1) to borrow a nurse from an equally scattered district adjoining, herself overworked; or (2) to get a relief nurse from headquarters, unused to the district, very expensive to the local association, and, as things are, very hard to accommodate. Now is all this really necessary? Either a nurse is trained or she isn't. If she is, she knows as well as I do how to go from one case to another without carrying a load of germs with her. If she isn't, she should not be practising midwifery at all. Obviously the rules are not idle restrictions, and are made to protect the public from gangs and other ghoulies; and obviously there are less clean nurses who might be a source of danger. But could not the opinion of the doctor treating the case be allowed to carry some weight? He knows just how septic the case is; and he knows, none better, if the nurse is careful and surgically clean. In the case I quote there seems to be absolutely no reason for all this fuss. When one remembers that the G.P. can be called from whatever he is doing—no matter how septic—to cope with an emergency confinement, and cannot answer that he is sorry but he is feeling too septic to help, it makes these precautions into rather a farce. Moreover, the nurse herself can do dressings, give enemata, and wash dirty old folk to her heart's content, contacting goodness knows what bacterial infections without becoming "unclean." It will, of course, be quite different when this medical millennium we are promised arrives, but in the meantime when supplies of nurses and doctors are short could not an understanding "authority" allow that even C.M.B. rules can be modified when occasion demands, and that a good nurse need not be unclean even when seeing an infected case?

##### Bee-stings and Fish

Dr. C. R. STEEL (Hartfield) writes: Recently I was stung by bees two hours after a fish lunch and in a short while began to show signs and symptoms usually associated with anaphylaxis. When these had developed to the stage of disfiguring oedema and uncomfortable generalized urticarial rash, the expected relief was obtained with an injection of adrenaline. The swelling and marks of the rash took twenty-four hours to disappear. Dr. R. Stanley in *Bee-craft* of October, 1942, notes the association, which I have not seen recorded previously, of severe reactions following stings in a period when one is sensitive to fish protein. As I had not previously had reactions to either fish or bee-stings the point arises as to whether the dose received in a period of time, considering the sting is allied to a hypodermic injection, is the determining factor as to whether a reaction is experienced or not.

##### An Improved Saccharometer: Correction

Dr. J. E. STANLEY LEE writes: I regret that, owing to an error in the final draft, the formula was transposed in my note published on June 24 (p. 847). The formula should read:

$$\frac{25}{\text{c.c.m. diluted urine used}} = \frac{\text{**}}{\text{**}} \text{ sugar in specimen.}$$

# BRITISH MEDICAL JOURNAL

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## CURRENT PROGRESS IN STERILIZATION OF AIR

By

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The prevention and control of acute disease of the respiratory tract is the most serious problem and at the same time the most urgent challenge that to-day confronts medicine in general and industrial medicine in particular. Although diseases and injuries of occupational origin have long claimed the chief interest and attention of physicians in industry, it is now well established and generally recognized that in their frequency and importance non-occupational diseases far outweigh those conditions which arise from industry. The latter are chiefly responsible for stupendous losses in both time and money to employer and employee alike.\*

The sentences quoted opened an address by George Morris Piercel at the Third Annual Congress on Industrial Health in Jan. 1941. Does examination of available data on industrial disability due to acute respiratory disease indicate that this challenge is being met in current practice? Quite the contrary. The frequency of sickness and non-industrial injuries causing disability for 8 consecutive calendar days or longer among a very large sample of industrial workers over the years 1933-42 has been analysed by the United States Public Health Service (Gafafer 1943a). Sickness absenteeism among males due to respiratory disease has shown a steadily mounting rate since 1938 the rate for 1942 was higher than in any previous year of the 10-year period. For females the rate has been steady since 1930, but at a high level. Moreover, respiratory sickness in male industrial workers in the first quarter of 1943 (Gafafer, 1943b) was far higher than in the corresponding quarter of 1942; indeed, the respiratory rate for the first quarter of 1943 has never been equalled or exceeded during the 10-year period, the first-quarter rate of 1943 exceeding the 10-year mean rate by 52%.

Whatever are the causes of this high and mounting rate of industrial disability due to respiratory disease, common sense cautions us not to seek the complete explanation in the conditions of work in industrial establishments alone. The packing of endemic and other workers in the ill-ventilated common carriers—trains, street cars and buses—since rubber and petrol shortages have been overtaking already taxed transportation facilities certainly provides one superlative opportunity for the spread of endemic and epidemic respiratory disease, crowded and confined places of amusement provide another.

In attempting to form even a rough estimate of the cost of this industrial disability, recourse may be had to smaller samples which have been subjected to more detailed analysis. Figures for a public utility for the period 1938-41, inclusive, have been published (Gafafer, 1943c), these show that days lost from respiratory disease are more than a third of the total days lost from all causes of disability. Dr Gafafer has kindly permitted use of a similar table for 1942. This gives the average number of absences lasting one calendar day or longer in a sample comprising approximately 2,500 male and 550 female employees in a public utility in 1942. The average number of

days lost per person during 1942 owing to respiratory disease was for males 3.1 for females 4.3. It is of course understood that the figures for one company cannot be taken as representative of conditions in American industries as a whole. These rates may be either too high or too low. To gain an idea of the approximate cost, if these rates were accurately representative however we may multiply them by the numbers of non-agricultural workers in the United States, these are approximately 26 million male and 14 million female workers (Gafafer, personal communication). This yields an approximate total (with the reservations mentioned) of over 80 million man-days and over 60 million woman days (or over 140 million person-days) lost to industry in the United States through respiratory disease in 1942. On the basis of 300 working days per year, this waste is approximately equivalent to the time of 470,000 persons working for a year.

The Bureau of Labor Statistics publishes monthly data on straight-time hourly earning for manufacturing industries in the United States as a whole (BLS Chart Series, May, 1943). I have computed an average daily earning by multiplying the straight-time hourly earnings (80.5 cents) by 8, the normal working day in American industry.\* On this basis the loss in wages due to respiratory sickness amounts to roughly \$900,000,000 per annum. This does not include the expense for medical care, overhead expenses arising out of idle machinery, and interruption in production schedules, etc.

### Relation between Respiratory Disease and Infectiousness of Air

Persons sneezing, coughing, or even speaking loudly expel into the air large numbers of minute droplets which may contain in a viable and infective state any pathogenic bacteria or viruses present in their oral secretions. The larger of these, potentially infectious droplets have a flight range of about a metre, they are conspicuous, are easily recoverable on bacteriological plates, and their ability to transmit respiratory infection is obvious. When droplets or sputum have dried on solid surfaces their residues may become the source of infective dust.

The role of droplets was notably stressed by the German hygienist Flügge† (1897a, 1897b), and the doctrines of "droplet infection" and dust-infection, or transmission of respiratory infection by droplets and by infective dust, dominated thinking in regard to respiratory disease for 30 years.

The greater part of the potentially infective material expelled by persons into the air, however, is not contained in droplets visible without special means, but in smaller droplets which

\* It is unfortunate that daily rates of pay are not available. Since the figure representing costs of time lost due to respiratory disease is at best only an approximate one, the straight hourly earnings (excluding overtime earnings) are multiplied by 8 to secure a daily wage. It is recognized that this is somewhat arbitrary.

† Actually, however, Flügge himself appreciated the importance of invisible droplets accompanying the coarser visible droplets, these, he recognized, may persist in air for hours and reach distant parts of enclosed spaces.



evaporate almost instantaneously. The basic experimental demonstration was made by Wells (1933) and by Wells and Wells (1942) that much of the enormous germ-load conveyed to the atmosphere by the evaporated residues ("droplet-nuclei") of these finer droplets remains viable for hours or even days in the air of enclosed spaces and is wafted about like smoke to convey pathogenic bacteria or viruses to those who share the confined air. The atomizing of mouth-and-nose secretions into the air has lately been revealed with dramatic vividness by high-speed photography (Jennison, 1942). The enormously important role of pathogens floating in confined air in the dissemination of respiratory disease has now been adequately documented by animal experiments, by observations in controlled human environments, and by epidemiological deductions; the evidence to 1941 has been conveniently assembled in *Aerobiology*, a volume published by the American Association for the Advancement of Science with the aid of the Committee on Aerobiology of the National Research Council.

Any attempt to appraise current progress in the sterilization of air must, however, take account of the historical background. Members of the medical profession who now occupy responsible positions in practice, in teaching, and in administration have been thoroughly trained in the doctrine of "droplet-infection." Recognition of the greater importance of true air-borne infection has come only within the past 10 years, and has deeply impressed only the relatively small number of those who have seriously examined evidence which is either very modern or very old. (Of course, important foundations of the germ theory of disease were laid by the studies of Pasteur, Tyndall, and others on micro-organisms in the air.) Lack of a more insistent demand on the part of the medical profession for practical solution of the problems of air-borne infection might seem incomprehensible if this background were lost sight of. Lacking adequate demand by many prominent members of the medical profession for progress in securing pure air-supplies, air-conditioning, from the standpoint of health at least, has somewhat neglected the main point. The point is that, just as intestinal disease has in considerable measure been controlled by reducing the germ-load of water and milk, for the control of air-borne respiratory disease practical measures for reducing the germ-load of confined air must be instituted.

### Continuous Disinfection of Air

Effective continuous disinfection of the air of enclosed spaces has already been shown to be practicable where conditions are favourable and where the problem is approached with adequate determination and technical facilities and skill. The practical means are physical (ultra-violet radiation, dust-suppressive measures) and chemical (germicidal vapours). Doubtless physical and chemical means will each find appropriate place as mutually complementary measures in the fully matured art of providing non-infectious air in our future homes, transport vehicles, and places of work and recreation.

### Ultra-violet Radiation

Application of ultra-violet radiation to disinfection of air has been systematically reviewed in the A.A.A.S. volume on aerobiology. The physiological and germicidal effects of ultra-violet radiation and the characteristics and standardization of commercially available ultra-violet sources are surveyed in detail. The successful application of ultra-violet radiation to reduction of wound infections in the operating-room is presented by Dr. Deryl Hart, the pioneer in this field, and by Drs. Kraissl and Wilson of Columbia. Cross-infections in hospital wards and in children's nurseries and schools are reviewed and analysed, and success in the reduction of these cross-infections by appropriate use of ultra-violet irradiation is recorded. More detailed analyses of successful control of childhood contagions in schools have been published by Wells, Wells, and Wilder (1942) and by Wells and Wells (1943).

More recent records of germicidal action against bacteria and viruses by ultra-violet radiation in a children's hospital, with reduction in cross-infection, have been published by Sommer and Stokes (1942), by Henle, Sommer, and Stokes (1942), and by Robertson, Doyle, and Tisdall (1943). The Council on Physical Therapy of the American Medical Association (1942,

1943) has found ultra-violet lamps acceptable as an adjunct in the disinfection of air, and commercially available burners and fixtures of several types have been approved by the Council (C.P.T. Reports, 1942, 1943a, 1943b) for use in the operating-room, hospital nursery, and hospital ward.

The statement of the Council on Physical Therapy on acceptance of ultra-violet lamps for disinfecting purposes contains carefully considered appraisal of the present status of the practical art. Pertinent statements are quoted below:

"At the present juncture the design and installation of ultra-violet lamps in their fixtures for disinfecting purposes is empirical and the adequacy of disinfection by any given installation of lamp must be judged by clinical experience. For example, clinical evidence has been submitted to the Council showing that, in a scarle fever ward (size about 60 by 27 by 11 ft.) containing 16 cubicles four lamp units, each one emitting a radiant flux of 30 microwatts per sq. cm. at 1 metre, were found inadequate; but eight lamp units in the ward, each unit protecting two cubicles, and a ninth unit at the entrance, prevented cross-infection. This is a rather high intensity (requiring 20 minutes' calculated time to produce a minimum perceptible erythema) incident on a person of average height, standing directly under a lamp fixture suspended from a ceiling of average height. A greater number of lamps, each one of lower ultra-violet intensity (say, 20 microwatts per sq. cm. at 1 metre) and lower power input, more evenly distributed throughout the room, should be safer and equally efficient in disinfecting the air. This is a matter of engineering design, beyond the scope of the Council's purview. . .

"Since the ultra-violet emission from the low-vapour-pressure mercury discharge tube is practically homogeneous radiation of wavelength 2,537 Å, such a lamp can be readily calibrated in absolute value and used as a standard. The intensity at 1 metre may be only one-fifth of the Council's unit, or 20 microwatts per sq. cm., for safety to the occupants. This will require a minimum exposure of 250 to 500 seconds for adequate disinfection, which will depend on the rate of circulation and average distance of the air in front of the lamp. Evidence has been submitted to the Council showing that cross-infection in a contagious ward may be prevented by using a sufficient number of lamp units, each unit having an intensity of 30 microwatts per sq. cm. at a distance of 1 metre from the burner. This will require an exposure of 167 to 334 seconds for adequate disinfection, which implies a slow movement of the air in front of the lamp installation. . .

"The use of ultra-violet radiation for disinfecting air in industrial plants, barracks, school-rooms, assembly halls, refrigerators, and so on also appears to be outside the Council's purview. In fact, at this juncture the whole question of the use of ultra-violet radiation for disinfecting purposes is too complex and too little understood for the Council to do more than attempt to keep the medical profession informed regarding particular ultra-violet lamps that are acceptable for use in this method of disinfecting air in hospitals, nurseries, and operating-rooms (relatively free from dust) as practised by present-day empirical methods."

It must be emphasized that the Council's statement of acceptance does not prejudice the applicability and the usefulness of ultra-violet radiation to the problem of disinfecting the air of industrial plants, offices, assembly halls, railroad cars, etc. It emphasizes, however, that the specifications of engineering design and other features determining the adequacy and safety of the practical art must be further developed and applied before evaluation will become possible.

Another paragraph of the Council's statement discusses responsibility for design of installations.

"It is to be noted that a lamp used for disinfecting purposes is a single unit in an installation, and that compliance of the ultra-violet output of a single lamp unit with the Council's requirements does not ensure adequate radiant disinfection or the safety of the occupants of the room in which an installation of such lamps is in actual use. Obviously the manufacturer and the distributor of such lamps must assume some responsibility for the adequacy of the lamp installation for purposes of radiant disinfection of the air, and for the adequacy of the protection from injury of the occupants of the space irradiated. Concerning these questions the Council cannot undertake supervision or assume responsibility for the satisfactory performance of any particular installation."

The Senior Biophysicist of the Division of Industrial Hygiene, National Institute of Health (who also is Associate Referee for the A.P.H.A. on Disinfection of Air by Ultra-violet Irradiation), has critically reviewed applications, precautions, and limitations of the use of ultra-violet irradiation to disinfection of air (Hollaender, 1943). The statement of the Council on Physical Therapy is quoted with approval (Hollaender, 1943): "Obviously the manufacturer and the distributor of such



lamps must assume some responsibility for the adequacy of the lamp installation for purposes of radiant disinfection of the air, and for the adequacy of the protection from injury of the occupants of the space irradiated.

Acceptance by the engineering groups in whose province air hygiene may be considered as properly falling of a measure of responsibility for elaborating specifications for proper design and servicing of installations would be an important step towards development of a practical art of air hygiene.

The efficacy of ultra-violet irradiation in killing air borne bacteria and viruses under conditions in which the air is relatively free from dust and lint has been confirmed in Great Britain by Andrewes *et al* (1940) and by Edward Lush, and Bourdillon (1943). The difficulty of disinfecting dust-laden air by this means has also been emphasized. Andrewes *et al* suggest the combination of air filtration and ultra-violet irradiation in recirculation systems and for certain special purposes.

### Germicidal Vapours

The spraying of germicides into the air was of course a part of the technique of antiseptic surgery. Modern interest in germicidal mists was stimulated by the demonstration by Douglas Hill and Smith (1928), Trillat (1938), and Masterman (1938) that certain bactericidal substances—e.g. NaOCl and a number of phenolic compounds—when dispersed in the air as fine mists or aerosols exerted a highly lethal effect on air-borne bacteria. Twort, Baker, Finn and Powell (1940, 1942) found that hexyl resorcinol dissolved in propylene glycol made a highly effective and satisfactory germicidal aerosol.

An inclusive and practical discussion of the problems of air-borne infection and means for its amelioration in wartime Britain has been presented by Andrewes *et al* (1940). Concerning germicidal mists and vapours they conclude "*Hexyl-resorcinol* in propylene glycol has proved perhaps the most effective under laboratory conditions, but unfortunately neither the antiseptic nor its solvent is at present readily enough available\* in large amounts to warrant its introduction except for special purposes.

Considerations of economy and practicability as well as of efficacy have served to focus attention in Britain on the germicidal value of hypochlorites and hypochlorous acid. Actually the use of hypochlorites for purification of air was first tried in England as early as the influenza pandemic in 1918. Masterman (1941) reviews in detail the early history and various controversial aspects of the use of hypochlorites for air purification. He describes an atomizing device (dynamalysor) as already in successful operation. "For many months the dynamalysor has been successfully employed for hypochlorite spraying in hospitals, offices and other inhabited rooms, and air purification by hypochlorites is not a scheme 'with definite possibilities' but a successful *fait accompli*." Masterman concludes that HOCl gas is the active germicide in hypochlorite spraying.

Bourdillon, Lidwell, and Lovelock (1942) have reported success with hypochlorite atomized by a hand spray in disinfecting air contaminated by sneezing. They note certain unfavourable conditions: "such as low relative humidity or high content of organic matter in the air, which may hinder the action of hypochlorite sprays."

Edward and Lidwell (1943) report favourable tests on sterilization of air borne influenza virus with hypochlorous acid gas. "A concentration of 1 vol of gas in 2 million vols of air is probably effective in destroying 99% or more of virus particles when the proportion of these in the air is small. Preliminary experiments on mice and cats are recorded which failed to reveal any toxic effects produced by inhaling the gas in relatively high concentrations or for prolonged periods. Acute irritation of mucous membranes only was found. This did not appear to lead to any increased susceptibility of mice to subsequent infection with influenza."

Exploration of the possibilities of continuous disinfection of air by chemical substances has made and is making rapid progress in America through the work of O. H. Robertson and his associates. They determined that certain of the glycols alone, notably propylene glycol (Robertson *et al* 1942) and

triethylene glycol (Robertson *et al* 1943) provided promising means for continuous disinfection of air. They demonstrated that the germicidal action depended, not as earlier supposed upon collision of fluid droplets with air-borne bacteria, but upon condensation of hygroscopic glycol molecules upon air-borne droplets containing bacteria. The use of 1 g of propylene glycol dispersed as vapour in 5 or 10 million ccm of air and 1 g of triethylene glycol vapour in several hundred million ccm of air was found to kill pathogenic respiratory bacteria and the virus of influenza in air in seconds or minutes. Rat and monkey colonies kept constantly in atmospheres saturated with vapours of propylene glycol for periods up to 18 months and triethylene glycol up to a year suffered no ill effects detectable by observation or microscopical examination (Robertson 1943b).

The germicidal activity of glycol vapours is markedly influenced by certain environmental factors the most important of which is atmospheric humidity (Robertson, 1943b). A dry atmosphere is unfavourable. Likewise desiccated bacterial particles are not as susceptible to the vapour action as are moist ones. It has been found that the glycols are most effective at relative humidities between 40 and 60%. Subsequent work by Biggs, Jennings and Fried (1944a) and Biggs and Jennings (1944) places the relative humidity for maximal germicidal action of glycol vapours at from 30 to 50%. The former workers indicate also the types of apparatus that are being developed for disinfection of the air of large enclosed places by glycol vapours.

Careful investigation of the possibility of fire hazard resulting from the dispersal of glycol vapours into the atmosphere of enclosed spaces has also been made by Biggs, Jennings and Fried (1944b). These authors conclude: "In the vapour phase concentration required for air sterilization, propylene and triethylene glycol offer absolutely no fire or explosive hazard. The addition of water to these substances greatly reduces the possible fire hazard produced by their presence in storage or vaporizing devices."

Clinical application of glycol vapours during the winters of 1941-2 and 1942-3 is recorded by Harris and Stokes (1942, 1943), working at the Children's Seashore House in Atlantic City. This convalescent home has a relatively stable population, and the children in the wards are confined to their beds, and thus are subject to a minimum of contact or direct-droplet infection. Experimental and control wards were carefully matched, indeed, in the second study (Harris and Stokes, 1943) control and glycol-vapour wards were alternated for three-week periods throughout the respiratory season. Ill effects were not encountered. The germ load of the air was shown to be greatly reduced by the glycol vapours as judged by direct plate counts. In the preliminary study, 2 respiratory infections occurred in the vapour-containing ward as compared with 16 in the analogous control ward. In the second and larger study, 5 respiratory infections occurred in the vapour-containing wards as compared with 100 in the similar control wards without glycol vapour.

In his report as Associate Referee on Disinfection of Air by Germicidal Vapours and Mists Prof. O. H. Robertson (1943a) writes: "Practical application of the use of glycol vapours for the purpose of controlling air borne infection has had to await the construction of suitable apparatus for the dispersion of glycol vapours into large enclosed spaces and the development of an instrument to control automatically the concentration of glycol vapour in the air. Rapid progress is being made in the solution of both these problems."

Discussion of dust in industry would be outside the scope of this review. Consideration of the air as a vehicle of infection would be very incomplete, however, without reference to the importance of dust both as a carrier of pathogenic bacteria and viruses, and as a shield of air borne pathogens against the means used for disinfection of air, such as ultra-violet radiation and germicidal vapours. British investigators (Van den Ende and Andrewes, 1942) in particular, working under wartime conditions have found dust a very serious obstacle to application of measures for disinfection of air. They have introduced practical methods for reducing dust from floors, textiles, and bed-clothes by treatment with light paraffin oils (Andrewes *et al*, 1940; Van den Ende and Andrewes, 1942).

\* Both hexyl resorcinol and the glycols are available in the United States.

Experiments on the reduction of the infectivity of dust by floor irradiation with ultra-violet have been instituted by Hollaender, du Buy, Ingraham, and Wheeler (1944). As a result of these experiments they suggest that "floor irradiation be combined with ceiling irradiation in practical tests in barracks or hospital wards to determine the effect, if any, of ultra-violet irradiation in lowering morbidity rates or preventing cross-infection." They caution that "if such experiments be attempted it must be borne in mind that certain types of flooring may prove to be capable of reflecting sufficient amounts of ultra-violet to cause harmful effects."

I have just (April, 1944) been informed by Dr. Edward Bigg that practical apparatus (Bigg and Jennings, 1944) has been constructed and utilized for introduction into the air of properly humidified glycol vapours. Boiling glycol-water solutions are maintained automatically at any desired relative concentration. "The vapours emitted from such boiling solutions are of constant composition and are bactericidal. . . . A predetermined rate of delivery and concentration of water and glycol vapour may be accurately produced by varying the heat input and the temperature of the boiling mixture" (Bigg, personal communication).

### Summary

Respiratory disease is responsible for more than a third of the total number of person-days lost to American industry by disability. The air of enclosed spaces is at present the principal vehicle for the dissemination of respiratory disease. The rationale of rendering air safe for human occupancy has been laid down in the laboratory and in suitable controlled human environments. The means are ultra-violet irradiation, dust-suppressive measures, and the use of germicidal vapours of hypochlorous acid and of propylene and triethylene glycol. Elaboration of the practical art of providing safe air-supplies is, however, not to be accomplished cheaply or through the efforts of a few people. A specialty or specialties in sanitary engineering will have to develop around air sanitation, as has occurred around water and milk sanitation. Physicians, air-conditioning specialists, heating, ventilating, and illuminating engineers, the manufacturers of necessary equipment, agencies regulating public health practice, and the industries which will benefit by reduction of industrial disability through respiratory disease ultimately will all have to contribute effort and money to solving the manifold aspects of the problem. How much is it worth to reduce an annual industrial waste equivalent to the output for a year of approximately 470,000 persons?

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## INTRAVENOUS BARBITURATES IN THE TREATMENT OF HYSTERIA

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The value of intravenous barbiturates in psychiatric treatment remains controversial, despite increased popularity since the outbreak of war. Bleckwenn (1930) is credited with being the first to use intravenous barbiturates in psychiatry; he employed sodium amytal to produce lucid intervals in katatonic schizophrenics, to relieve insomnia, and, in criminological work, to elicit facts from difficult witnesses. Lindemann and Majamud (1934) gave the classical description of the subjective phenomena of light sodium amytal narcosis. They described its characteristic effect as the induction of a feeling of well-being, security, friendliness, and a desire to discuss personal matters not usually spoken of to strangers. Hexobarbitone (evipan) was introduced by Weese and Scharpf in 1932, and two years later was recommended by Hauptmann (1934) as an aid in the production of deep hypnosis. Horsley (1936) described the technique of narco-analysis, using 2½% solution of nembutal and pentothal. He found that psycho-analysis was made considerably more rapid by this method. The value of hexobarbitone in the treatment of neurosis has been stressed by Campbell (1938) and Stungo (1938, 1941). Hadfield (1942) pointed out the value of pentothal in artificially overcoming "blocks" in analysis. Sargent and Slater (1940) found amytal useful in recovering hysterical loss of memory in acute war neurosis. Mallinson (1940) described the technique used in the Navy, and Wilde (1942) reported the use of narco-analysis with pentothal in the treatment of 50 Service neurotics.

Most of the papers on the subject deal with heterogeneous neurotic groups, and tend to stress the advantages of this method of treatment. This paper is limited to one type of neurosis—viz., hysteria—and the results of treatment are compared statistically with those of other psychotherapeutic methods.

### The Material

The total material considered consists of 247 successive cases of hysteria admitted to a unit of an E.M.S. neurosis centre. 126 patients received intravenous barbiturate in the course of their treatment. In 19 cases verbal hypnosis was used; the remaining patients were treated by ordinary psychiatric methods without the aid of either intravenous barbiturate or hypnosis. All patients participated in a comprehensive general scheme of treatment, which included various forms of occupational therapy, such as courses of instruction in book-keeping, type-writing, engineering, carpentry, gardening, etc. Remedial physical training formed an integral part of the scheme. Educational lectures and discussion groups also formed part of the patients' activities. Psychiatric social workers were employed when need for them was indicated.

### Indications

The main indications for including intravenous barbiturate narcosis in the scheme of treatment were:

1. Cases in which it was considered that ordinary methods of treatment were unlikely to produce speedy recovery.
2. To elicit further information when the causative factors of the case were not clear.
3. To aid production of relaxation in patients with hysterical spastic motor symptoms or contractures.
4. To aid production of deep hypnosis in difficult cases.
5. Cases in which hysterical symptoms had not shown satisfactory improvement, in a reasonable time, at this or other hospitals, by such methods as ordinary persuasion, explanation, and re-education.

The indication varies with the type of symptom. Thus, cases of hysterical amnesia in which interrogation did not produce a speedy recovery of memory were usually given intravenous barbiturate without delay, as it was found to be by far the easiest and quickest method of recovering memory in such cases.

### Choice of Barbiturate

The following barbiturates were tested: Sodium amylal (sodium iso-amyl-ethyl-barbiturate), 10% solution; pentothal (sodium ethyl-(1-methyl-butyl)-thio-barbiturate), 2½% solution; and soluble hexobarbitone (evipan—syn. cyclonal—sodium *is*-methyl-CC-cyclo-hexenyl-methyl-barbiturate), 10% solution. It is essential that these drugs be injected very slowly to ensure an even distribution throughout the body so that the required degree of narcosis may be adequately controlled and maintained. When used by the technique to be described we found that, apart from the duration of action, there was no essential difference between these drugs. Sodium amylal is less rapidly broken down in the body than pentothal or hexobarbitone, and therefore exerts its narcotic action for a relatively longer period.

### Technique

After a number of cases had been treated it became increasingly apparent that the preparation of the patient and the general technique played an important part in producing therapeutic success. We tried various degrees of narcosis in pre-anaesthetic and post-anaesthetic phases, and found that the pre-anaesthetic phase of light narcosis was the most suitable for psychotherapy.

The technique can be divided into five phases: (1) preparation of patient; (2) induction of narcosis; (3) phase of analysis; (4) removal of symptoms by suggestion and persuasion; (5) continuance of use of recovered functions to full waking state.

**Preparation of Patient.**—Soon after the patient's admission to the ward full psychiatric and physical examinations are carried out. Rapport is increased by further interviews if necessary. When it is decided to use intravenous barbiturate he is told that he will receive an injection which will aid his recovery. An explanation of his symptoms is given and the nature and mode of action of the injection are explained in terms suitable to his intelligence and personality. He is told beforehand when he will be receiving the treatment, and an attitude of expectation of cure is encouraged. This is reinforced by contact with patients successfully treated by this method.

**Induction of Narcosis.**—At the appointed time the patient is made to rest comfortably in bed in the treatment-room. The preparations for the injection are ready and the materials at hand. He is engaged in conversation and the venepuncture is made with as little inconvenience to him as possible. Conversation is continued, and the solution is injected very slowly and evenly—not more than 1 c.cm. per minute. As narcosis proceeds the patient becomes progressively more communicative and usually develops increasing suggestibility and mild euphoria. If his speech becomes slurred and indistinct the injection should be stopped, as it indicates that the narcosis is becoming too deep and the patient may go off to sleep, with resulting loss of rapport. This phase may be determined by letting the patient count backwards from 50 and stopping the injection when he repeats a number or counts in normal progression. After some experience this counting technique may be dispensed with, as better rapport can be obtained by just continuing the conversation and ceasing to inject when yawning or slight slurring of speech indicates drowsiness. The desired stage of narcosis can be maintained by the injection of further small amounts of solution if necessary (0.2 to 0.3 c.cm. is usually enough). The quantity of solution required to produce this degree of narcosis varies from 1 to 4 c.cm., depending on the patient's reaction. It is not possible to determine beforehand how much will be required in a particular case.

**Phase of Analysis.**—As the drug takes effect the patient usually talks with increasing freedom, and the physician limits himself to occasional prompting or follows up clues already gained from the history. The patient must not be hurried, and the session must be continued until it is no longer profitable to proceed. Abreaction of repressed emotion, when it occurs, should be as complete as possible.

**Removal of Symptoms.**—When the analytic phase is terminated the symptoms can be dealt with by any method of approach

favoured by the physician. The patient's suggestibility is increased and the symptom usually readily removed by firm suggestion and persuasion.

**Use of Recovered Functions.**—When functional integration is achieved the patient is made to continue using the recovered functions into the full waking state. He is allowed to mix with the other patients and demonstrate his recovery. The continuation of the active use of the recovered functions into the full waking state is important in order to consolidate the recovery. The patient should also be seen the following day for further firm persuasion and encouragement.

TABLE I—Showing Results of Treatment of Hysteria in 126 Service Patients by Means of Intravenous Barbiturate

Group	No	Removal of Symptoms (%)	Considerable Improvement (%)	Slight or no Improvement (%)
Conversion group				
(1) Motor	33	63.63	30.30	6.06
(1a) Stammer (recent)	7	57.14	28.57	14.28
(2) Sensory (general)	16	25.00	37.50	37.50
(3) Special senses	3	100.00	—	—
Dysmnesic group				
(1) "Fits"	5	100.00	—	—
(2) Somnambulism	6	33.33	33.33	33.33
(3) Amnesia	56	82.14	7.14	10.71
Totals	126	67.46	19.04	13.49
Totals excluding amnesia cases	70	55.71	25.57	15.71

TABLE II—Results of Treatment of Hysteria in 237 Service Patients

Group	No.	Removal of Symptoms (%)	Considerable Improvement (%)	Slight or no Improvement (%)
(a) Patients treated with Intravenous Barbiturate				
Conversion group:				
(1) Motor	29	65.51	34.49	—
(1a) Stammer (recent)	7	57.14	28.57	14.28
(2) Sensory (general)	10	20.00	40.00	40.00
(3) Special senses	3	100.00	—	—
Dysmnesic group				
(1) "Fits"	5	100.00	—	—
(2) Somnambulism	6	33.33	33.33	33.33
(3) Amnesia	56	82.14	7.14	10.71
Totals	116	69.80	18.90	11.20
Totals excluding amnesia cases	60	58.30	30.00	11.70

(b) Patients who received General Psychiatric Treatment without the Aid of Intravenous Barbiturate				
Conversion group				
(1) Motor	33	78.78	18.18	3.03
(1a) Stammer (recent)	3	33.33	66.66	—
(2) Sensory (general)	33	12.12	48.48	39.39
(3) Special senses	5	60.00	20.00	20.00
Dysmnesic group				
(1) "Fits"	11	81.81	—	18.18
(2) Somnambulism	1	—	—	100.00
(3) Amnesia	16	87.50	6.25	6.25
Totals	102	55.88	25.49	18.62
Totals excluding amnesia cases	86	50.00	29.06	20.93

(c) Cases treated by Hypnosis				
Conversion group				
(1) Motor	5	60.00	20.00	20.00
(1a) Stammer (recent)	3	100.00	—	—
(2) Sensory (general)	4	75.00	—	25.00
(3) Special senses	1	100.00	—	—
Dysmnesic group				
(1) "Fits"	1	100.00	—	—
(2) Somnambulism	1	—	—	100.00
(3) Amnesia	4	75.00	—	35.00
Totals	19	73.68	5.26	21.05
Totals excluding amnesia cases	15	73.33	5.26	30.00

### Results of Treatment

Tables I and II show the results obtained in the treatment of 247 successive admissions of Forces patients to a unit of an E.M.S. neurosis centre. Table I shows the results in a group of 126 patients treated with intravenous barbiturate. Ten of these patients had previously been treated by persuasion and re-education without success, and so for purposes of comparison with other psychotherapeutic methods are excluded from Table II. Table II therefore gives the results of treatment of 116 patients treated with intravenous barbiturate; 102 patients treated by ordinary psychiatric methods such as explanation, persuasion, and ordinary suggestion; and 19 cases treated by hypnosis.

We have taken symptomatic recovery and functional integration as the criteria for evaluating the results. The criterion of return to duty as an indication of therapeutic success was found to be unsatisfactory for many reasons—e.g., the appropriate disposal depends on the total assessment of the case, and symptomatic recovery is only one of the many factors to be considered. While some patients have to be discharged from the Service in spite of symptomatic recovery, others could be retained for suitable work in spite of their symptoms. It will be seen from Table II that intravenous barbiturate was included in the treatment of about half the total admissions for the period under consideration. Of cases of hysterical amnesia 73% were treated with intravenous barbiturate, and as the results were relatively satisfactory the weighting of the intravenous barbiturate group with cases of amnesia will tend to give an unduly high proportion of therapeutically successful results. It is therefore desirable to compare the groups without the amnesia cases in addition to the groups as a whole.

#### Comparison of Treatment Results of Total Groups

From Table II it will be seen that 88.7% of the barbiturate narcosis group showed complete symptomatic recovery or considerable improvement; the corresponding figures for the general psychiatric treatment and hypnosis groups are 81.4 and 78.9% respectively, recording an apparently higher therapeutic success rate for the barbiturate narcosis group. The differences, however, are in the realm of chance. The value of "*t*" for the difference between the barbiturate and general psychiatric treatment groups is 1.52 (*P* is between 0.2 and 0.1, and is considerably above the 0.05 level of significance). Similarly the difference in results between the barbiturate narcosis and hypnosis groups is not statistically significant (*t*=0.99, *P* is between 0.4 and 0.3). Comparing only the proportion of those showing full functional recovery, the difference between the barbiturate and general psychiatric treatment groups is greater, but is not statistically significant (*t*=1.77). Similarly the difference between the results of the barbiturate and hypnosis groups is not statistically significant (*t*=0.36).

#### Comparison of Groups, excluding Cases of Amnesia

When the amnesia cases are excluded the difference in results becomes even less marked. Comparing the proportion of cases showing complete recovery, the difference between the barbiturate and general psychiatric treatment group is not statistically significant (*t*=0.93). The difference from the hypnosis group is also in the realm of chance (*t*=1.1). Comparing the proportion of cases showing complete symptomatic recovery or considerable symptomatic improvement, we find that the differences in results between the barbiturate and general psychiatric treatment and hypnosis groups are again not statistically significant (*t*=1.5 and 0.86 respectively).

The results of treatment of the conversion and dysmnesic groups were compared to ascertain whether the different forms of treatment produced significantly different results.

**Conversion Type.**—The percentage of cases showing complete recovery and considerable improvement in the three groups are: barbiturate narcosis group, 86.4%; general psychiatric treatment group, 79.7%; hypnosis group, 93%. When these results are statistically evaluated they show no significant differences (*t*=0.95 for difference in barbiturate and general psychiatric treatment groups, and *t*=0.77 for difference between the barbiturate and narcosis groups). Thus there are no statistically significant differences between the results of treating conversion symptoms by the three methods.

**Dysmnesic Group.**—Taking the dysmnesic symptoms, the proportion of cases showing complete recovery or considerable improvement is 86.2% for the barbiturate group and 85% for the general psychiatric treatment group. The difference is not statistically significant (*t*=0.14).

#### Motor Symptoms

Intravenous barbiturates were used in the treatment of about half the total number of patients with hysterical motor symptoms. The rapidly acting barbiturates were found preferable for treating motor symptoms, as the patient could be made to continue using the recovered function into the full waking state in a reasonable time. Motor symptoms were usually removed by passive movements, followed by active movements

with the appropriate suggestions. Patients with hysterical gait were made to run as soon as possible. Hysterical contractures were the only hysterical symptoms requiring deep narcosis to ensure adequate relaxation.

The percentage of cases showing complete recovery is lower than that of the group treated by ordinary psychiatric methods. The difference (13.27%) is, however, not statistically significant (*t*=1.18). The difference from the hypnosis group in the proportion of cases showing complete recovery is also in the realm of chance (*t*=0.1).

**Stammering.**—Recent stammers were fairly easily removed by relaxation and suggestion under ordinary hypnosis. Chronic stammers showed only temporary improvement and usually relapsed after a short interval.

#### Sensory Symptoms

The main symptoms in the special senses group were varying degrees of deafness and blindness, and usually responded well to suggestion under barbiturate narcosis. In the general sensation group anaesthesias were easily removed by any method. Various somatic pains were found to be by far the most difficult symptoms to treat by any method. The proportion of cases showing complete recovery when treated by hypnosis is significantly greater than that of the intravenous barbiturate narcosis treatment (*t*=2.3). The difference in proportion of cases showing complete symptomatic recovery in the barbiturate narcosis and general psychiatric treatment groups is not statistically significant (*t*=1.01).

In the dysmnesic group we found that intravenous barbiturate narcosis had no advantage over other therapeutic methods in the treatment of somnambulism or hysterical fits.

#### Amnesia

Intravenous barbiturate narcosis was found to be by far the quickest and easiest method of recovering memory in hysterical amnesia. It was used in all cases in which memory did not recover spontaneously or after a short period of interrogation. Such cases constituted 73% of the total number. The lost memory was recovered completely in 82% of cases; this result is not as high as that obtained for the general psychiatric treatment group (87.5%). The difference, however, is not statistically significant (*t*=0.91). In the intravenous barbiturate group 89.28% showed considerable improvement or complete removal; the corresponding figure for the general psychiatric treatment group is 93.75%. Here again the successes are proportionately higher in the general psychiatric treatment group, though the difference is not statistically significant (*t*=0.59).

In most cases the patient begins talking spontaneously about the amnesic period. If he does not, he is asked to relate the events leading up to that period, and is prompted by any clues previously learned from the history. In a large number of cases facts relative to the main causative factors came out first under narcosis. Though hypermnesia was the rule in the typically hysterical cases, those patients with depressive or anxious preoccupation usually were only able to recall outlines of the period. Most patients recovered memory in one session. Some cases, however, required repeated injections, and often the memory would come back only after the patient had been in hospital some weeks. Most of these cases were found to be those developing amnesia in a depressive setting, and a number had made suicidal preparations or attempts during the amnesic period.

Intravenous barbiturate injections are popularly known as "truth serum" or "truth drugs." Our experience with cases treated by this method tends to show that although, as with alcoholic intoxication, one is more likely to get the truth from persons under barbiturate narcosis, this is by no means invariably so. It is probable that the degree of a person's honesty is not altered. In some cases we found that important information could be deliberately withheld. Two patients gave such fantastic and inherently improbable accounts of their amnesic periods that the stories were considered to be almost certainly untrue. Social inquiry revealed that one of these patients was extremely fond of romancing, and that he was in fact a case of pseudologia phantastica. We have knowledge of a patient who gave detailed accounts of his experiences in

action in France. Later it was proved conclusively that not only had he not been in action but he had not even left the country.

The cases in which memory failed to be restored fell into three groups.

1. *Malingers.*—We found that these cases behaved differently from others. Whereas most patients became communicative under barbiturate narcosis, the malingerer usually became more quiet and guarded. When he was questioned about the amnesic period he would often tend to yawn and go to sleep. Failure to recover memory may suggest malingering in some cases; but of course it cannot be used as proof, as the failure may be due to other causes, such as:

2. *Fugues*, occurring in depressive setting;

3. *Faulty technique*, such as allowing narcosis to become too deep; this probably explains why some physicians succeed after others have failed.

### Discussion

Analysis of the results of treating 247 Service cases of hysteria shows that intravenous barbiturate narcosis is no better than ordinary persuasion and re-education. The usefulness of including intravenous barbiturate narcosis in a scheme of treatment varies with the type of hysterical symptom—e.g., it proved to be by far the easiest and quickest method of recovering memory in hysterical amnesia. On the other hand, it was of little value in treating somatic pains. The main advantage appears to be the saving of time; equally good or even better results can be obtained by other methods if one is prepared to devote a longer time to treatment. Thus intravenous barbiturate narcosis is particularly popular in wartime, when usually the time available for the treatment of each patient is strictly limited. The greater rapidity of psychotherapy when intravenous barbiturate is used is probably due to its pharmacological effects of diminishing inhibitions and also, probably, of increasing suggestibility in most cases. The increased suggestibility cannot wholly be attributed to the pharmacological effects of the barbiturate; in fact, Lewis (1941) considers the pharmacological effect to be trifling compared with the suggestive value of the procedure in the achievement of therapeutic success. Our findings confirm this view, and we regard the "psychological preparation" of the patient as of equal importance to the injection, and in some cases as of even greater importance. A number of patients recovered from their symptoms spontaneously during the preparatory phase before the injection had been given. However, each step of the general technique is of value in the achievement of therapeutic success.

Another important aspect of this method of treatment not often realized, but pointed out by Lewis (1941), is the increased confidence of the physician. Compared with verbal hypnosis there is usually less embarrassment to both physician and patient, and as risk of failure is negligible the former's confidence is increased. This increased confidence probably plays a large part in the achievement of successful therapeutic results.

Some specific disadvantages of using intravenous barbiturates were that in some cases great motor restlessness was precipitated, and the patients could only with difficulty be restrained from hurting themselves; also in some cases the physical procedure may tend to confirm the patient's cherished belief that he is suffering from some physical illness. This disadvantage, however, is probably outweighed by the suggestive value of the physical procedure. The results achieved cannot wholly be attributed to the intravenous barbiturate treatment, as essentially it fitted into a general scheme of treatment at the hospital, all aspects of which contributed to the successful outcome. Also it should be realized that barbiturate narcosis is merely an aid to psychotherapy and probably plays only a small part in producing therapeutic success. The success achieved depends mainly on the ability of the physician, his confidence in the method, and the general plan of treatment.

### Summary

The results of treatment of 247 Service cases of hysteria are described with particular reference to 126 patients to whom intravenous barbiturates were given.

Various barbiturates were tried, but there was no important difference in the effects produced or in the results obtained.

The pre-anæsthetic phase of light narcosis was found to be most suitable for psychotherapy.

Compared with other psychotherapeutic methods, the main advantage obtained by using intravenous barbiturates was economy of time. This was particularly so with cases of hysterical amnesia, for which it was regarded as the method of choice. Mathematical evaluation of the results shows that, statistically, barbiturate narcosis produces no significantly better results than other psychotherapeutic methods.

The general technique is described, and the importance of the various steps of the technique in ensuring success is stressed.

The suggestive value of the treatment and the increased confidence of the physician are considered to play an important part in the success obtained.

Intravenous barbiturate narcosis may be described as a tactical aid in the general strategy of treatment of patients suffering from neurosis.

We wish to thank Dr. W. S. Macleay for permission to publish the case material.

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## TWO CASES OF GUNSHOT WOUND RESULTING FROM UNUSUALLY LARGE MISSILES: RECOVERY

BY

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I have removed many large missiles from the human body in treating war wounds, but the history of the following cases is of interest because they involved two of the largest foreign bodies that I have ever taken from the chest or abdomen. In both instances the patients recovered.

### Case I: Chest Wound

Flight Sergeant B. was hit by "flak" at approximately 18.45 hours on May 7, 1942. He lost consciousness for a few minutes, and on recovering found himself leaning over his gun-hatch. His under-gunner helped him to undo his harness and placed him on the floor of the aircraft. Towards the end of the journey home to his base he apparently became delirious, and his under-gunner had difficulty in restraining him from firing off Vêry lights. About 35 minutes later they landed at an aerodrome.

On admission to S.S.Q., he was greatly shocked, restless, in great pain, cyanosed, and suffering from severe dyspnoea. His blood pressure was 90/50; pulse 140 and very thready. He had a large penetrating sucking wound of the left side of the chest, approximately 3½ by 2 in., situated about 2 in. from the midline at the back, at the level of the sixth and seventh ribs, and running in a forward and lateral direction. A shell fragment which measured 3½ by 5/8 in. (Fig. 1), was found lying beneath the skin over the eighth rib in



Fig. 1.—Shell fragment (3½ by 5/8 in.) removed from Case I.

the mid-clavicular line, at a distance of 12½ in. from the wound of entrance. During its passage into the chest wall the sixth rib was fractured, and the seventh was shattered for several inches, though the overlying skin had not been damaged. Squadron Leader Anderson controlled the parietal haemorrhage, and covered the wound with a large wet dressing and overlapping layers of adhesive strapping. Morphine 1/4 gr. was given, intravenous serum begun, and 90% oxygen administered by the B.L.B. mask intermittently, and for a short time moderate warmth was applied by a radiant-



heat cradle. A little later the shell fragment was removed under local anaesthesia and occlusive dressing applied.

I saw the patient at the Rest Station at 22.45 hours. His dyspnoea and cyanosis were then less marked; pulse 110 and very steady. There was no apparent intrathoracic bleeding or any sign of tension pneumothorax—the latter not likely to develop in this particular type of wound. He was not, however, in a fit state to be transferred to hospital—a distance of about five miles. During the night two more pints of serum were given, and two further doses of morphine. By 08.00 hours his general condition had slowly but steadily improved, and he was fit to be transferred.

On admission to hospital his blood pressure was 110/70; pulse 116 and of fair volume. Full clinical and x-ray examinations were carried out, and during these procedures he was given a transfusion of one pint of blood; he was then transferred to the operating theatre and received a further pint during the course of the operation, which was carried out under gas and oxygen supplemented by local anaesthesia, using 0.5% novocain (anaesthetist, Dr. Pretty). The skin was washed thoroughly with soap and water, dried, and painted with warm tincture of merthiolate. An elliptical incision was made round the wound of entrance, extending forward to the incision previously made for the removal of the missile; the skin was undermined and widely retracted, and the entire tract of the missile, with all layers, including several inches of the comminuted rib, periosteum, and pleura, was excised *en masse* without permitting the knife or other instruments to touch the tract or the infected surface wound. All used instruments and gloves were then discarded. Blood was evacuated from the pleural cavity by suction apparatus, and a hole in the costal portion of the diaphragm was sutured. Attention was then directed to the lung itself and a careful search was made for bone splinters, pieces of clothing, etc. A portion of the lung was found bruised but not lacerated. The operation was completed by intercostal drainage carried out through a Malecot tube, introduced by trocar and cannula, into the ninth intercostal space posteriorly. The wound was freely dusted with sulphaniilamide powder. The skin only was sutured as far as the wound of entrance, which was packed with vaselined gauze. By this time the patient's condition was very grave; he was pulseless and cyanosed. A pint of serum was quickly given, and on his return to the ward he had another pint, followed by the usual 5% glucose and saline. Oxygen 90% was administered at intervals, and at 18.30 hours his blood pressure was 120/80, pulse 130 and of fair volume, haemoglobin 50%. Two days later sulphapyridine was begun, and subsequently two further transfusions of blood were given. After this his convalescence was practically uneventful.

On May 18 the sutures were removed and the wound had healed by first intention. On May 20 the Malecot tube was withdrawn from the thorax as there had been no sign of intrapleural infection and only a slight serous blood-stained discharge for the first ten days. The wound of entrance was dressed from time to time, and he was finally discharged on June 1.

In Aug., 1943, a letter was received from the patient informing me that he was fit and well, and that he was back on operational duty in the R.A.F., but was not allowed to fly above 5,000 ft. for present.

#### Case II: Wound of Abdomen

Flying Officer K. was admitted to hospital on June 5, 1943, with a gunshot wound of the abdomen. About 05.00 hours, while returning from an operational flight over the North Sea, he was hit by a large fragment of cannon-shell. He stuffed a handkerchief in the large abdominal wound of entrance and gave himself an injection of one tubercle ampoule of morphine. His pilot crash-landed at 06.10 hours; shortly afterwards Dr. Garnett saw the wounded airman and gave him a dose of alupon. At 07.30 hours he was transferred to hospital under my care, arriving at 10.00 hours.

On examination he was pale, sweating, restless, cold, and shocked; pulse 128 and of poor volume, blood pressure 90/70. A preliminary examination revealed a penetrating wound of the lower abdomen, a laceration of the penis, and a superficial wound of the left leg. Prophylactic doses of anti-gas-gangrene and antitetanic serum were administered, and serum drip was begun. Radiographs of the abdomen showed a large foreign body in the pelvis, and there was a smaller one in the mid-third of the left leg. X-ray examination of the chest was negative. At 11.30 hours one pint of blood was given, and by 13.30 hours he was fit to be taken to the theatre. A second pint of blood, followed by saline and glucose, was administered during the course of the operation, which was carried out under gas-oxygen and ether (anaesthetist, Dr. Pretty). The parietal abdominal wound measured 3 by 2½ in., and there was gross loss of substance; it was situated just lateral to the outer border of the right rectus and its lower end was about 2½ in. above Poupart's ligament. The hole in the peritoneum was about half the size of the missile. The whole abdomen was thoroughly washed with green soap and water, dried, and shaved. The penis wound was then prepared in the same way, and finally the whole area was painted with warm tincture of merthiolate. Laparotomy was performed through the standard midline incision and a fair quantity of blood

in the abdomen was removed by suction. Several small areas of the small bowel were seen to be damaged but not perforated. Two large perforations were found in the pelvic colon running in a longitudinal direction; these were closed in two layers, using fine silk sutures. The damaged areas of the small bowel were then invaginated by pursestring sutures. The foreign body (Fig. 2) was found lying

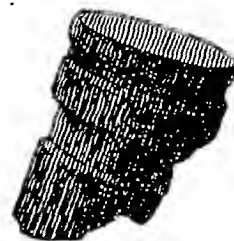


FIG. 2.—Portion of cannon-shell (1 by 1½ in.) removed from Case II.

loose in the pouch of Douglas. The peritoneal cavity was sprinkled with sulphathiazole powder and the wound temporarily covered with hot abdominal packs.

Next, after a complete change of gloves and gowns, using a closing-tray of clean instruments prepared beforehand, a double-barrelled colostomy was performed in the left iliac fossa, and a Rankin's clamp applied. Sulphathiazole cream was then applied to the abdominal incision, which was completely closed. The penis wound, which consisted of a severe laceration involving the right side of that organ, dividing one half of the corpus cavernosum, was dealt with again, using fresh instruments and gloves. All devitalized infected tissue was removed, including a portion from each end of the corpus cavernosum, and the latter were brought together by an end-to-end suture, using fine silk-worm-gut. The wound was left open, and was dressed with sulphathiazole cream and vaselined gauze. Finally, the parietal wound in the abdominal wall was similarly treated. By 17.30 hours his blood pressure was 120/80, and five hours later 130/86.

During the next three days the patient made fairly steady progress. Nothing was given by the mouth during that time; fluids were administered intravenously, but subsequently he began to take sips of glucose, barley-water, and fruit juice.

On June 10 he complained of a pain in the right chest. Temperature 100–103°. X-ray report: "Collapse of the right middle and lower lobes of the lung." A full course of sulphathiazole was begun, and this was continued for seven days. Haemoglobin 69%, W.B.C. 13,000 per c.mm.

June 14.—Respirations 32; pulse 118; swinging temperature 102–102.8°. Still complaining of pain in the right chest, though not so severe. His abdominal condition was satisfactory and the colostomy working well. Radiographs of the chest at this time showed loss of radio-translucency over the whole of the right side, most marked in the middle and lower zones. Haemoglobin, 62%; W.B.C., 28,000 per c.mm.

June 18.—The incisional wound had healed by first intention without the slightest sign of infection. The other wounds had a very mild suppuration, which required occasional dressings.

June 21.—Swinging temperature continued. Night sweats; slight breathlessness but no cough. X-ray report: "Several opacities seen in the right side of the chest. These are greater in the middle and lower zones. ? pleural effusion." In consultation, Dr. Ronald Jones confirmed the previous clinical findings. The following is his report: "There were marked dullness, diminished breath sounds, and impaired fremitus over the whole of the right chest, without any obvious displacement of the mediastinum. The fingers were not clubbed."

July 2.—Chest signs seemed to be diminishing, but fever and sweats still continued and lung abscess was suspected.

July 14.—After a few days' dry cough the patient began to cough up purulent sputum, and 10 oz. was produced. This contained pus cells; the predominant micro-organism was the pneumococcus. No tubercle bacilli were seen. Postural drainage was begun.

July 24.—Some 40 to 60 oz. of pus had been coughed up. General condition much better.

July 29.—Temperature normal, sputum very scanty.

Aug. 3.—Temperature and pulse normal for past five days. No sputum. Chest signs: slight diminution of movement of the right thorax with slight impairment of percussion note and air entry. No clubbing of fingers.

The patient was transferred to a Royal Air Force hospital on Aug. 3; thereafter his convalescence was uneventful. A letter was received from Wing Commander G. H. Morley on Nov. 1, informing me that he had successfully closed the colostomy wound and the patient had made a good recovery.



## Comments on Case II

This was a case of pulmonary suppuration probably resulting from atelectasis and infection. Alternatively it may have been metastatic, but if so one would not expect the predominant organism to be the pneumococcus. As there were neither clinical nor radiological signs of cavitation, pulmonary suppuration is a more descriptive diagnosis than lung abscess.

The result of postural treatment was very good, and, owing to this and the absence of cavitation, the question of surgical treatment fortunately did not arise.

By using the midline incision in war wounds the abdomen can be opened quickly, and, what is equally important, it can be closed quickly. It is comparatively bloodless, and can be extended upwards and downwards according to the needs of the case.

In colon injuries, perforated or bruised, exteriorization of the damaged loop as a colostomy is the safest procedure; when this is impossible the wound of the intestine should be sutured and a proximal double-barrelled colostomy of the Devone type performed. In cases of injury to the fixed parts of the colon a separate incision in the flank has many advantages.

The suction apparatus is invaluable in abdominal wounds as, in addition to its many other advantages, it reduces the number of swabs used to an absolute minimum, thereby contributing towards a fool-proof organization in the counting of swabs and packs.

It is interesting to record that the pilot officer, who escaped without a scratch, found 120 cannon-shell bases in the cockpit!

[Figs 1 and 2 are reproduced from drawings by Leonard Squinell.]

## A MODIFICATION OF THE INVAGINATION METHOD OF INTESTINAL ANASTOMOSIS

BY

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In this communication a modified method of performing intestinal anastomosis is described which, it is hoped, will be of use in carrying out this operation quickly and efficiently. The operative technique was devised by me many years ago, and has only recently been employed on the living subject. In view of the measure of success achieved in the cases noted below, which were not ideally suitable for a trial application, I have been encouraged to bring the method to the notice of the profession, before having been able to practise it extensively, in the hope that surgeons in our field hospitals may find it useful.

During the last war Fraser and Dott used the invagination method with satisfactory results in abdominal emergency work in France necessitated through injuries caused by projectiles. They employed the method of temporary occlusion, and although the end-results of their operation and the one to be described are somewhat similar, there are important differences in: (i) the degree of invagination achieved at the site of anastomosis by means of a special instrument devised for this purpose; and (ii) the means of recanalization. Other "aseptic" methods have no doubt been adopted, both in this country and abroad, and any claim to originality on behalf of this method must depend upon the specific use of the two instruments undermentioned—viz., a screw and a pair of sharp-pointed angled forceps. It is hoped that these improvements will lead to the more widespread practice of this type of operation in suitable cases. It effects the union of two temporarily occluded ends of severed bowel and therefore leads to little soiling of the operative field. Preliminary technical investigations were carried out on fresh pig's bowel, and the union obtained was found to be sound and capable of withstanding high water pressure and considerable distension before any sign of leakage occurred round the site of anastomosis.

The special instruments required in addition to those normally available are: (a) an instrument of modified corkscrew pattern (Fig. 3); (b) a modified StClair Thomson angled

forceps; (c) a powerful broad-bladed enterotribe, of the Doyen pattern, and means of heating its blades (the means adopted was a small electric heater).

In describing this operation it is assumed that the part to be removed has been isolated, together with sufficient lengths of healthy bowel on both sides of the lesion to enable the union to be effected. From this point the technique employed is as follows

### Technique of Operation

The mesenteric attachments are ligated and divided close to the bowel. This operation is continued on each side of the diseased portion for a distance of one and a half to two inches. Two portions of healthy bowel, adjacent to the diseased part, are now crushed with the enterotribe. Sufficiently wide areas should be crushed to enable the next stage to be carried out. This consists in removing the lesion between ligatures. A "double overhand knot" (Fig. 1) should be used to occlude the healthy bowel-ends,

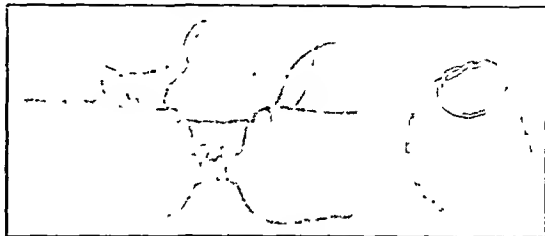


Fig. 1

as these ligatures have to be unloosed by mechanical means at a later stage in the operation. Silk is best for this purpose, as it is much less liable to slip than catgut. For temporary occlusion the pursestring, instead of the stump method, may be adopted so long as the same type of knot is employed. If a heated enterotribe is used for crushing the type of knot is immaterial, as an opening may easily be secured through the "roasted" bowel owing to its friability.

The occluded ends are now approximated, and before invagination are held together by half a dozen interrupted sutures round the circumference of the bowel (Fig. 2). The special "corkscrew" is

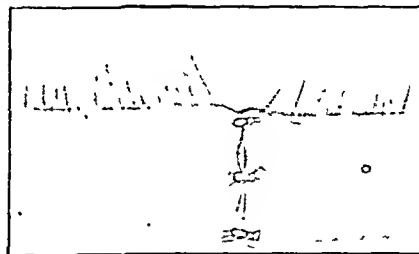


Fig. 2

then inserted into the lumen of the bowel with a screwing movement, in the approximate position as shown in Fig. 3, and partly screwed through the double diaphragm formed by the approximated occluded ends (Figs 3 and 4).

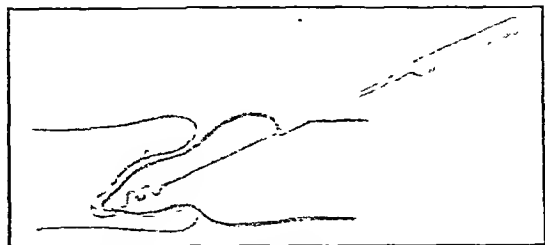


Fig. 3

Invagination is produced by holding the distal part of the bowel in the left hand and pushing the diaphragm, by means of the

"corkscrew," into the distal portion (Fig. 4). This can be done easily when there is no great degree of disparity in the calibre of the two segments to be anastomosed, and to the extent of invaginating the mesenteric attachments. Invagination should be effected up to the mesenteric attachments at least. It should be noted that a greater degree of invagination is produced towards the antimesenteric



FIG. 4

than towards the mesenteric side of the bowel because the mesentery interferes somewhat with this process. In this way a good blood supply is ensured towards the antimesenteric aspect of the bowel and thus the risk of subsequent necrosis of that border is practically eliminated. A row of Lembert sutures, continuous or interrupted, is now inserted round the site of invagination, a mattress suture being used where the two mesenteric borders approximate.

The "corkscrew" can now be withdrawn and the St. Clair Thomson angled forceps inserted through the same opening, forcibly pushed through the double diaphragm (Fig. 5), and used in

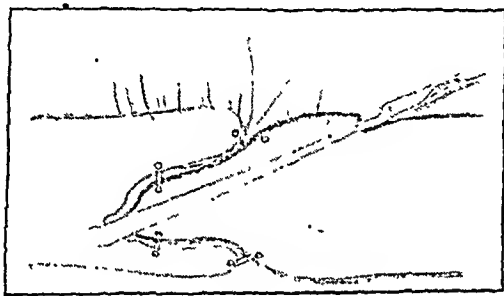


FIG. 5

a scissors-like manner to obtain recanalization. As soon as this is accomplished the forceps are withdrawn with their blades closed, and the opening left after their removal is closed with a pursestring or other form of Lembert suture (Fig. 6). The operation is now

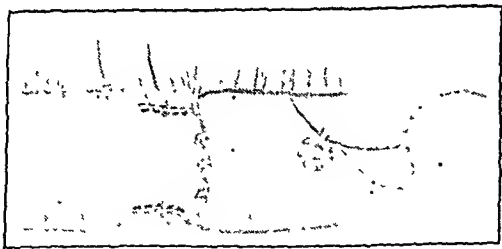


FIG. 6

essentially complete, and the abdomen is closed, with or without drainage as circumstances dictate. It will be appreciated that a considerable collar of invaginated bowel has been deprived of its blood supply, and this will slough off in the course of healing.

[NOTE.—In the case of the small intestine, where generally the upper segment of bowel is more distended than the lower and is much more friable, it will be easier, safer, and simpler to reverse the process of invagination so that the lower is pushed into the upper portion and, continuity having been restored, to invert the invaginated collar by massage—e.g., in cases of acute obstruction.]

### Observations

Reference has been made to the fact that invagination methods have already been used in abdominal surgery. Maunsell's method was devised because it imitated the natural process of adhesive inflammation following sloughing. Although

used successfully on many occasions, it cannot be classed as an operation approaching the principles of aseptic technique. Simple end-to-end suture, and the various mechanical means of procuring circular enterorrhaphy, have the immediate disadvantage of not producing enough invagination of the bowel edges, with the subsequent risk of bowel necrosis towards the antimesenteric aspect. Ullman modified the operation, using a bobbin similar to that of Allingham.

The most successful mechanical means hitherto used for this purpose is Murphy's button. During the last war, as before mentioned, Fraser and Dott elaborated a method of securing end-to-end continuity of bowel by the device of temporary occlusion, without securing much invagination, no form of internal splint being used. The method above described may therefore claim to follow the principles of the Fraser and Dott operation and to achieve the greater degree of invagination secured by Maunsell.

### Conclusions

This operation is submitted in the belief that it is: (a) comparatively aseptic if properly performed; (b) rapid and efficient in suitable cases; (c) a method providing free anastomosis with little risk of leakage or necrosis; (d) isoperistaltic in action and has, in the cases in which it has been adopted, resulted in natural bowel action and only slight post-operative distension and pain; (e) a suitable method of union in cases of excision of the caecum or part of the large bowel.

Although opportunity has not hitherto occurred of adopting this method in cases of injury to the small intestine or to gunshot wounds where the degree of injury necessitates excision, it would appear to be particularly suitable.

The following are condensed notes on three cases, all of which are concerned with operations upon the large bowel.

### Notes on Three Cases

**Case 1.**—A woman aged 49. Referred by Dr. Milligan, suffering from carcinoma of the caecum. Very thin and anaemic. Large palpable mass in right iliac fossa. Operation Jan. 14, 1942. A hemicolectomy was performed, and junction of ileum to transverse colon effected by above method. For five days post-operative progress was good and the bowels opened naturally on the third day. On the second day there were signs of inflammation at the site of saline injection. She died from septicaemia on Jan. 24. The post-mortem report stated that the abdominal cavity was clean and the junction was good and patent, with no sign of leakage. There were septic infarcts in the lungs, and abscesses were present in the abdominal wound and behind the posterior peritoneal suture line. The site of the primary septic focus was undetermined, but it was gratifying to find the abdomen clean.

**Case 2.**—A woman aged 36. Referred by Dr. Shields. Acute intestinal obstruction due to carcinoma of transverse colon. A transverse colostomy was performed by the R.S.O. (Mr. Adlington). This successfully relieved the obstruction. Later (May 7, 1941), as the patient was unhappy about her colostomy, I performed the operation described, through a vertical incision outside the left rectus. Having excised the growth, temporary occlusion and approximation of the two ends of bowel were effected through this opening. Invagination and recanalization were carried out through the old colostomy opening. As a safety measure the colostomy was left open and a T-shaped drainage tube temporarily inserted to ensure the patency of the anastomosis and relieve flatulence. After the return of normal bowel movement the tube was removed and the opening closed by operation. She was discharged completely healed and with normal bowel movements.

**Case 3.**—A man aged 43. Referred by Dr. Milligan with tentative diagnosis of Crohn's disease. Operation Sept. 9, 1942. Resection of caecum and ascending colon performed. Anastomosis was effected as above. Growth proved to be an adenocarcinoma of caecum. Subsequent progress was very satisfactory. Natural bowel movements returned and flatus was freely passed on the fourth day without aperients. Radiological report by Dr. Miller on barium meal administered on Oct. 2: "Barium passed rapidly through intestinal tract. After four hours no barium in small bowel. After 24 hours all meal was evacuated." The patient was discharged on Oct. 28 with normal bowel action, and is now (May, 1944) quite fit and well. He has carried on his work on the railway for the past year.

My thanks are due to Miss F. M. Lambert, A.R.C.A., for the excellence of the drawings illustrating the operation, and to my son, Mr. T. B. Hogarth, for assistance in the preparation of this article.

## METHOD OF LOCATING A MOBILE RENAL CALCULUS AT OPERATION

BY

B. W. GOLDSTONE, B.Sc., M.B.Lond., F.R.C.S.Ed.

Major, R.A.M.C.

The case described below presents several interesting features which will be apparent; but its outstanding feature is that the stone had considerable freedom of movement within the bounds of the kidney. According to its location different syndromes were produced so as to cause, at first, some difficulty in the diagnosis. Because of its changing position, it might have been difficult to locate at operation; a special technique was therefore devised.

When a small stone is known to be somewhere "in the substance of the kidney" (i.e., somewhere in the calic system) several methods have been available for its extraction. In the past the kidney has been split from pole to pole in the hunt for vagrant stones. The method has been used very often; death from post-operative haemorrhage is not uncommon as a sequel. Twelve years ago two patients lay in adjacent beds after a kidney-splitting operation. One died of post-operative haemorrhage. The other announced that he would have a haemorrhage and die; his statement proved correct. The frequency of this complication is not surprising when one considers the immense blood supply of the kidney. One-third of the heart's output goes into the renal arteries (Pickering, 1943). By another estimate, all the blood in the body—about 10 pints—passes through the kidney vessels in three or four minutes (Wright, 1941).

As an alternative to large-scale kidney-splitting, the kidney may be carefully palpated in an endeavour to feel the stone before cutting. This is rarely successful, and then only with a large stone. If this fails it is recommended to "needle" the kidney. The needle can sometimes be felt to grate upon the stone. Even if one is lucky enough to impinge on the stone it may, if free in the calix, be pushed quietly along without yielding any grating sensation. The kidney may also be radiographed on the operating table after delivery through the wound. A cassette is wrapped in a sterile towel and the kidney laid upon it for a picture to be taken. The method needs a long flexible renal pedicle, which is often not available. In that event the cassette cannot be placed close up to or flat against the kidney, and the shadow of that viscus is therefore grossly distorted in the photograph: kidney and stone appear in the picture, but it is impossible to say exactly where the stone lies in relation to the calic system.

The method under description involves none of these disadvantages. It entails insertion of several straight needles into the kidney, which is then radiographed. The needle nearest to the calculus guides the incision. The method is obviously "inspired" by the modern technique for nailing the fractured neck of the femur (Farquharson, 1939).

### Case Record

A sailor, already diagnosed as a case of appendicitis, was admitted to a tropical military hospital. At a previous port he had been in a civilian hospital, where appendicitis had also been diagnosed; no operation had been undertaken, as the condition resolved quickly.

Examination showed a heavily built man of 38. He looked quite well and comfortable, and he was aphyrexial. He said that he had been subject to attacks of colicky pain in the upper abdomen for several years. The pain was always worse in the right hypochondrium, where it usually began; it then radiated horizontally to the back. He suffered from indigestion, but there had never been jaundice. During the attacks of pain he had no frequency of micturition. There were no physical signs except the Murphy-Moynihan sign (inhibition of expiration on deep pressure over the gall-bladder). Gall-stones were provisionally diagnosed; cholecystography was ordered. This showed a normal gall-bladder shadow. But behind it was a shadow that could have been due to a calculus in the renal pelvis. Intravenous pyelography showed that this shadow was within the shadow of the renal pelvis: hydronephrosis was present as judged by the clubbed calices. The urine contained no pus cells. Under cystoscopy with intravenous injection of methylene blue the dye appeared from the left ureter in 3½ minutes. There was no efflux from the right ureter. Evidently the stone was completely blocking the right uretero-pelvic junction.

The next day he had a brisk rigor. Temperature rose to 105° and he looked very ill. The urine was still free from bacteria and pus cells. Malaria is rife here, and although the parasite was not found in his blood, a white count showed 14% monocytes. This was consistent with malaria, and he was accordingly given a full course of mepacrine. In a few days the fever subsided. Right retrograde pyelography was then undertaken. This showed that the stone was no longer wedged into the uretero-pelvic junction; it was lying in the lowest calix. Urine draining from the right ureteric catheter was loaded with pus and *B. coli*.

It was now evident that the febrile attack had been due not to malaria but to infection of the hydronephrosis; no pus had then appeared in the urine because the pelvis had been blocked by the stone. A course of sulphathiazole was given to control infection of the right kidney. His blood urea was then 85 mg. per 100 c.cm. This was surprising; I would have expected the sound kidney to control his blood urea. B.P. 120/80. After a further course of sulphathiazole his blood urea had sunk to 45 mg. per 100 c.cm., though *B. coli* was still present on urine culture.

This was judged to be the optimum time for operation. Preliminary radiographs showed that the stone was still in the lowest calix. Under general anaesthesia the kidney was exposed by Mayo's incision. Only its lowest pole was visible, projecting beyond the last rib. This rib was therefore removed. Even then the kidney was delivered with difficulty. The pedicle was short and could not be properly seen.

With such a mobile stone it was quite probable that shift could have occurred during delivery. Three round-bodied straight needles were pushed into Brod's line, blunt end first. They covered an area which probably contained the stone, and were pushed in so that they converged radially upon the centre of the pelvis. An x-ray cassette was enclosed in a sterile towel, but it was impossible to obtain proper apposition of cassette and kidney. The picture taken was expected to show much distortion on the kidney shadow; it was rapidly developed. The expected distortion was revealed; but it was immaterial, because the stone was clearly seen to be close to the highest needle. It is unnecessary to set a line of needles at right angles to the first line; the stone must be somewhere on a line radiating from the chosen spot on Brod's line to the centre of the kidney pelvis.

A very small incision was made along Brod's line immediately above this needle. The incision was deepened at once in the direction of the pelvis. This exposed the stone, which was seized and removed. It had the spiked appearance of an oxalate calculus. The kidney was sutured with fine gut on an eyeless needle over a free muscle graft. Recovery was rapid and uneventful except for post-operative pyrexia and some inevitable small-scale haematuria; both cleared up rapidly.

### Discussion

It is well known that a renal stone may produce different syndromes according to its locality. In this case there was an opportunity to observe four clear-cut syndromes produced by a single mobile stone. Thus it could give at different times a good imitation of four different diseases according to the stage in which the case was seen by different surgeons.

1. Symptom-free but with pyuria (at this stage the patient might easily have fallen a victim to the pernicious diagnosis of "pyelitis"). The stone was snugly lodged in the calix.

2. The stone emerged, to impact suddenly in the uretero-pelvic junction. This caused upper abdominal pain, principally right-sided. Owing to complete blockage of the right renal outflow there were no urinary changes. Thus the renal origin of the pain was missed and the patient was believed by a surgeon to be suffering from the "first-stage" pain of appendicular colic.

3. Impaction persisted, but the pelvic musculature tired of its peristaltic efforts. The pelvis dilated into a hydronephrosis. This caused a dull pain in the back. The sequence of right epigastric colicky pain which finally radiated to the back, accompanied by a story of chronic indigestion, suggested the diagnosis of gall-stones. The Murphy-Moynihan sign was easily, though wrongly, elicited and this helped to round off the diagnostic picture.

4. The hydronephrosis became infected. The temperature rose rapidly and the clinical appearance was strongly suggestive. Again the ever-present false scent was provided by a mononuclear count. Antimalarial treatment for a few days the temperature was normal. But because of dislodgment of the stone, all the pus was drained.

There remains for discussion the question of the capacity of the kidney alone is quite capable of keeping normal limits. It follows that this patient's case somehow have been affected by the stone in the right kidney. This is a remarkably difficult to understand in terms of a

secretion. It is true that several cases have been reported in which unilateral infected nephrolithiasis has caused a general rise of blood pressure. It probably acts by effecting a chemical constriction of all arterioles, including efferent glomerular arterioles but excluding afferent arterioles (Pickering, 1943). Thus the glomerular pressure in the sound kidney should rise and, if anything, more urea should be excreted, because urea is probably secreted by a process of mechanical glomerular filtration and not by tubular secretion. In this patient another unknown mechanism must have been involved, because there was no general rise of blood pressure and there was lessened urea excretion as judged by his raised blood urea.

### Summary

A mobile renal calculus, according to its different positions, so changed the clinical picture that the following conditions were successively diagnosed: appendicitis, gall-stones, renal calculus, malaria.

During the phase of infected early hydronephrosis the opposite healthy kidney was affected; no explanation has been found for this.

A method is described for accurately locating the stone at operation. Thus only a small incision in the renal substance was needed; this minimized the risk of gross post-operative haemorrhage.

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## Medical Memoranda

### Fulminating Diphtheria in a War Nursery

A case of fulminating diphtheria in a young child these days must be unusual; when that child has been immunized it becomes something of a rarity. It is therefore hoped that a study of the following cases will prove of interest, and that a few suggestions will help those practitioners who have charge of war nurseries to prevent a similar occurrence.

#### CASE I

P. L., a boy aged 4, was seen at midnight on March 5, 1944. He had been perfectly well in the morning, but was put to bed after lunch because there seemed to be difficulty in swallowing. He resented being put to bed. Examination of the throat showed nothing abnormal except enlarged tonsils, which were reddened, and a slight increase in temperature. When seen the child was not unduly toxic. Temperature 103°; pulse 170; tongue furred; tonsils grossly enlarged, red, with small whitish patches; some nasal discharge. The cervical glands were enlarged and gave the "bull-neck" appearance. On auscultation heart sounds were quite strong; no abnormal sounds in the chest. A rigor occurred after examination. A clinical diagnosis of diphtheria was made and a throat swab taken. Anti-diphtheritic serum (4,000 units) was given, and sulphanilamide in adequate doses to combat haemolytic streptococci. Early the following morning (March 6) the child's temperature was 101°, the pulse 180, and he was toxic. There was obvious membrane on both tonsils, although the breathing was not obstructed. On auscultation heart sounds appeared weaker than on the previous occasion. A further 2,000 units of A.D. serum were given and arrangements made to send the child to an isolation hospital.

On admission 60,000 units of A.D. serum were given and tracheotomy was performed as a last resource; but the patient died.

**Throat Swab.**—(1) Morphological diphtheria bacilli present. (2) *C. diphtheriae* present. (3) *C. diphtheriae* present, gravis type. No bacteriological evidence of Vincent's angina or haemolytic streptococci.

#### CASE II

A. L., twin sister of Case I, complained of a sore throat at 10 a.m. on March 6. She seemed very well; temperature 99°; pulse 130; tonsils reddened only; tongue not furred. At 2.30 p.m. the same day a greyish-yellow patch had appeared upon both tonsils, although the general condition of the patient seemed good. A.D. serum was given, and the child is recovering after being removed with her brother to an isolation hospital. Throat swab—third report: *C. diphtheriae*, gravis type, present.

### INVESTIGATIONS AND PROPHYLAXIS

There were 39 children and about 10 staff at the nursery. The problem was to find the carrier and check further outbreaks. The procedure in this nursery is to immunize each batch of children as they arrive, at the conclusion of their medical examination. A.P.T. is used; dosage 0.3 c.cm. first on 0.5 c.cm. second injection. Practically all the children had been immunized except a batch of about six to eight

who were waiting for their second injection. Some of the staff had not availed themselves of immunization. One child (J. W.) had been known to have had diphtheria previously, and was admitted to the nursery in Sept., 1943.

Nasal and throat swabs both of children and of staff were taken on March 7, 1944, with the following results:

		Nasal Swabs		Throat Swabs	
		1st Report	2nd Report	1st Report	2nd Report
Children	..	All neg.	J. W. pos.; rest neg.	All neg.	All neg.
Staff	..	"	All neg.	"	"

J. W. therefore was the carrier. He was immediately isolated. The third report showed *C. diphtheriae* present, gravis type; nasal swab. This child was immediately removed to an isolation hospital. Two of the staff and one child were given prophylactic doses of 2,000 units of A.D. serum. There have been no further cases.

### SUMMARY AND COMMENT

A case of fulminating diphtheria occurred at a war nursery; the first patient, who had been immunized, succumbed. His twin sister also contracted the disease, but is recovering; she also had been immunized.

Opportunity was given to observe the development and rapid extension of the membrane.

The carrier was found by means of a nasal swab only. The child had had diphtheria, but had recovered and was admitted to an unsuspecting nursery. It had been in daily contact with 39 children for about six months, but no outbreak occurred until March, 1944.

Investigations showed that the child who died was immunized in Devon in 1941: Aug. 12, 0.5 c.cm. A.P.T.; Sept. 10, 0.1 c.cm. A.P.T.; Oct. 10, third dose, but no stated amount. *Doubt, however, is thrown upon whether A.P.T. was the material used*

It is suggested: (1) Before proceeding to a war nursery (or to school or similar places) children should be immunized. (2) Those who have been immunized two or three years previously should be re-immunized before entry. (3) Where this is not possible, children should be immunized on their first day of entry. (4) Records should be kept of the name and age of the child, the material used, dosage, where immunization was carried out, and, if possible, the name of maker of material used. (5) Children should have throat and nasal swabs taken for K.L.B.; this will show carriers. (6) Any child known to have had diphtheria should be isolated until the results of the throat and nasal swabs are known. This is not foolproof, as a swab which was negative may after a cold be positive. (7) Where there is doubt that the condition may be either a diphtheritic throat or a haemolytic streptococcal throat, isolate immediately and give A.D. serum without waiting for the result of the swab.

My thanks are due to the medical superintendent of Lincoln Isolation Hospital and, for the bacteriological data, to the E.M.S. Pathological Laboratory, Lincoln.

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### Adenocarcinoma of the Small Intestine in Father and Daughter

Carcinoma of the small intestine is comparatively rare, accounting for about 3% of all intestinal cancers (Ewing, 1940). At the Mayo Clinic only 76 cases of small-gut carcinoma had been recorded up to 1936. Furthermore, intussusception after the first or second year of life is also rare, and Choyce (1932) states that not more than 12% of all cases of intussusception occur in patients over 10 years. Accordingly the following two cases of intussusception of the small gut caused by adenocarcinoma and occurring in father and daughter appear to warrant publication.

#### CASE REPORTS

**Case 1.**—A coppersmith aged 43 was admitted to Llandough Hospital, Cardiff, on June 4, 1940. He gave a history of attacks of abdominal pain for 12 years, relieved by vomiting and the passage of flatus, and on a few occasions had passed some blood in the motions following the attacks. A barium meal showed a normal stomach and the barium enema a distended colon. The occult blood was positive. While in hospital he continued to have attacks of abdominal pain, and when seen in a severe attack on June 23 he presented the features of a small-gut obstruction. Laparotomy, performed by Mr. W. D. Lovelock-Jones, revealed a jejuno-jejunal intussusception, which was easily reduced. Examination then showed that the apex of the intussusception had been occupied by a tumour, and accordingly about 6 in. of gut containing the tumour was excised and continuity re-established by end-to-end anastomosis. Convalescence was uneventful, and he has remained well since.

**Pathological Report.**—"The tumour has a structure superficially resembling an adenomatous polyp but in many areas showing disorderliness suggestive of adenocarcinomatous transformation. The epithelial cells in many parts are distinctly hyperchromatic and have an anaplastic appearance. In some areas the demarcation between epithelial cells and the supporting connective-tissue framework is disorderly, and there is in parts a heavy infiltration of inflammatory cells. On the whole the appearance is suggestive of a low degree of malignancy."

**Case 2.**—A girl aged 16, a shop-assistant and daughter of the above, was admitted to Llandough Hospital on Feb. 3, 1943, with a history of abdominal pain and vomiting for about 24 hours, the bowel action being normal. On examination the temperature was 100° and the pulse rate 126 a minute. There was marked tenderness around the umbilicus and in the right iliac fossa, but no mass was palpable. Immediate laparotomy was performed (D. B. E. F.); this revealed an ileo-ileal intussusception. Reduction by the usual technique was attempted, but the intussusceptum then split for about 4 in. In view of this, enterectomy was performed and approximately 14 in. of gut was removed and continuity re-established by end-to-end anastomosis. Post-operative progress was satisfactory, and a year later she is symptomless.

**Pathological Report.**—"The specimen consists of a resected portion of small intestine 14 in. in length. Ten inches of it, measuring from one end, is deeply congested and shows a condition approaching gangrene. The remaining 4 in. is only slightly engorged and thickened. At the junction of the two parts there is a pedunculated polyp growing from the wall into the lumen. It is about 1 in. in diameter and roughly spherical, but has an uneven nodular surface and is attached by a thick pedicle. Its surface is irregularly blood-stained. In section the polyp does not show the usual clear demarcation between the glandular part which covers the surface and the fibrous part which forms the pedicle, and an appearance is produced as if there was some degree of invasion of the deeper tissues by the glandular elements. Histologically, the appearance is that of an adenocarcinoma. There is a disorderliness in the arrangement of the gland structures which is not seen in the simple adenoma of the intestine. Gland tubules are irregularly scattered through the connective tissues in the deeper layers and even in the pedicle, and the gland cells show a considerable degree of anaplasia."

It was noted that both patients presented a diffuse brownish pigmentation of the lips and face. On investigating the family history it transpired that the father's brother showed similar pigmentation, and he had been a patient in this hospital in 1935 complaining of attacks of abdominal pain, with the passage of blood and mucus per rectum. A diagnosis of mucous colitis had been made. His health is now satisfactory.

#### COMMENTARY

The feature of interest is the occurrence of adenocarcinoma of the small gut in father and daughter, causing intussusception. As regards the prognosis of small-gut carcinoma, it is interesting to note that of 31 cases treated at the Mayo Clinic (Rankin and Mayo, 1930) the average duration of life after operation was one year. Harnes and Harrison (1935) record two cases of primary carcinoma of the small intestine. Both patients died within three months of the operation, the first with progressive debility and anaemia, the second with metastases in the chest. Mayo and Nettrout (1937) state that the prognosis of carcinoma of the small intestine is unsatisfactory, regardless of whether or not the growth can be removed.

I wish to express my thanks to Prof. J. B. Duguid for the pathological reports, and to Mr. D. J. Harnes for his encouragement to report these cases.

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### Congenital Deformity of the Ribs

Although clinical interest is mainly concerned with supernumerary ribs in the cervical region, a recent case of deformity of the lower ribs seems unusual enough to be worthy of record.

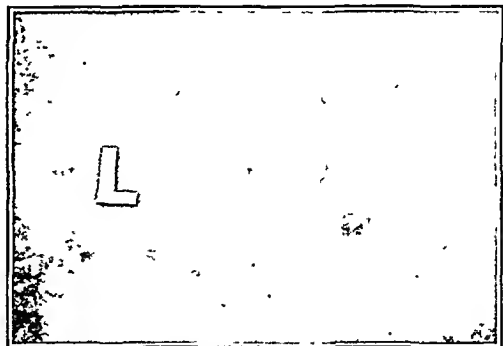
#### CASE REPORT

A young woman aged 26 was said to have swallowed a pin, and during radiological examination of the alimentary tract a curious abnormality of the eleventh and twelfth ribs on the right-side was discovered. The radiograph of this region (see Fig.) shows the first part of the right eleventh rib curving almost vertically downwards to the level of the intervertebral disk between the eleventh and twelfth thoracic vertebrae, thus forming a kind of neck. The main shaft of the bone then turns away to pursue a normal outward and downward course, but at a considerably lower level than the corresponding rib on the left. At the angle between "neck" and shaft the bone is somewhat thickened, particularly below, and the inferior surface presents a straight facet which articulates with a similar facet forming the top of a short stout process arising from the upper border of the twelfth rib adjacent to the head of the bone.

All other ribs were normal in shape and number; there were no other bony processes, and, although the patient had a scoliosis, radiographs of the spine from the sixth cervical vertebra to the sacrum showed no hemivertebrae.

#### COMMENT

Congenital deformities are described by Brailsford (1935) as bifurcation of the anterior extremity, or fusion with an adjacent rib or ribs just beyond the tubercles, the latter deformity being associated with multiple hemivertebrae of the dorsal spine and large gaps in the bony framework of the thorax. Under the heading of developmental abnormalities, Brailsford also refers to the bands of bone attached to the ribs in myositis ossificans progressiva, and to osteomata seen in cases of multiple exostoses.



Radiograph showing congenital deformity of the eleventh and twelfth ribs on the right side

In the case reported it was at first thought that the buttress of bone arising from the twelfth rib might be an osteoma or an ossification in the soft tissues. However, the original radiographs showed no other bony processes, and when, in view of a possible myositis ossificans, the thorax was x-rayed again twelve months later no further changes were seen. Moreover, the condition of the eleventh rib is clearly an alteration of shape, presumably developed before ossification took place, and therefore being a true congenital deformity. It does not, however, conform to Brailsford's description, since the ribs are not actually fused and there are no hemivertebrae, and I can offer no suggestion to explain such an unusual development.

Maryport, Cumberland

J. D. H. BIRD, F.R.C.S.

#### REFERENCE

Brailsford, J. F. (1935). *The Radiology of Bones and Joints*, p. 391, London.

### Rupture of Atheromatous Abdominal Aorta

The rarity of complete rupture of an atheromatous plaque combined with the clinical picture of an acute abdominal forms a syndrome interesting enough to merit publication.

A man aged 67 was admitted to hospital with acute abdominal pain; the pain was severe and had come on suddenly at 11 o'clock the previous evening, about half an hour after a meal, since when it had persisted. There was no associated nausea, constipation, or other symptom, and it was located mainly in the right side of the abdomen. On admission his temperature was 97° and his pulse 88. The abdomen was tender and rigid, both in the right hypochondrium and in the right loin, which also contained an indefinite swelling. In the absence of any more definite signs, a non-committal diagnosis of an intra-abdominal catastrophe was made.

At operation a small amount of slightly blood-stained fluid was found in the peritoneum: all the abdominal viscera were normal, but an obvious retroperitoneal haemorrhage was found, mainly on the right side spreading downwards. Pulsation was present in both common iliac arteries, and it was decided that the haemorrhage probably arose from the rupture of an aneurysm of the right renal artery; the abdomen was therefore closed. The patient collapsed soon afterwards and died.

Post-mortem examination revealed widespread severe atheroma of the abdominal aorta, which was thin and friable and contained ulcerated and partly calcified patches. Just above the bifurcation of the aorta one of these atheromatous ulcers had ruptured and produced a large mass of retroperitoneal blood-clot, chiefly on the right side. About a pint of fluid blood was found free in the peritoneal cavity.

My thanks are due to Mr. V. Glendinning for permission to publish this case and to Dr. D. M. Vaux for performing the post-mortem examination.

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## Reviews

### INFECTIOUS FEVERS

*Clinical Practice in Infectious Diseases. For Students, Practitioners, and Medical Officers.* By E. H. R. Harries, M.D., F.R.C.P., D.P.H., and M. Mitman, M.D., M.R.C.P., D.P.H., D.M.R.E. Second edition. (Pp. 570. 22s. 6d., plus 6d. postage.) Edinburgh: E. and S. Livingstone. 1944.

The second edition of this book is a great improvement on its predecessor. It is larger than the first edition by more than 100 pages, contains a full list of references, and deals not only with the clinical and administrative aspect of fevers but with their history and their epidemiology, bacteriology, and immunology. It may now be fairly described as a textbook on fevers and even a work of reference. It is, moreover, well up to date. The literature of the past four or five years is dealt with in great detail. The authors make little contribution of original work, but show much skill in the assessment of the work of others. The chapter on chemotherapy is a model of précis writing, mostly of the Medical Research Council's War Memo. No. 10. It would be difficult, however, to find anywhere a more concise and yet satisfying account of present knowledge on this subject.

Cross-infection in hospitals is particularly well done, and a good account is given of the newer work on bacterial contamination of the air by dust and of the measures suggested for its control. The new work on meningococcal infections, on the pathogenesis of poliomyelitis, and on infective and other forms of jaundice is clearly summarized. Lobar pneumonia and anthrax have not yet found a place in the book. A good account is given of epidemic typhus. As in the first edition, one of the best chapters is that on haemolytic streptococcal fevers. In the way of minor criticism might be mentioned the retention of the intradermal test for hypersensitivity to serum, although dermal and general sensitivity are recognized to be different; the low estimate of incidence of post-vaccinal encephalitis (1 per million); and the too casual dismissal of the aerial theory of convection of smallpox.

This book may now have a greater appeal to the senior reader than to the student. The practitioner, the general physician, and the health officer will find in it a very up-to-date and valuable presentation of modern ideas on fevers.

### DERMATOLOGY AND SYPHILOLOGY

*The 1943 Year Book of Dermatology and Syphilology.* Edited by Marion B. Sulzberger, M.D., and Rudolf L. Baer, M.D. (Pp. 584; illustrated. 53.00 post paid or 19s.) Chicago: The Year Book Publishers; London: H. K. Lewis and Co.

The American Year Book of Dermatology has now established itself, and its appearance is welcomed by all those who are interested in the manifold aspects and ramifications of this subject. For eleven years it was under the joint editorship of Dr. Fred Wise and Dr. Sulzberger, but Dr. Wise has now retired and is succeeded by Dr. R. L. Baer, and the introduction to the current volume contains an appreciation of Dr. Wise's services and talents by the new senior editor.

The yearbook maintains the characteristics which have always been associated with it of a comprehensive review of the chief advances in dermatology during the previous twelve months, and is well illustrated. Much is done by the editors or the relief of boredom in their readers. Among other things here is a questionnaire on the cover consisting of twenty searching questions which may well be addressed to those who consider themselves dermatologists, for testing the modernity of their knowledge of the subject. For example, "What are the three commonest disabling complications of 'athlete's foot,' and what is an effective therapy for each?" Again, "What seven skin conditions may be caused by exposure to cold?" It need hardly be added that answers to all the questions will be found in the yearbook itself, which becomes, therefore, a sort of dermatological catechism.

The special problems resulting from the present world war receive adequate consideration. It is to be noted that the tannic acid treatment of burns, which was commended in the last volume, is now recognized as being "out" officially, but we fancy that the editors themselves still have a certain hankering after it. The editors have always begun their volume with an essay on some topic of special interest to the general

practitioner, and this year there is a long chapter on skin tests and their application; it is very comprehensive and well worth study. While emphasizing the value of patch tests in the management of allergic dermatoses they do not hesitate to point out the difficulties and limitations of this method. Included in this chapter is a list of the various bodies in relation to which useful information may be obtained by patch testing. The large number of these substances shows how important the subject has become in dermatology.

### SAVILL'S MEDICINE

*Savill's System of Clinical Medicine.* Edited by E. C. Warner, M.D., F.R.C.P. Twelfth edition. (Pp. 1,168; illustrated. 30s.) London: Edward Arnold. 1944.

Dr. T. D. Savill first published his classical *System* about 36 years ago. It is distinguished by approaching the study of medicine from the symptoms and tracing from these effects to the morbid cause. The sequence of the argument is that which should be adopted in the examination of a patient. He died in 1910, and his widow, Dr. Agnes Savill, has brought out the successive revisions until this one, for which Dr. Warner has the chief responsibility, though he acknowledges her helping hand in the background. The difficulties of producing in these days a new edition of a work to which many authors contribute may well be imagined. It is almost impossible to obtain the co-operation of contributors serving abroad, and during a war medicine tends to produce in rapid succession new discoveries and aspects which must be dealt with. The editor has overcome these difficulties to a remarkable degree, and those who have come to value "Savill" in the past will find this edition in no way inferior to its predecessors.

The discussion of psychological disorders has now been taken out of the section on diseases of the nervous system. The classification of diseases of the blood has been revised to bring it more closely into line with the Savill tradition and to incorporate the many advances which haematology has made in recent years. Dr. Geoffrey Evans explains the mechanism of hypertension in terms of current opinion as an increase in peripheral resistance determined by narrowing of the very small arteries and arterioles, and caused in its turn by the secretion of a pressor substance from the kidney as a reaction to reduction of intrarenal pulse pressure. Accordingly the section on nephritis, especially its chronic form, has had to be largely rewritten. The section on diseases of the thyroid has also been massively revised in accordance with modern teaching. New tables and figures have been added, more notably those which indicate the uses of the sulphonamide preparations and illustrate the x-ray findings in pyorrhoea and apical abscess. Entirely new subject-matter includes the carotid sinus, effort syndrome, mass radiography of the chest, the Rh factor, immersion foot, psychopathic personality, occupational therapy, and many other topics which have recently become of first-rate importance. The index is not really full enough for a reference book of this complexity.

### Notes on Books

*Synopsis of Materia Medica, Toxicology, and Pharmacology*, by Dr. F. R. DAVISON, is published at 32s. 6d. by Henry Kimpton. Several authors have compiled synopses of this kind, but few of them have been works to recommend. This synopsis, now in its third edition, is an exception, for it can be recommended warmly as a useful work of reference for medical men. Like most American books it is well arranged and well printed. Drugs are classified according to their main site of action, whether on the nervous system or on muscle. The chemical composition of each substance is given, usually also its structural formula, its solubility, its pharmacological action, its toxic effects, and its therapeutic uses. The book contains forty illustrations mostly demonstrating the pharmacological action. Each chapter ends with a list of original papers and books which should be sufficient to enable the reader to follow any line as far as he wishes to go. Books of this kind have a period at which they are at their best. For the first two or three editions they improve as the author takes note of his omissions. Later they deteriorate as the basic matter becomes out of date. This book is now in its best period. The author has successfully coped with the difficulty of becoming acquainted with the great advances in many fields. Later he may not be able to do so, unless as few authors do, he writes the book afresh. It is true that most of the literature referred to is American, but it must be admitted that American literature now covers a very wide field.



## Preparations and Appliances

### A MAINS-OPERATED SINGLE-CELL PHOTOELECTRIC COLORIMETER

Mr. C J O R MORRIS, Ph D, writes from the Medical Unit and the Clinical Laboratory, the London Hospital

Colorimetric methods of analysis have always been used extensively in clinical biochemistry, largely owing to their convenience and rapidity. Such methods have, however, been considered less accurate than volumetric methods owing to the subjective error of colour matching. The advent of photoelectric methods of colour measurement has now removed this objection since it is possible to measure colour intensity with an accuracy of  $\pm 0.5\%$ , compared with about  $\pm 2\%$  for the best visual measurements. Even the last figure is rarely achieved in general laboratory practice, and, in addition the photoelectric method completely obviates the subjective factor. It is thus evident that the photoelectric colorimeter is a very valuable tool for the clinical biochemist, as it enables him to put his colorimetric analyses on a standard of accuracy comparable with volumetric methods while retaining the advantage of rapidity for multiple analyses associated with colorimetry.

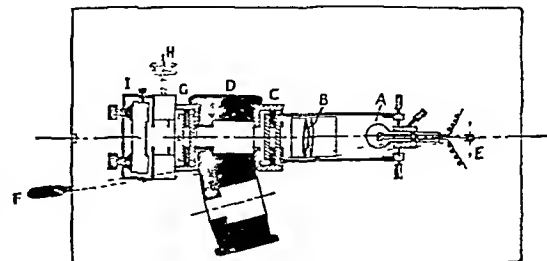
The design of photoelectric colorimeters has been studied very extensively, and two types of instrument have been evolved. The first of these is the twin photocell type in which two photocells connected in opposition are illuminated simultaneously, and the "unbalance" current caused by interposing the coloured solution to be measured in one light path is compensated by optical or electrical means a galvanometer being used as null point indicator. The amount of compensation necessary is a measure of the light transmission of the solution. Certain examples of this class have the advantage that variations in light intensity of the source are automatically compensated, since they affect both photocells equally. This is however, not necessarily true for all such instruments, since Möller (1939) has pointed out that certain circuits have the doubtful advantage of only giving complete compensation when the solution to be measured has 100% light transmission. Also if the two photocells have unequal spectral responses a false balance point may be found.

The second type of instrument employs only one photocell, the current produced on illumination being measured directly by a sensitive galvanometer. The principle of this instrument assumes that the galvanometer deflection is proportional to the intensity of the light incident on the photocell. Several workers have demonstrated that this is readily achieved if (a) the level of illumination is low, and (b) the galvanometer resistance is low compared with the photocell resistance. The chief advantages of this type are simplicity of design and rapidity of operation. It is notable that what are probably the most accurate measurements of colour intensity ever made—those of Hogness and his co-workers on haem pigments—were made with a single-cell instrument. The chief disadvantage is that illumination of constant intensity is necessary during the measurement. In the past this has involved the use of low wattage lamps and storage batteries. Recent developments in the design of constant voltage transformers have, however, made it possible to use A.C. mains as the source of power with a constancy of illumination superior to that obtained with storage batteries. The chief criticism of this class of instrument is thus no longer valid. The extremely high sensitivity readily available with the single-cell instrument makes it possible to use very selective light filters, and thus to isolate a narrow spectral band, a property very desirable for certain colorimetric estimations.

The design of either class of instrument involves close attention to both optical and electrical principles, and the instrument described below is presented not as anything fundamentally new, but as an example of the application of these principles to the design of a practical instrument. It has been developed from four years' experience of the essentials necessary in a photoelectric colorimeter for routine biochemistry, and can be readily handled by a relatively unskilled operator.

The principle of the instrument is illustrated in the figure. A is a 6-volt 6 watt tungsten filament lamp (automobile side lamp bulb), which can be run either from a large-capacity storage battery or from A.C. mains with a constant voltage transformer. The lamp can be centred accurately by the grub screws shown. The electrical leads are soldered directly to the lamp, as the use of a lampholder is unsatisfactory. B is the optical condenser, which can be adjusted to give a parallel light beam by a radial lever (not shown). C is the first filter holder with provisions for two light filters. This makes it possible to interpose a filter between light source and solution if necessary. A 2 mm thick Chance colour infra-red filter is mounted permanently in C. D is the cell carriage. This is provided with a 1-cm thick optical stop which travels with it. The provision of a

thick stop immediately adjacent to the optical cell is an important feature of the design, as by this means reflection from the liquid meniscus and from the sides of the cell is obviated. The carriage is mounted on an arm pivoted at E and extended to form a handle at F. The carriage is traversed by means of F. When F is in the middle of its travel the light beam is interrupted and the filters can be changed without risk of excessive illumination of the photocell.



The carriage will accommodate optical cells of 5, 10, or 20 mm solution thickness. G is the second filter holder with provision for two filters. Ilford spectrum filters which cover the visible region in nine steps, are used. H is an iris diaphragm operated by a worm drive to give fine adjustment. I is the photocell (2 cm E.E.L. type) mounted in an eccentric housing for adjustment. It is connected directly to the galvanometer. This is a Tinsley enclosed scale type SS 6/45 sensitivity 800 mm per microamp, coil resistance 150 ohms. The ratio of photocell resistance (approximately 20,000 ohms) to galvanometer resistance is adequate to ensure linearity over a wide range of illumination.

If A.C. mains are used as source of current, the lamp is operated through a type MT 183 230-6 v. Advance constant voltage transformer. It is advantageous to connect one primary terminal to one secondary terminal to minimize transformer drift. Where the highest degree of stability is required the MT 183 transformer can be fed from a type MT 161 230-230 v. Advance constant voltage transformer, the secondary of the MT 161 being connected directly to the primary of the MT 183. In this case the primary and secondary of the MT are not connected. With this combination a change of 8% in mains voltage produces a change of 0.2% in galvanometer deflection.

The instrument has also been used as a photoelectric spectrophotometer by removing the lamp housing and focusing on the exit slit of a monochromator. The latest instrument has provision for attachment to an optical bench for accurate alignment. The monochromator was illuminated by a 12 v. 60-watt tungsten filament lamp fed from A.C. mains through a type MT 140 230-230 v. Advance constant voltage transformer and an ordinary 230-12 v. transformer.

It is hoped in the near future to develop a modified form of the instrument for fluorescence measurements. A simplified form of the instrument is available for routine use. This differs from the description above in having only one filter holder and a permanently focused optical system.

Operation of the instrument is extremely simple. The lamp is switched on some 10 minutes before use to allow constant light intensity to be attained. With F in the central position, the galvanometer zero is set and the correct filter inserted. The control solution is now brought into the light path and the galvanometer deflection is adjusted to full scale (200 mm) by the iris diaphragm H. The carriage is traversed to bring the solution to be measured into the light path. The galvanometer deflection  $\times 0.5$  then gives directly the percentage light transmission of the solution. The extinction can then be calculated from the relation

$$E = 2 - \log_{10} T,$$

where E is the extinction and T is the percentage transmission, or may be read from a table. A calibration curve is made for a given estimation by determining the extinctions for solutions of known concentration. The galvanometer scale is read to the nearest half division, which is equivalent to an accuracy of  $\pm 0.25\%$  in transmission or 0.6% in extinction in the usual operating range. The linearity of measurements on solutions of salts like  $\text{KMnO}_4$  and  $\text{K}_2\text{Cr}_2\text{O}_7$ , which are known to obey the Beer-Lambert law, is within this error of measurement. One instrument has been in use in this laboratory almost daily for four years, and has shown no change in linearity of response during this time.

The instrument may be obtained from L. H. Miller, 57, Dulverton Road, New Eltham, S.E.9

#### REFERENCE

Müller, R. (1939) *Ind. Eng. Chem. (Anal. ed.)* 11, 1.

## BRITISH MEDICAL JOURNAL

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## AIR DISINFECTION

Air-borne infection is perhaps the largest unconquered field in preventive medicine. It is well recognized as being responsible for the spread of all the infectious fevers and almost all infections of the air passages, from the common cold and influenza to diphtheria and tuberculosis, but beyond improvements in general architecture and in ventilating systems no serious attempt has been made to diminish the spread of infection by this route. That the air of inhabited places does actually contain pathogenic bacteria has been repeatedly proved, and it should obviously not be beyond the wit of man to find some means of destroying or removing them. Regular readers of this *Journal* will be aware that only since the war began has any serious attempt been made to attack this problem in this country. The motive, so far as we were concerned, was the danger of widespread epidemics when large numbers of people were crowded in air-raid shelters, and the valuable work done by Andrewes and his colleagues at the National Institute for Medical Research, designed to discover an efficient method of air disinfection, was undertaken mainly with the object of averting this danger. That no such grave epidemic ever occurred, although large-scale measures to prevent it were never actually brought into operation, is a mystery as well as a fact for which we must all be thankful. Similar but more leisurely studies have been in progress in the U.S.A., not so much with any immediate wartime object but with the larger end in view that the atmosphere of inhabited places generally might be brought to a higher standard of bacteriological purity.

We print in our opening pages a review by Prof. Stuart Mudd of the progress which has been made in this direction. Those who are interested in the subject will find his survey of this wide field a valuable source of information, and any who are not familiar with what has been going on may perhaps be astonished at the scope of this work and the far-reaching effects it is calculated to achieve if the lessons learnt in laboratory experiment prove capable of application on a general scale. The magnitude of the problem is evident from the figures given of industrial disability due to infections of the air passages. The number of hours lost from this cause has increased in the U.S.A. since the war began, and is larger by far than those due to any other condition. There are two principal methods by which air may be disinfected. One is the employment of ultra-violet light, and in the practical application of this method workers in the U.S.A. have been the pioneers. It can be applied in several different ways, the light being either employed diffusely by burners reflecting upwards and disinfecting only the upper layers of air in a room, or directed in the form of curtains protecting a cubicle or other unit

from contamination from without. A third special example is the irradiation of the operation site employed by Hart for safeguarding wounds from atmospheric contamination. The diffuse method of ultra-violet irradiation has been shown, in many practical experiments in the U.S.A., to be capable of restricting the spread even of highly infectious diseases in schools and hospitals, and this method evidently has a valuable future.

The other available methods are chemical, and the earlier work on these originated mainly in this country. The work of Andrewes and his colleagues, of Twort and of Masterman, showed that various disinfectants were unexpectedly active in disinfecting air in the sense that the concentration required was smaller by far than that required, for instance, in water. One possible explanation of this was the aerosol theory of Trillat, who postulated that minute particles of fluid in the atmosphere attracted bacteria to themselves and so brought a high concentration of the disinfectant to bear upon them. This hypothesis led to attempts to produce mists or aerosols composed of fluid particles which persisted for as long as possible without evaporation. It was this consideration which led to the use of glycols as solvents for the disinfectants. Masterman, on the other hand, believed that when sodium hypochlorite was sprayed into the atmosphere its effect was exerted not by fluid particles but by hypochlorous acid gas. Whatever the mechanism of the effect, either sodium hypochlorite or a solution of hexyl resorcinol in propylene glycol was certainly capable of disinfecting air when sprayed to produce a concentration which was harmless to people breathing it. The main advance on these studies achieved in the U.S.A. is the demonstration that propylene glycol itself, used by English workers merely as a solvent, is highly bactericidal. This astonishing discovery has entirely altered the outlook for this method of treating air, since the use of glycols for this purpose is simplicity itself, and the vapour produced is entirely imperceptible and, so far as is known, quite harmless to human beings. Here again practical demonstration of the efficacy of the method in checking the spread of air-borne infection has been obtained in studies made in the U.S.A.

There are therefore, undoubtedly, methods by which the atmosphere of inhabited places can be disinfected so that the transmission of infection from person to person can be checked. It is one thing to prove the efficacy of such methods on an experimental scale and quite another to apply them wholesale. Indeed, it is difficult at present to predict how far such procedures will come into practical use. They have an obvious field in hospitals where communicable infection is known to exist, and their employment in such conditions may be regarded as a certainty. This in itself will be a great achievement, and has many special applications which those who have been concerned with ward epidemics and cross-infection of various kinds will readily be able to picture. To turn these discoveries to practical account in crowded buildings, in public vehicles, and in all those places where respiratory diseases may be acquired from one's neighbour is quite another problem. How far it will be possible or advisable to go in this direction will doubtless depend on local conditions, on season, and on the prevalence or otherwise

of epidemic infection. If there is any serious aspect of checking the spread of the common cold, influenza at all completely it may be asked whether the effect of this would be entirely desirable. One distinguished author<sup>1</sup> has recently suggested that occasional attacks of these infections are the price we pay for some degree of immunity to more serious diseases of the air passages and there is any basis for this idea it may perhaps be inadvisable to go beyond a certain point in protecting the community against air-borne infection.

## HIATUS HERNIA AND ANAEMIA

Three types of oesophageal hernia have been described: the congenitally short oesophagus, in which part of the stomach is permanently within the thorax; the para-oesophageal hernia, in which the lower end of the oesophagus remains below the diaphragm and a part of the stomach herniates past it into the thorax; and the gastro-oesophageal hernia, in which both oesophagus and stomach herniate through the diaphragm into the thorax. The para-oesophageal hernia is the most frequent, and by popular usage it has come to be known as hiatus hernia. Similar symptoms may occur in all three types of hernia; these symptoms may be of great variety, and they do not occur in all cases. A broadly dilated oesophageal hiatus, with a freely movable and distensible herniating portion of stomach and a normal pattern of gastric rugae, is far less likely to give rise to symptoms than a hernia which is persistent, fixed, and not distensible, and in which the pattern of the gastric rugae is abnormally prominent. The most typical symptom of hiatus hernia is a substernal pain like angina, which is worse after meals, aggravated by the horizontal position, and often accentuated by emotional stress. Heartburn and regurgitation occur, particularly in the supine position, and the patient may have to stand after meals and read or write with the book on top of the piano. Vomiting may occur without much nausea; haematemeses is not infrequent, but dysphagia is unusual. A symptom which Ohler and Ritvo<sup>2</sup> regard as pathognomonic of hiatus hernia is a feeling of fullness, pain, or distress in the epigastrium or under the tip of the xiphoid, coming on with the ingestion of the first few mouthfuls of food. It may be so severe as to necessitate the interruption of the meal. However, on leaving the table and walking about for a short time the patient experiences a sudden disappearance of the complaints, often with a feeling of something dropping or giving way in the region of the lower sternum. He is then able to return and finish the meal in entire comfort. The explanation is doubtless that the food first ingested fills the herniated portion of the stomach, with distortion, compression, and complete or partial obstruction of the oesophagus; when he gets up and moves about the herniated portion of the stomach empties or reduces itself, and the symptoms disappear.

Hiatus hernia commonly occurs in well-nourished individuals past middle age. Large abdominal tumours favour

herniation, and it is more common in females because of the effects of pregnancy, chronic constipation, and post-menopausal obesity. The symptoms closely mimic those of disease of the gall-bladder or the coronary arteries, and the combination of severe substernal pain and haematemeses may suggest cancer of the stomach. The lesion is easily missed if the patient is x-rayed in the erect position only, and it is essential to make the examination during the ingestion of barium in the supine and prone positions as well as the erect. Forceful pressure on the abdomen may reveal a hernia which would be otherwise missed. The shadow of the herniated portion of stomach is picturesquely described as having the shape of an inverted molar tooth; the lower end of the oesophagus is situated asymmetrically in relation to this shadow, entering at the right anterior margin of the herniated fundus.<sup>3</sup>

Recent writers have commented on the comparative frequency of hiatus hernia and on the high incidence of haemorrhage and anaemia. Sahler and Hampton<sup>4</sup> found that in a series of 220 cases of hiatus hernia 32 had either moderately severe anaemia or a history of bleeding from the gastro-intestinal tract. They attributed the bleeding to constriction at the hernial ring and, as a result, venous congestion, gastritis, and ulceration in the herniated fundus. The gastritis has been confirmed by examination with the gastro-scope. Murphy<sup>5</sup> found that, of 7 patients with hiatus hernia or short oesophagus, 66% had some degree of anaemia, and in 27% the anaemia was severe. Erosive gastritis and severe anaemia, which are similarly due to lack of living space, have been observed by Reimann<sup>6</sup> in severe kyphoscoliosis and attributed by him to compression of the stomach and duodenum and the great vessels in the mesentery. The anaemia of hiatus hernia is usually of the hypochromic type, and it responds well to iron. A curious symptom mentioned by Dyke and Dyas<sup>7</sup> is pain in the hands. Another patient described this dramatically as like a flame in the hands; there are also tingling and loss of strength in the hands and inability to do fine work. The symptoms are worse with changes of temperature, such as going to bed or exposure to cold. There are no visible changes in the hands, and there is no involvement of the nervous system. Similar symptoms occasionally occur in idiopathic hypochromic anaemia, and they are not pathognomonic of hiatus hernia. Treatment of hiatus hernia is by a diet low in roughage, with avoidance of solid food at the start. Five or six small meals are better than three large ones, and the patient should lose weight if obese. The patient ought to avoid lifting or straining and should rest before meals rather than after; it is helpful to raise the head of the bed. Iron should be given for the anaemia. Operation must be considered if the symptoms are severe and do not yield to treatment, if there is obstruction at the hiatus, or if there is recurrent severe bleeding. In conclusion, hiatus hernia should always be considered in the diagnosis of obscure substernal pain or unexplained hypochromic anaemia, as it is much more likely to be found if it is looked for.

<sup>3</sup> Amer. J. Roentgen, 1943, 50, 33.

<sup>4</sup> Ibid, 1943, 49, 433.

<sup>5</sup> Arch. intern. Med., 1943, 72, 58.

<sup>6</sup> Gastroenterologia, Basle, 1:41-2, 68, 197.

<sup>7</sup> Lancet, 1940, 1, 119.

<sup>1</sup> British Med. J., 1944, 1, 296.

<sup>2</sup> New Engl. J. Med., 1943, 229, 191.

## NUTRITION AND THE WAR

Dr. V. P. Sydenstricker,<sup>1</sup> the well-known American nutritionist who was in this country last year, concluded that after four years of war the food situation here was on the whole fairly good. But he thought it a pity that the pregnant woman does not get her unborn child's ration book as soon as she is pregnant instead of ten months later. The effects of slight malnutrition in pregnancy are not detectable clinically and therefore attract little notice; it is only rarely that gross deficiency disease develops. Nevertheless improvement of the nutritional status of the pregnant woman can lower maternal morbidity and cause a reduction in abortion, premature delivery, and stillbirth. It appears that the pregnant woman tends not to get enough vitamin C, animal protein, and fats in her diet. The free cod-liver oil and orange juice now available to her may remedy this in part. The nutritional status of young children is fairly good, for they are provided with vitamin C and cod-liver oil. Growing school-children, however, do not get enough first-class protein—youngsters of 6 get only half a pint of milk daily—and probably not enough vitamin C unless they consume large amounts of "greens." The position of the industrial worker appears to be adequate. Sydenstricker discusses the effect of adding vitamin supplements to the diet of workers to increase their stamina or to enable them to endure excessive and prolonged effort. Controlled observations by Keys and Henschel<sup>2</sup> and by Foltz and his colleagues<sup>3</sup> in America showed that, provided a person is on an adequate diet, supplements of vitamins have no effect on resistance to fatigue, endurance, output of work, or muscular power. Frankau,<sup>4</sup> however, observed that the addition of nicotinamide to the diet increased the efficiency of fit young men in carrying out a fairly severe test involving physical effort and co-ordination. But fatigue in industrial workers would seem best to be combated by giving extra calories (e.g., in the form of sweetened drinks) and salts to replace those lost in sweat. Sydenstricker rightly deprecates indiscriminate dosing with vitamin pills in place of natural foodstuffs. "It is axiomatic," he says, "that vitamin concentrates and synthetic vitamins should not be used when natural foodstuffs are available in adequate amounts." Jenkins and Yudkin<sup>5</sup> have shown that there is little to be gained by giving vitamin supplements to adequately fed school-children.

Who can predict the post-war food situation? It will doubt vary in different countries and even in different parts of the same country. The duration of the war will be an important factor. Bread is one of the staple foodstuffs in Europe now, and the fact that it is made from very high extraction flour, other cereals, legumes, and potatoes suggests that there is not likely to be a shortage of the vitamin B complex. The lack of milk, butter, cheese, and meat, however, may be expected to cause a deficiency of calcium, vitamins A and D, riboflavin, and first-class protein. All European countries have done what they can to see that children and expectant mothers come first on the list for protective foods and supplements of vitamins A, D, and C; but many thousands must be in a pitiful plight, and no doubt, when the moment of liberation comes UNRRA won't be slow in coming to their aid. The requirement for synthetic vitamins in post-war Europe cannot be foreseen. The most urgent need will be for calories and protein. G. H. Bourne<sup>6</sup> advocates the preparation of adequate stores of wheat, dried milk,

dehydrated butter, dried meat and fish, whale oil, soya beans, and supplements of vitamins A, D, and C. Deficiency diseases should be treated in the acute stage with special vitamin concentrates. In this connexion Sydenstricker warns against the use of large doses of vitamin B<sub>1</sub>, riboflavin, and nicotinic acid in severely depleted patients: it seems certain that large doses of one of these three vitamins may precipitate a major deficiency of one of the others. In most cases dried brewers' yeast and liver extract appear to be preferable to mixtures of the synthetic B vitamins.

## TOXIC POLYNEURITIS AFTER SEDORMID

Sedormid (allyl-isopropyl-acetyl carbamide) is a mild sedative and hypnotic, its potency lying between the bromides and the barbiturates. It has been used extensively on the continent of Europe and in general practice in England, though in hospital practice it has never found much favour. It is not very toxic and is rapidly excreted. Cases of thrombocytopenic purpura resulting from its use have frequently been recorded: in England by Loewy,<sup>1</sup> Torrens,<sup>2</sup> Joekes,<sup>3</sup> and Miller and Rosenheim<sup>4</sup>; in America by Hoffmann,<sup>5</sup> Moody,<sup>6</sup> and Huber<sup>7</sup>; and in Germany by Dennig<sup>8</sup> and Lieberherr,<sup>9</sup> among others. The thrombocytopenic purpura is quite typical of that condition, being characterized by haemorrhages from the mucous membrane, into the skin and other organs, a reduced platelet count, a prolonged bleeding time, and lowered capillary resistance. Moeschlin<sup>10</sup> attempted to investigate the cause of the condition by sternal-puncture studies and by controlling the rise and fall of platelets during experimental tolerance tests with sedormid in ten cases. During these tests there were no changes in the megakaryocytes, and the "myelogram" remained practically unchanged, except for a slight increase in the erythroblasts as a result of haemorrhages. The tolerance tests showed that in sensitive individuals the platelets would disappear from the blood within half an hour. They must therefore be destroyed in the circulating blood. Yet blood from a sensitive patient at the height of the thrombocytopenia, when given as a blood transfusion, had no effect on the platelets of the recipients. Two or three days after the acute thrombocytopenia a progressive increase in platelets became evident, until after five days normal levels were reached; at first the platelets were immature, which may have been due to an inhibition of maturation of the megakaryocytes. Moeschlin suggested that the cause of these phenomena lay in those nerve centres of the brain that regulate the entire platelet apparatus, but there does not appear to be any concrete evidence to support such an ingenious theory.

Wespi<sup>11</sup> quotes Fortanier as describing medullary symptoms, including dysphagia, in a woman aged 52 after taking a course of 51 tablets of sedormid; but she also had purpura, so these symptoms may have been brought about by a cerebral haemorrhage. He also quotes the description by Spanish authors of paresis of the arms and legs in a young girl who took 6 tablets of sedormid; the symptoms were thought to be due to a toxic polyneuritis. Wespi then gives an account of a woman of 21 who attempted suicide by taking 36 tablets

<sup>1</sup> *Lancet*, 1934, 1, 845.

<sup>2</sup> *Ibid.*, 1938, 1, 749.

<sup>3</sup> *Ibid.*, 1938, 2, 305.

<sup>4</sup> *Ibid.*, 1938, 2, 402.

<sup>5</sup> *J. Amer. med. Ass.*, 1938, 110, 725.

<sup>6</sup> *Ibid.*, 1938, 110, 726.

<sup>7</sup> *Ibid.*, 1939, 113, 674.

<sup>8</sup> *Munch. med. Wschr.*, 1933, 60, 562.

<sup>9</sup> *Med. Klin.*, 1937, 33, 475.

<sup>10</sup> *Schweiz. med. Wschr.*, 1942, 72, 119.

<sup>11</sup> *Ibid.*, 1943, 73, 1257.

<sup>1</sup> *Nutr. Abstr. Rev.*, 1943, 12, 339.

<sup>2</sup> *J. Nutr.*, 1942, 23, 259.

<sup>3</sup> *J. Lab. clin. Med.*, 1942, 27, 1396.

<sup>4</sup> *British Medical Journal*, 1943, 2, 603.

<sup>5</sup> *Ibid.*, p. 265.

<sup>6</sup> *Nature*, 1942, 149, 182.

(9 grammes) of sedormid. She did not develop purpura, and her platelet count remained normal throughout her illness; but when she recovered consciousness she was found to have paresis of the right sixth nerve, the right brachial plexus, and the left ulnar nerve. These symptoms cleared completely in the course of a few months. Since both sides were involved, it is unlikely that the symptoms arose from pressure during the period of coma; and the normal platelet count excludes the possibility of multiple haemorrhages into the central nervous system. It seems, therefore, that a toxic polyneuritis must be numbered among the symptoms that can arise from overdosage with sedormid, though there is no account of its ever having arisen with normal therapeutic doses.

### VENEREAL DISEASE IN SWEDEN

The spread of venereal diseases has again presented a grave social and medical problem in time of war, and the review<sup>1</sup> of the experience of Sweden in this respect recently made by Dr. Rolf Hallgren is therefore of more than special interest and importance. Venereal disease was rife in Sweden in the seventeenth and eighteenth centuries, and strong measures were taken to combat it during the latter period, but without much effect. In 1812 a Royal Decree was promulgated, replacing local rules. Later, promiscuous women were registered and medically examined at frequent intervals; they also had to conform to certain police regulations. In 1903 a private motion to set up an inquiry was carried in the Diet; this inquiry took seven years, and it was not until 1917 that the proposed Bill took shape. The Venereal Disease (Prevention) Act came into force in 1918; minor amendments have been made since, and at the present time improvements are under consideration. The principles of the existing law are that: (1) Everyone is treated alike: there is no discrimination against prostitutes. (2) Notification is compulsory by the doctor making the diagnosis but is anonymous. (3) Examination and treatment are free during the period of infectiousness (apparently this may be as long as three years in the case of syphilis). (4) The police may be called in to enforce the law. (5) It is a criminal offence knowingly to transmit venereal disease. The Act of 1918 in 19 sections lays down the procedure. There are three official forms of venereal disease—syphilis, gonorrhoea, and soft chancre; lymphogranuloma inguinale was added later. The M.O.H. operates the Act, and treatment is compulsory but free, including free hospital treatment and free certificates. Treatment is carried out by specially appointed medical officers, who are paid according to a fixed scale; there are no *ad hoc* venereal disease clinics.

The procedure is somewhat as follows: The doctor making the diagnosis must explain to the patient the nature of his disease (the parents if the patient is under 15) and give him a pamphlet, which lays down what he must do, including the avoidance of marriage; the patient signs a receipt. If the patient defaults the doctor must try to persuade him to resume treatment; if he does not comply the doctor reports him to the M.O.H. The doctor notifies venereal disease by sex, age, and domicile, but not by name; he must also try to obtain particulars of the source of infection, and he notifies this by name and address to the M.O.H. The latter is enjoined to employ great discretion in dealing with the contact: letters should be in plain envelopes and not marked "O.H.M.S." He orders the contact to be examined and to furnish a certificate that this has been done; the contact must then submit to treatment, if necessary in hospital. The M.O.H. orders all defaulters to resume treatment, and the public health

authority may call in the police to enforce this. A Parish Registrar, on information received, may forbid the banns if any patient suffering from venereal disease contemplates marriage. There is an appeal against the decision of the public health authorities, but pending this orders must be obeyed. The King decides on measures to educate and inform the public, and to make known the obligations of those suffering from venereal disease. Officials or doctors neglecting their duties are liable to fines. Under the penal code anyone who knowingly exposes another to infection is subject to a fine, and, if venereal disease is actually transmitted, to hard labour. Unqualified persons treating venereal disease for gain are subject to fine or imprisonment. It will be seen that our Regulation 33B is a mild version of the Swedish law: mild in that neither notification nor treatment is compulsory, unless a person found to be suffering from venereal disease has infected two or more persons.

Gonorrhoea reached its peak in Sweden in 1919 with 20,651 cases, dropped to 10,006 in 1940, but rose to 19,841 in 1943. In 1942, of 13,747 cases 4,551, or nearly one-third, occurred in Stockholm alone; during the present war the proportion of women to men has been much higher than during the last war; this is thought to be due to the greater number of young females who are promiscuous, and to an increased indulgence in alcohol, both of which are paralleled in Great Britain. Acquired syphilis fell from 6,303 cases in 1919 to 273 in 1941, but rose again to 936 in 1943. Soft chancre, curiously enough, has shown a fairly steady decline throughout the whole period 1918 to 1942, till its incidence is now almost negligible. During the five years 1937–41 in Stockholm 23 to 27% of contacts were reported; in the three other large towns, 17 to 28%; and in the rest of the country 29 to 36%: a substantial proportion of these could not be traced. Naturally the proportion was higher in Stockholm than in the rest of the country.

The Royal Medical Board, which criticized the suggestions for legislation resulting in the Act of 1918, has now made recommendations stressing the need for increasing treatment facilities, appointment of social workers to clinics, provision of prophylactic facilities for males, and an intensive educational campaign, including teaching of sex physiology to the young. It is to be remarked how closely these conform to those made by the Medical Advisory Committee in Scotland, and it is of interest to ponder whether Swedish methods would work as well in Great Britain as they do in Sweden, and whether British public opinion is yet ripe for them. If compulsory notification and compulsory treatment can aid in checking the spread of venereal disease then there is everything to be said for introducing these measures. The experience of Sweden in this war shows, however, that such legislation does not prevent the rising incidence of venereal disease when circumstances favour this.

### PENICILLIN IN VIRUS DISEASES

It has usually been assumed that penicillin has no effect on filterable viruses. This is to be expected by analogy with the entire lack of effect on them of other chemotherapeutic agents, and by what little we know or assume about the nature of the action of penicillin. Obscure as this question is, it is generally believed that penicillin interferes in some way with the metabolism of the bacterial cell, and since the metabolic activities of viruses are of the simplest nature they are not likely to be susceptible to this form of attack. Such clinical evidence as is so far available includes no instance of any apparent *tive* effect in a virus disease in man. It is therefore



surprising to read in a recent paper by F. R. Heijman and W. E. Herrell<sup>1</sup> that penicillin is effective against experimental ornithosis in mice. The strain of virus used was derived from a pigeon, and initial attempts to treat mice infected by the intracerebral route were without effect. This failure was attributed to the incapacity of penicillin to traverse the blood-brain barrier, and a further series of animals were inoculated intraperitoneally. Treatment was begun at once, consisting of repeated subcutaneous injections of penicillin solution. The mortality in 40 untreated controls was 88% and that in 40 treated only 5%. The controls were found to have characteristic lesions in the liver and spleen which were absent in the treated animals, though virus could nevertheless be detected in these organs by inoculating further animals with suspensions of them. This unexpected result seems difficult to explain except as a direct effect of the drug on the virus. There seems to be no question of its having merely controlled a secondary bacterial infection, as was the case when sulphanilamide was alleged to be curative of distemper and trachoma. The authors have not yet carried out experiments with psittacosis virus, which is much more virulent to mice. This is an obvious extension of the work which must clearly be pursued. If there is anything in the idea that penicillin is effective against viruses, there are many other directions in which this study can be extended in the experimental field before any attempt is made to treat virus infections in man. So far as the direct translation of this work into the clinical field is concerned, there have already been a few scattered observations that penicillin is without effect on what are apparently virus pneumonias.

#### DIFFERENTIATION OF CULEX MOLESTUS

We have several times recently had occasion to refer to *Culex molestus*, a British mosquito of more than usual interest. This is the bloodthirsty mosquito that has been found breeding in underground levels of the London tube railways, etc., and which seems to have a preference for a subterranean life. Again it is the mosquito which has long given to its near relative, the common British mosquito *C. pipiens*, an undeserved bad reputation, since *C. pipiens* rarely if ever bites man, and it is only the existence of *C. molestus*, which does bite man freely and has been mistaken for *C. pipiens*, that gave rise to the belief that *C. pipiens* did so. Apart from this, *C. molestus* has for some time been of special interest to the scientific entomologist because it was supposed to be a biological race of *C. pipiens* which had developed the very curious and quite unique habit among mosquitoes of being able to lay eggs without a previous blood meal, on which account it was usually referred to as the autogenous form of *C. pipiens*. It may not be irrelevant to note that a very similar case of a mosquito being supposed on account of peculiar habits to be a biological race applies to the so-called races of *Anopheles maculipennis*, now generally conceded to be closely related but distinct species and therefore entitled to any distinctive habits such species may possess. As with these nearly related species of anopheles, so with *C. molestus* the difficulty has been to find suitable structural characters on which differentiation, in this case from *C. pipiens*, can be made in practice. It is therefore very gratifying and helpful that the points of distinction between these two species have been placed on an entirely satisfactory and practical basis in a recent publication of the British Mosquito Control Institute, Hayling Island, Hants, under the authorship of its director, Mr. John F. Marshall, C.B.E. Here in a form that even

the non-expert can readily follow is given a most complete and up-to-date account of this interesting British mosquito, its life-history and habits, the localities from which and the conditions under which it has been recorded how it may best be captured and identified, and the methods that can be used in its control. Perhaps for those working on British mosquitoes the most welcome feature of the pamphlet is the very clear statement of the points in which this species differs in structural characters from *C. pipiens*. The surprising thing being that the two species could ever have been confused. These points of differentiation apply not only to the adult—notably the abdominal ornamentation, the absence of patches of pale scales at the ends of the femora and tibiae, especially of the hind legs, and the fact that the last segment of the male palpi lies wholly beyond the tip of the proboscis—but to differences in the larva and notably in the egg raft. It is entirely due to Mr. Marshall's careful work on British mosquitoes that this long-unsuspected species has now come to be recognized, and his account of its morphology and biology is a notable addition to mosquito literature. He will send a free copy to any responsible inquirer who writes to "Wayside," 47, London Road, Cheltenham.

#### CONTROL OF TRAFFIC IN NARCOTICS

Sir Thomas Russell Pasha, whose vigilance in the Near East effected so salutary a change in the contraband trade in Egypt, has again issued warnings against illicit production of hashish (cannabis) in Syria and the Lebanon resulting in illegal traffic in the drug among the prosperous middle and lower classes in Egypt. The Permanent Central Opium Board, which now meets in London under the presidency of Sir Atul Chatterjee, the Indian delegate, continues to receive reports on the production, manufacture, export, import, and stocks of the scheduled dangerous drugs included in the several international conventions. Some of the Governments party to these conventions, however, are in default in making the statistical returns which are obligatory on the contracting parties. Fifty-two of the 66 metropolitan countries complied with their obligations in respect of the year 1942, and 51 of the 99 colonies and dependencies likewise made returns. Among non-belligerent countries the most serious unexplained gap is that of Spain, which is in default as regards all the required annual statistics. This omission is the more regrettable as there is reason to believe that in the last two years imports of opium and crude cocaine to Spain have reached an abnormally high level. The countries of Central and South America continue to improve their records. Peru, however, has since 1935 furnished either no returns or inadequate ones, though the country produces and exports crude cocaine in large quantities. In 1942 such exports amounted to 2,825 kilogrammes, some of which went to the Argentine, which is not yet a party to two of the conventions. The Board issues a warning of the need for "complete control over the manufacture of, trade in, and distribution of narcotic drugs in the countries, whether enemy or enemy-occupied, as they come under the military and civil control of the United Nations. Unless this is done there is grave danger of a recrudescence of the illicit traffic in drugs and of the spread of addiction, such as was encountered after the last war."

We regret to announce the deaths of two distinguished members of the consulting staff of the London Hospital: Sir William Lister, Consulting Surgeon Oculist to the King, who was also for many years surgeon to Moorfields Eye Hospital; and Dr. Wilfred Hadley, who was also consulting physician to the Victoria Park Chest Hospital.

<sup>1</sup> *Proc. Mayo Clin.*, 1944, 19, 57.



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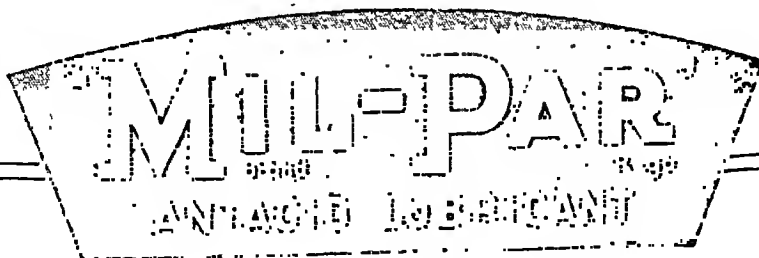
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of the females and 21.5% of the males took aspirin—a significant difference between the sexes of  $23.0 \pm 5.6$ . Regular users appeared to take it for headaches and not for rheumatic ailments, as there is not a rising incidence with increase in age; throughout the survey it was noted that the heaviest occupational incidence of aspirin-taking was among those engaged in dry indoor work, laundry workers (in dry posts), and female factory workers, and the incidence was low in A.R.P. workers in outdoor occupations. Nowadays aspirin is almost as much a drug of addiction as is morphine. Habit plays an enormous part in the consumption of aspirin. All three women taking aspirin daily did so to ward off headaches; only one of the five taking it at least weekly used it as an antirheumatic. Headache powders were also chiefly used to ward off and not to relieve headaches. One woman took two tablets of a proprietary compound four-hourly three days a week to ward off headaches. And very successfully, it appears, for she never has headaches; but she is lucky that the Government has protected her against worse things, for the tablets she takes contained amidopyrine until it was placed on the Fourth Schedule. We are ignorant of the remote effects of many common and seemingly harmless substances when used with such intensity over a long period of time. Few of these people had or ever had had headaches, but they took these substances as preventives.

#### Laxatives

As might be expected, laxative medicines were very extensively used, the salines markedly predominating over the vegetable laxatives. The percentage incidence of takers was highest in the office and laboratory workers and lowest in the A.R.P. workers, who lived a more or less open-air life. The habit factor was strongly shown by the saline-takers, more taking regular doses than those taking doses irregularly. The vegetable laxatives were for the most part taken irregularly, as the spirit or the state of the bowels suggested. Of recent years there appears to have been a swing from the use of the stronger vegetable laxatives to the milder salines, probably correlated with sustained and clever advertising. The influence of advertising is probably again shown in the gross predominance of one particular saline and one particular vegetable laxative. This does not seem to be due to any wartime zoning or rationing, but to be a matter of personal preference.

It is probably in relation to laxatives that the words "harmless and beneficial" (Viscount Gage, 1938) are most commonly applied. Yet besides the general objections to the regular use of laxatives (Hurst, 1924) many specific complaints have been voiced. In particular, liquid paraffin has been indicted. It is known to interfere with vitamin A absorption (Curtis and Ballmer, 1939) and also with vitamin D, calcium, phosphorus, and vitamin K (Council on Food and Nutrition, A.M.A., 1943). It is thus a most undesirable laxative to use when a patient is in need of these substances—e.g., in pregnancy. But I am indebted to Dr. F. J. Lewis for the information that of 12 pregnant women attending an antenatal clinic six were using liquid paraffin, some of them daily for over five months. One imagines that their Ministry of Food vitamin supplements were rather wasted. (The women are not included in this survey.) There is little doubt that laxatives used regularly over a lengthy period will cause deleterious effects. That a daily cascade of salines through the bowels may cause serious decrease of absorption of, for example, iron is possible, and it is known that calcium absorption is affected. Meulengracht (1938) reported a case of osteomalacia of the spine following the daily ingestion of Carlsbad salts (sodium sulphate and sodium bicarbonate) every morning for 35 years. No such striking case can so far be quoted against the vegetable laxatives, but there is no doubt of their harmfulness (Clark, 1938). Mass Observation (1943) report that there has been an increase in the taking of salines and laxatives in wartime, but mention no figures. They also state that there has been no increase in the taking of digestives.

#### The "Preventive" Group

The results of the inquiry into the taking of the group broadly known as preventives—iron, vitamins, etc.—were most disappointing. This group, it might be thought, would be used extensively after the propaganda of the last few years. Yet

only 18 out of 277 were taking any of these substances supposedly so beneficial, and half of these were laboratory assistants, mainly engaged in biological work, and two more were nurses. (Ten nurses were given iron and vitamins by the hospital authorities.) Thus only 7 out of 240 of the general workers took either iron or vitamins, and many of the females badly needed iron. It has recently been announced that the Ministry of Food is to insist that vitamin preparations must conform to certain specifications. But surely it is equally essential that iron preparations should not be sold as purporting to cure anaemia unless they contain adequate amounts of iron. Mass Observation (1943) report that preventives, including calcium as a cold-preventive, were taken by "many people." They also state that there has been an increase in vitamin-taking in wartime. The incidence suggested would appear to be much higher than that found in this survey. The explanation may lie in the introductory words of their bulletin—that the surveyed were an "unusually thoughtful" section of the population.

#### Comment

The two most gratifying aspects of the survey were: first that the more exotic and extravagant remedies were not much used—a fact noted by Clark (1938); and, secondly, that there was a widespread desire for information among those questioned. They desired good health, and many quite sincere thought that they were ensuring it by the taking of the medicines. The majority of those surveyed were ostensibly healthy people, and when the high proportion taking drugs noted we may well wonder at the probable extent of self-medication among the sick folk. The excuse of poverty-lacking, as all those surveyed were covered by national health insurance, and it is a curious fact that the public have no faith in medicaments that can be obtained cheaply. While always recognizing the therapeutic powers of faith and hope, even in patent medicines, it is more than time that steps were taken to protect the public—both the sick and the healthy—from exploitation. Mr. A. L. Taylor of the Bristol Royal Infirmary has kindly estimated the cost of many of these substances in relation to their purchase price, and his figures reveal that there has been little improvement on the conditions revealed in *Secret Remedies* (1909). In fact, as Lord Horder said in 1938, in the last 25 years, with the increased extent and power of advertisement, the public is being swindled on a larger scale than ever before. The 1941 Act has checked a few of the more grotesque abuses, but the uselessness of the Act in really improving the sorry state of affairs is shown by a perusal of Chapman's book (1942). In view of the experience of Edwards and Kinsie (1940) it would be wise to be sceptical of the possibility of improving matters by increased education, for they found, after three years of intensive campaigning against venereal disease, that the persons surveyed were more ignorant than ever, and that the number of drug stores where counter-prescribing and the sale of patent nostrums went on was greater than ever. Every advance in medicine is mirrored by an extension of the patent medicine manufacturers into the same field. Recent belated action by the Newspaper Proprietors' Association (1943) in the censoring of advertisements will do little to help. Their ban does not go beyond the "code" of the members of the Proprietary Association of Great Britain (Chapman, 1942). For harmful substances can still be advertised and sold, and impressionable people will still be intimidated into using the advertised medicaments. Very few sick people are able to read dispassionately and discriminatingly advertisements of substances purporting to cure or relieve the ailments from which they suffer. To prevent much public exploitation and ill-health restrictive legislation is imperative.

#### Summary

The results of a census of self-medication among 277 persons engaged in various occupations in Bristol is presented.

The present data show that self-medication is independent of age for both males and females. For all medicines combined there was no difference between the sexes. Differences existed for specific remedies: the use of aspirin by females was significantly greater than by males, but the majority of the medicines involved too few persons for definite conclusions to be drawn.

Some specific groups of medicines and their effects are briefly discussed.

I wish to express my thanks to the Medical Research Council and Prof. R. J. Brocklehurst for permitting me to make this survey; Dr. H. Heller, Mr. A. L. Taylor, and Mr. W. R. Lush for their valuable help; and especially to Mr. Horace Todd, who performed statistical analyses.

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## SAFETY IN OPERATING THEATRES AND ANAESTHETIC ROOMS

### MEMORANDUM BY INSTITUTION OF ELECTRICAL ENGINEERS

In February, 1938, papers were read before the Institution of Electrical Engineers by the late Prof. W. M. Thornton and Dr. E. H. Rayner, and as a result the question was raised whether the Institution ought not to take the initiative in arranging for the discussion of safety in the electrical equipment of operating theatres and their ante-rooms, where there would appear to be danger of explosion of anaesthetic vapours. The Council was impressed with the wisdom of this course, and it was agreed that the Institution should set up a suitable committee to consider: (1) The electrical conditions and design of equipment necessary for the elimination of the risk of explosions. (2) The desirability of a Code of Safety Rules. (3) The arrangements which are appropriate for ensuring that safe equipment is installed and safe conditions are maintained.

Under the chairmanship of Mr. H. T. Young, the Operating Theatres Electrical Apparatus Committee was formed and appointed two technical subcommittees to carry out its work, one to deal with questions of static electrification, and the other to deal with apparatus, installation, and maintenance, with Dr. E. H. Rayner of the National Physical Laboratory and Mr. H. W. Swann of the Home Office respectively as chairmen. These committees began their investigations in February and March, 1939, but before much progress had been made the deteriorating political situation and the evacuation of many large hospitals from London caused the suspension of the work. However, in May, 1943, a communication was received from Dr. C. F. Hadfield, on behalf of the Council of the Association of Anaesthetists of Great Britain and Ireland, requesting that the work of the committee should be resumed, and a ready response was forthcoming from the council of the Institution.

It had become clear at an early stage that the elimination of danger from anaesthetic explosions must depend mainly upon the provision of safe electrical conditions and apparatus, and that, to achieve this, arrangements would need to be made to ensure that safe equipment was installed and that safe conditions were maintained. After having considered the advisability of drawing up a brief safety code, the committee unanimously adopted a suggestion put forward by Mr. Swann, that the detailed recommendations of the committee should be expressed in the form of a distinctive Warning Notice of a size and form adequate for display in operating theatres and similar locations where explosion risks might exist, so that its guidance should be constantly before not only the anaesthetists and surgeons but also the nursing and other staff employed.

In November, 1943, the Warning Notice in its final form was submitted to the council of the Institution, when it was decided that it should be sent to the Minister of Health with a request for distribution by the Ministry to hospitals, nursing homes, etc., in England and Wales; it was further agreed that, if it were adopted by the Ministry of Health, it should also be sent to the Scottish Office and to the Government of Northern Ireland for a similar purpose.

In Mar h, 1944, the committee learned that the Minister of Health had convened a representative interdepartmental conference, attended by representatives of the interested Government Departments, at which the decision had been taken to circulate the Warning Notice to all voluntary hospitals and to all hospital authorities in this country, and, through the agency of the Admiralty, War Office, and Air Ministry, to all Service hospitals in this country and abroad, after certain omissions and modifications had been made. It was also decided to delete the references to published work which had been given in the original Notice, but to include them in a covering letter sent to hospitals, etc., in this country.

At a meeting in March, 1944, the council of the Institution noted the dissemination that had thus been assured for the Notice, and authorized the publication of the Warning Notice in its revised form [reproduced in the *Journal* of July 1, p. 19], together with the present

memorandum, which contains a note of the more detailed recommendations contained in the original draft. It was felt that as changes and re-equipment may be carried out in individual hospitals from time to time, it would be desirable that the medical and electrical experts concerned should be made aware of the full precautions which the Council of the Institution recommend. The major departures may be summarized as follows.

In their review the members of the committee were of the opinion that a very real risk existed that the persons of operating personnel might become charged with electricity, and an appropriate reference in this regard was made in paragraph (c) of the introductory matter. The paragraph also points out that the risk of a spark occurs when an object is brought nearly into contact with another at a different electrical potential. In the list of precautions and recommendations the committee added a recommendation to item 2 that when operations were finished for the session or for the day, all the ether should be removed from the apparatus.

In connexion with the equipment of operating theatres it was recommended that electric lamps connected to the main supply should be fitted with protecting shields of metal, glass, or other suitable material, and in the list in item 7 of the insulated apparatus which can be electrified in various ways portable anaesthetic equipments were included.

The important question of earthing received additional attention, and in connexion with item 8, which points out that trailing chains are useless when the floor is covered with dry, non-conducting rubber, cork carpet, or linoleum, the additional recommendation was made that in such cases earthings may be effected by attaching the chains to water pipes or to some other suitable earth connexion. The last sentence in item 9, suggesting that under war conditions damping of the floor may have to be adopted as an alternative to the use of special "conducting rubber," was added in the course of the revision of the original notice.

In dealing with the state of the atmosphere in the operating theatre, the committee in its original recommendations drew attention to the value of maintaining a satisfactory degree of humidity and put forward the recommendation that equipment for conditioning the air of the theatre should provide adequate and continuous control of humidity (approximately 60 to 70%).

### References to Scientific Work

In the circular letter issued by the Ministry of Health to establishments in England and Wales (Circular 53/44 of June 4, 1944) a list of the references to scientific work which has been carried out on this subject was included, and for convenience these are set out below.

Memorandum 191 Med. published by the Ministry of Health (H.M. Stationery Office, price 1d.)

Rayner, E. H.: "The Risk of Explosion due to Electrification in Operating Theatres of Hospitals." *J. Inst. elect. Eng.*, 1938, 83, 156

Thornton, W. M.: "The Electrical Ignition of Mixtures of Ether Vapour, Air and Oxygen." *Ibid.*, 1938, 83, 145.

Swann, H. W.: "Electrical Ignition of Anaesthetics." *British Medical Journal* 1938, 2, 234.

"Anaesthesia Explosion Hazards" (Code of Safeguards, Bureau of Standards, U.S.A.).

"Combustible Anaesthetics and Operating-room Explosions," issued by the National Fire Protection Association, 60, Batterymarch Street, Boston, Mass., U.S.A., price 15 cents.

Finch, G. L.: "Ignition of Explosive Anaesthetic Mixtures." *Proc. Roy. Soc. Med.*, 1935, 28, 1130.

Regulations for the Electrical Equipment of Buildings, 11th edition (revised), issued by the Institution of Electrical Engineers, Savoy Place, Victoria Embankment, London, W.C.2, price 1s.

### KHARTUM SCHOOL OF MEDICINE

The seventh report, 1939-42, of the Kitchener School of Medicine, Khartum, records continued progress in spite of wartime difficulties. Graduates from the school have served as officers in the Sudan Defence Force—both within and outside the Sudan, and also in the Civil Medical Service. The course of professional studies consists—at present—of a year and a half at the School of Science and four years and a half at the Kitchener School of Medicine. The two teaching hospitals at Khartum and Omdurman provide the opportunity for all Sudanese medical graduates to spend two years in resident appointments in medicine, surgery, obstetrics and gynaecology, and ophthalmology.

A few lines may be quoted from the sympathetic and constructive Visitor's Report, 1942, by Major-General W. H. Ogilvie, consulting surgeon, M.E.F. "The hopes of Gordon, Kitchener, and Stack, men who loved the Sudan and sought its welfare, are here embodied, in a scheme to which those who are responsible for Britain's stewardship in developing countries can point with satisfaction. The present directors of the school are working in the spirit of that stewardship, determined to provide a centre of medical education which, though small, is of high quality. The searching character of the final examination, the insistence that all subjects must be taken at the same time, the 60% pass level, and the practice of inviting visitors from Britain to observe and comment, are evidence of a policy that aims to maintain and even improve a standard that is already high."

## MEDICAL SICKNESS AND LIFE ASSURANCE

At the recent annual meeting in London of the Medical Sickness, Annuity and Life Assurance Society, Ltd., Mr. R. J. McNeill Love, chairman of directors, who presided, referred first of all to the special concessions which the Board of Directors had made to Service members. Before the war benefits were virtually restricted to the United Kingdom, but claims, not in respect of enemy action, were now being paid in any part of the world during in-patient treatment in hospital or from the day of embarkation if the member was invalided home. Prisoners of war were exempted from payment of all sickness premiums until they were repatriated. With regard to life assurance, the Board had resolved in principle to exclude only death due directly to enemy action, and it was hoped to pay in full all other claims, whether arising on Service or not. Over £4,000 had already been paid in claims to members who had been ill while over-seas. The chairman also announced that a special subcommittee had been appointed to consider the White Paper on a National Health Service; the Board was interested in its possible repercussions upon private practice. The annual report showed that new business in the Life Assurance Fund in 1943 totalled £185,780 for annual premiums of £5,779. Claims by death were higher at £30,079. The increase to £68,548 paid in benefit under the sickness fund was due to influenza and also to the decision to pay claims from over-seas. The invested funds had been increased by £217,268, and now stood at well over £2,750,000, more than 43% of the total being in British Government securities. The Board had arranged new head offices at 7, Cavendish Square, and when the time arrived the Society would move back to London from its temporary quarters at Highfield, Chesterton, Cirencester.

## MEDICAL PROTECTION

The annual meeting of the London and Counties Medical Protection Society was held at Victory House, Leicester Square, on June 7, with Mr. W. M. Mollison, treasurer, in the chair. Sorrow was expressed at the death of Sir Cuthbert Wallace, who had been president of the Society since 1935, and until the beginning of the war was a regular attendant at its council and committees. The office of president remains vacant for the time being. Mr. Mollison said that the past year—the fifty-first in the Society's history—had been one of continued progress. There had been less litigation over trivial matters, but several important cases had been fought and won by the Society on behalf of its members. The number of applications for advice and assistance amounted to nearly 1,000. The net gain in membership had been 576. The income showed an increase, and the accumulated funds had now reached £96,400, with an investment reserve of £7,000 in addition. During the year, owing to the uncertainty as to the obligations of medical practitioners to report deaths to coroners, the Society and the Medical Defence Union had obtained the opinion of Mr. Roland Burrows, K.C., president of the Medico-Legal Society (see *Journal*, Nov. 27, 1943, p. 694). He understood that a number of members had applied for copies of this opinion. The report and statement of accounts was adopted, all the retiring officers and members of council were re-elected, and on the motion of Sir Robert Hutchison a vote of thanks was accorded to the staff and to the solicitors, Messrs. Le Brasseur and Oakley.

## Nova et Vetera

## HARVEY CUSHING'S LIBRARY

*The Harvey Cushing Collection of Books and Manuscripts.* Edited by Prof. J. F. Fulton. (Pp. 205. \$8.50.) New York: Schuman's. 1943.

A private library of historical medical books is an expression of the development of a personality. A real collection is formed by slow accretion, and at each stage it reflects the literary interests of its collector. The late Harvey Cushing was early in the field, inspired by Osler, the prince of collectors and stimulators. When Cushing died in 1939 he left a charming essay on a Vesalian collection,<sup>1</sup> now reprinted in his posthumous work on Vesalius, and from this and other sources we surmise that Cushing must have started the unending quest for old medical works in the latter part of the '90's, when he was just under 30. From then to the time of his death he collected with enthusiasm and discrimination. In more recent years the need for specialization became evident, and he had a working arrangement with his friends Arnold Klebs and John F. Fulton.

Klebs was to concentrate more on incunabula and Fulton the seventeenth century. The result is that Cushing's collection is particularly rich in anatomical and surgical texts of the sixteenth century. The whole of the three libraries mentioned have gone to form the kernel of the Historical Medical Library at Yale, and the present catalogue is the first to appear of the three which will describe this nucleus.

It is of interest to compare the Cushing collection with other libraries which have been catalogued in recent years, and especially with that of Osler, Cushing's mentor.<sup>2</sup> The Cushing collection contains about 7,900 entries; that of Osler has about 7,800. Osler has 54 editions of Hippocrates against 1 of Cushing, but Cushing has 42 of Ambroise Paré against 17 of Osler. They appear to have been almost equally interested in Galen (about 60 editions each). Cushing is peculiarly weak on Celsus; perhaps he considered Celsus merely as disseminator. Osler's own catalogue of his collection was based on the example of Ferguson's *Bibliotheca Chemica*, a catalogue of the Young collection,<sup>3</sup> and it is to be expected that the latter would be much richer in books dealing with the development of pure science. Outstanding examples are the editions of Albertus Magnus, Glauber, Hermes Trismegistus and Raymond Lull in this collection. Both Cushing and Osler compare favourably (about 20 editions) with the Paracelsus editions in the Young collection; but all these are driven into the shade by the 201 editions of Paracelsus which Ferguson had in his own library, a catalogue of which (limited to 4 copies) has recently been published<sup>4</sup> by Dr. W. R. Cunniff, the Hunterian Librarian at Glasgow. It has also been very interesting to compare the Cushing library with the collection of early medical books owned by the late Dr. Le Roy Crummer.<sup>5</sup> On Albertus and Aristotle Crummer has it but otherwise there is little in his collection which is not represented in Cushing, and the latter's editions are sometimes earlier. Cushing is also especially rich in Culpepper, Guenther, Berengar da Carpi, Mondino, Boerhaave, Cardan, Tagault, Boyle, and Harvey. The manuscripts and incunabula are excellent. There are certain weaknesses which possibly throw some light on the tastes of the collector. Of the *Religio Medici* he has nothing earlier than Kcynes's No. 6, and the Wilkins collected edition is not included. He has only the facsimile of the first edition of Auenbrugger's *Inventum Novum*; while the Fernel collection is good, there are unexpected omissions; and while he has the catalogue of Mead's pictures, he does not have the catalogue of his library. There is no original edition of John Snow, and nothing at all by Budd. Volumes II and III of Priestley's *Experiments and Observations* are missing. Karl Pearson and Raymond Crawford are poorly represented, and while Osler is allotted 60 entries, Clifford Allbutt is given only 5, and *Greek Medicine in Rome* is not included.

The works of Vesalius are the gems of this collection. Here Cushing far outstrips Osler, who first taught him how and where to buy them. Against Osler's 14 early editions of different works, Cushing has 41. It is sufficient to say that this collection is the basis of Cushing's monumental *Bio-bibliography* which Messrs. Schuman's have recently published.<sup>6</sup>

Prof. Fulton calls this catalogue an "experiment in bibliography." It is essentially a short-title catalogue. (In some few instances there appears to be doubt regarding the actual edition described.) Authors' names are given in the vernacular and punctuation is largely omitted. Though the student will have to go elsewhere for further particulars, the method used has certain very definite advantages, and cross-reference is greatly facilitated. Prof. Fulton and his co-workers are to be congratulated on the completion of their long task, the publishers on the production of a pleasing and easily handled volume, and Yale University on the acquisition of a personal library of great distinction and importance.

E. A. U.

<sup>1</sup> Osler, W., *Bibliotheca Osleriana*, Oxford, 1929.

<sup>2</sup> Ferguson, J., *Bibliotheca Chemica*, 2 vols., Glasgow, 1906.

<sup>3</sup> Catalogue of the Ferguson Collection of Books, mainly relating to Alchemy, Chemistry, Witchcraft and Gipsies, in the library of the University of Glasgow. (Edited by W. R. Cunningham.) 2 vols., Glasgow, 1943.

<sup>4</sup> A Catalogue of Manuscripts and Medical Books printed before 1611 in the library of Le Roy Crummer, Omaha, Nebraska. Omaha, 1927. (Privately printed and limited to 100 copies.)

<sup>6</sup> Cushing, H., *A Bio-bibliography of Andreas Vesalius*, New York, 1943.



## PEPPYS AND ALCOHOLISM

Having recently made a study of venereal diseases in Pepys's Diary<sup>1</sup> (see *Journal*, 1944, 1, 298), Dr. J. D. Rolleston has made a similar inquiry concerning alcoholism.<sup>2</sup>

In the seventeenth century, and particularly during the Restoration, alcoholism was prevalent in all classes of society from the King downwards. Of special interest was the case of Pepys himself, who, after being an alcoholic subject, became, if not a complete abstainer, a very moderate drinker, and played an important part in the campaign against drunkenness in the Royal Navy, in which it was rampant. Total abstainers in those days were exceptional. Such a one was Mr. Pryne, who "at a great dinner in good company would not drink any health, even not the King's, but sat down with his hat on, but nobody took any notice of him at all." Apart from the King's Proclamation against drinking, swearing, and debauchery issued in the first year of his reign, Charles II was far from showing any opposition to inebriety, but was remarkably lenient towards the scandalous drunkards in his Court. A similar view was held by Prince Rupert, who on the occasion of a man being dismissed from his office of boatswain for drunkenness exclaimed, "God dam me, if they turn out every man that will be drunk, they must turn out all the commanders in the fleet. What is the matter if he be drunk, so when he comes to fight he do his work? At least let him be punished for his drunkenness, and not put out of his command presently."

As he had shown in his previous paper on Pepys, Dr. Rolleston remarked that several explanations had been offered for his numerous amorous escapades, the account of which had been more or less concealed by Victorian editors; but as many of his erotic adventures took place in ale houses, it was not improbable that alcohol was responsible to some extent for their occurrence.

Apart from chewing roll tobacco as a prophylactic against plague Pepys does not appear ever to have made any use of tobacco or other narcotic, but on one occasion he protested to the Commissioners of the Admiralty on "the incorrigible liberty found among workmen and watchmen taking tobacco."

## Reports of Societies

### THIOURACIL FOR HYPERTHYROIDISM

At a recent meeting of the Section of Medicine of the Royal Academy of Medicine in Ireland Dr. L. K. MALLEY, in a paper on thiouracil in the treatment of thyrotoxicosis, observed that the toxic reactions from thiourea and thiouracil included agranulocytosis, increase in the size of the goitre, leucopenia, and dermatitis. He gave an account of three patients suffering from Graves's disease treated with thiouracil.

The first, a single woman aged 55, had no visible or palpable thyroid enlargement, but the pulse rate was 110, there was auricular fibrillation, the B.M.R. was +55%, and the blood cholesterol was 69 mg. per 100 c.cm. She was given an initial test dose of 0.2 g. of thiouracil, followed by 0.2 g. thrice daily for three days, the dose being then increased to 1.2 g. daily. After two weeks the B.M.R. fell to +13% and there was improvement in symptoms. A maintenance dose of 0.2 g. was determined, but on the thirty-fifth day of treatment signs of mild myxoedema appeared, the B.M.R. was -34%, and the blood cholesterol 248 mg. per 100 c.cm. Thiouracil was now given in a dose of 0.2 g. every fourth day. After eleven weeks of treatment the patient felt quite well; all symptoms of hyperthyroidism had disappeared; the pulse rate was 72 and now regular after a course of quinine; she had gained 19 lb. in weight; and the B.M.R. was -7%. In the fourth month of treatment a moderate enlargement of the thyroid gland was noted.

The second patient, a married woman aged 33, had received preliminary treatment with Lugol's solution and the B.M.R. had fallen from +80% to +45%, but clinical evidence of hyperthyroidism persisted. Treatment with thiouracil resulted in a fall in the B.M.R. to +17% in three weeks and +3% in seven weeks. Exophthalmos and the goitre were unaffected, but all symptoms disappeared, and the pulse rate was reduced to 72. In the third patient, a man aged 38, treatment was discontinued on the third day owing to leucopenia (4,500 per c.mm.) and reduction of the granulocytes to 39%.

From a study of the literature and from a brief personal experience with thiouracil Dr. Malley concluded that it should be used with caution and only under properly controlled conditions, with frequent estimations of the basal metabolic rate and leucocyte and differential blood counts. Release of the drug for general use was premature. For the present its use

should be restricted to the pre-operative preparation of patients awaiting thyroidectomy, to those with persistent thyrotoxicosis after operation, in juvenile cases, and in the few cases in which operation was refused or considered inadvisable.

The PRESIDENT thought evidence showed that some cases were resistant to this drug. Dr. D. K. O'DONOVAN advocated giving a minute dose first and then steadily increasing it. Thiouracil sometimes produced an irritating nettle-rash; some of the preparations were nauseating and might cause diarrhoea and vomiting; the least toxic preparation, he thought, was methylthiouracil. Dr. T. M. KAVANAGH mentioned the case of a female child aged 2½ with toxic goitre, who did not improve on Lugol's solution. Two surgeons were doubtful about operation, so she was eventually put on thiouracil. After 3 weeks' treatment her white cells showed a small diminution and the gland itself was now smaller; she had put on weight. Graves's disease was very rare in childhood, and rarer in boys than in girls. A case had been reported in a boy of 2½ years, and in a female infant of 1 year.

### Five Cases of Familial Paresis

Dr. MORGAN CROWE read a communication entitled "Familial Spastic Paresis with Strabismus." He chose this to describe the presence of squint in four and weakness with spasticity of the limbs in the five children of a family. The births of the children, whose ages were 17, 16, 13, 11, and 7 years respectively, were normal; no instruments were used. Their present disabilities were noticed in early infancy and had shown no tendency to spread; otherwise there was nothing abnormal in their history. Their parents were in good health and did not suffer from any similar defect, nor could they recollect any associated condition among their relatives. The lower limbs of these children showed varying degrees of adduction deformity and weakness. This permitted three of them to move about in a slow shuffling manner, with a "scissors" type of gait; one could propel herself only by holding on to a chair or wall; the youngest, the most seriously affected, could not stand by herself. In each child muscle tone was spastic in the lower limbs; knee- and ankle-jerks were increased, together with ankle clonus; but in only one child could a definite plantar extensor response be elicited. Club-foot is present in two cases; it had existed in another child but was rectified by surgery. Different degrees of hypermetropia, with visual acuity of about 6/12, were present in each child and accompanied by well-marked squint in four. Sensation generally, and the upper limbs, were normal; while mentally they were about two years behind the average for their age.

The condition would seem to be a modified form of cerebral diplegia and might perhaps be described as a spastic paraplegia or Little's disease; but the considerable degree of voluntary power in the legs of three of the children made paresis a more descriptive term. The loss of power, with evidence of upper motor neurone involvement and retention of sensation, seemed to negative any other diagnosis. The blood Wassermann reaction of parents and children was negative. The occurrence of the five cases in this family seemed to rule out infection, trauma, prematurity, or any abnormality associated with birth as the cause, for it was unlikely that any one of these conditions could have been present on each occasion. A failure of development, or a degeneration of motor cells or pyramidal fibres, would best explain the symptoms and signs. Photographs illustrating the defects were shown.

At a recent meeting of the Midland Tuberculosis Group of the Society of Medical Officers of Health Dr. George Jessel, a consultant tuberculosis officer to the Lancashire C.C., pointed out that the dispensary was the pivot of the tuberculosis work, which should be run by specialists in chest diseases, who should be paid as such. Improvement was required in buildings, general institutional and x-ray facilities, and in the co-operation with other specialists, as well as more efficiency in the environmental work. Policy and progress were dependent upon administrative officers who were often far from expert on the subject; fortunately many M.O.s.H. were now progressive. In discussing the White Paper it was agreed that the revision of boundaries and the enlargement of areas would help to ensure a uniform service of high quality. It was important, however, that the clinical and environmental aspects must not be dissociated, as tuberculosis is a public health service.

<sup>1</sup> *Brit. J. Ven. Dis.*, 1944, 1, 298.

<sup>2</sup> *Brit. J. Inebriety*, 1944, 41, 71.

## Correspondence

### Operations on Infants as Out-patients

SIR,—I see from your correspondence columns (K. F. Pollaczek, June 3, p. 764) that there is a tentative suggestion about the wisdom of operating for hernia in young children as out-patients. Forty-odd years ago I was impelled to adopt this plan because of the very limited accommodation for infants and young children in the Newcastle-upon-Tyne Royal Infirmary at that time. A not inconsiderable and developing experience subsequently taught me that it is perfectly safe to undertake most operations that are likely to be necessary up to about 5 years of age as out-patients. Of course older children can be treated in the same way, but after 5 there is not the same necessity, for at times of great pressure such children can be accommodated among adults with little upset to either. For years now I have sent infants home on the day of operation carried out for all varieties of hernia, for umbilical fistula, even when it has been necessary to resect and anastomose bowel, for acute intussusception, and for other abdominal emergencies like the occasional acute appendicitis in the very young. When I was doing a considerable number of cleft-palate operations, cases in which the anomaly was limited to the soft palate or little more were nearly all done during the first twelve months, and the patients were sent home the same afternoon. I believe that in most cases these little ones have a better chance if dealt with in this way, for they go back to an environment to which they are accustomed, and, at least in normal times, they receive the undivided attention of persons with whom they are thoroughly familiar.

Of course it must be understood that these patients were not treated in any haphazard way. Cases which were not emergencies were always previously seen and examined and the proposed course explained to the parent. On the day fixed for operation they were brought to the day-room of the ward two or three hours before in order that they might receive the essential preparation and so that we could be sure the stomach was not overloaded by the time they reached the table. Emergencies had to be seen and dealt with more or less off the street, though if considered to be an advantage the necessary delay was arranged.

The actual operations were nearly always carried out in the regular operating theatres on the daily list. Except for a short period when trying out spinal anaesthesia and the very occasional cases where local infiltration anaesthesia was employed, general inhalation anaesthesia was used, either the A.C.E. mixture, open ether, or chloroform, and in that order. No premedication of any sort was employed. The children went back to the ward day-rooms until they had safely recovered from the anaesthetic and it was clear there were no immediate complications. As a rule they left in their mothers' arms, and mothers were told that if there was the slightest anxiety they were to be brought back to the hospital at any time of day or night. One miserable little infant, a cretin, died after circumcision, but that was due to haemorrhage aggravated by a tight bandage behind the corona.

Among the large number of other cases I can remember only one that was returned, and that was for the treatment of haemorrhage after a cleft-palate operation, the child recovering. Occasionally mothers brought the child back the next day or within the next few days because it would not settle or the dressings had slipped or for some other reason, but, on the whole, the results were most satisfactory. Here I might mention that dressings ought to be very carefully applied and bandaged well beyond the area. For years I have used anchored dressings tied on with a stitch passed through the skin as described and recommended by the late Sir John Lynn Thomas of Cardiff. In the first instance this practice of out-patient operating was a matter of expediency due to bed shortage, but it soon developed into an accepted routine, which I have no hesitation in recommending.—I am, etc.,

G. GREY TURNER,  
Professor of Surgery.

British Postgraduate Medical School, W.12.

### The Term "Blast"

SIR,—After this war there will be a spate of statistics on the various body injuries peculiar to warfare. This letter is a plea that the influence of fashion on diagnosis may be taken into account. Earlier in the war "blast" was a fashionable diagnosis. I once had the pleasure of meeting a medical officer who had seen over 100 instances of this interesting condition. In an experience of over 2,000 casualties, many of whom had been in a closed compartment with a bursting bomb or torpedo, I have only once made a diagnosis of blast lung; necropsy showed him to have his bronchioles choked with sand and mud. An officer with a diagnosis of blast lung has been transferred under my care recently, and radiography showed him to have a fractured skull vault, a crush fracture of the first lumbar vertebra, many fractured ribs, and a haemopneumothorax on each side. Nevertheless he is down on "someone's records as "blast." Is it possible that blast is commoner among sheep and goats than among men?—I am, etc.,

FRANK STABLER,  
Surgeon Commander, R.N.V.R.

### Thiouracil and the G.P.

SIR,—I have followed the reports of thiouracil with great interest, particularly the account in the *Journal* of the discussion at the Royal Society of Medicine (June 24, p. 852). There are, however, two somewhat disturbing opinions expressed by the specialists who took part in this discussion. It is reported that Mr. Cecil A. Joll "hoped that treatment with thiouracil would be allowed only under strict control, and that manufacturers would not release this powerful and dangerous drug to all and sundry." Dr. S. L. Simpson appears to support this by expressing the opinion "that it was a potentially dangerous drug and at present should be used only by those who had specialized knowledge and were capable of observing their cases closely." If it is the opinion of these speakers that thiouracil should be regarded as a dangerous drug whose sale is to be limited strictly to members of the medical profession, then I am in complete agreement with them. But these two passages which I have quoted, when taken with their context, would imply that the sale and use of these drugs should be further restricted to the élite among the specialists, and that the great majority of the medical profession should be placed on the same side of the fence as the layman, who is unable to obtain the drug except on a medical prescription.

Now if I have correctly interpreted these remarks, certain fundamental questions are raised. Who, for instance, is to decide who is a specialist who may safely be entrusted with supplies of thiouracil? Are the manufacturers to have lists of doctors whom they may supply, and who is to provide these lists? It possibly may not have occurred to the pundits of the Royal Society of Medicine that even general practitioners sometimes take a keen interest in their cases and are eager to follow the latest developments of research, particularly when there is afforded so powerful a remedy for a hitherto intractable disease. Surely the only criterion of trustworthiness for the use of these drugs must be the practitioner's own conscience. A man who has kept himself in touch with such information and reports as are available, and has carefully studied the needs of his individual patients, may safely be left to decide whether he is in a position to use these new remedies without endangering the health of those who trust him.—I am, etc.,

Hayle, Cornwall.

D. STANLEY-JONES.

### Chemotherapy in Otitis Media

SIR,—Mr. Steele's letter in your issue of June 24 (p. 854) emphasizes a very important point. If sulphonamide therapy is withheld in the early stages of otitis media we shall have many more mastoid infections. I have seen many "threatened mastoids" resolve completely under adequate chemotherapy, but, as Mr. Steele points out, it is the general practitioner who sees these cases in their early stages, in which their treatment is so important.

I think the general practitioner of to-day is very alive to the importance of this early treatment. Of course this does not mean that every case of P.U.O. should be put on sulphonamide therapy, but once a diagnosis of acute otitis media is made

this treatment should be started. Our admissions of acute mastoiditis are only about a third of those in pre-war days, and I venture to think they will even get less when early adequate treatment is universally given—I am, etc.

Guidford

T. I. JOHNSON

### Recurrent Laryngeal Paralysis complicating Infective Hepatitis

SIR—I was most interested to read the article on the nervous complications of infective hepatitis by Dr F. G. R. Lescher.

Some time ago I treated a lance-corporal with a moderately severe infective hepatitis with jaundice, during the course of which his voice became husky, and the ENT specialist, after reporting nil abnormal on the first complete examination of the patient, reported a commencing paralysis of the left recurrent laryngeal nerve. The otologist said that the paralysis really began before his eyes. The paralysis became complete and then made a very gradual recovery over a period of months. There were no other neurological signs or symptoms. There was no possibility of diphtheria, either cutaneous, facial, nasal, laryngeal, or cryptic. Numerous investigations such as blood sedimentation rate (normal), Wassermann reaction (negative), complete blood counts, x-rays (root of neck, chest, barium swallow, etc.) etc. were carried out and repeated.

No therapeutic agents used in the treatment of the infective hepatitis could have been responsible for the paralysis of the recurrent laryngeal nerve. Such treatment consisted of high protein, high carbohydrate, high vitamin (including massive ascorbic acid therapy and "multivite" tablets) and fat free diet, sodium bicarbonate thrice daily after food and magnesium sulphate in the morning when necessary.

As I was unable to demonstrate a known cause for the paralysis of the left recurrent laryngeal nerve, which occurred during the course of a moderately severe attack of infective hepatitis in a subject free from syphilis, I felt justified in regarding the neurological lesion as a complication of infective hepatitis from which the patient was suffering—I am, etc.

J. MACKAY-DICK

Major R.A.M.C., Medical Specialist, M.E.F.

### Sodium Pentothal in Nasal Operations

SIR—All of us will be very grateful for Dr Sandiford's advice (June 17, p. 826) on the administration of sodium pentothal.

In China, as a missionary, I did all the nasal operations under twilight sleep and cocaine, and continued with this method on returning to England until sodium evipal was introduced. Then I resorted to sodium evipal, only to turn to sodium pentothal as soon as it was on the market. It is indeed a wonderful anaesthetic. A few days ago I did a septum, Caldwell-Luc and a Sluder's sphenoidectomy under this anaesthetic and then, as there was no pus, only thickened polypoid membrane in the nasal sinuses, I dissected out the tonsils while the patient was under the sodium pentothal, and it proved to be a perfect anaesthetic for this extensive operation. The pre-anaesthetic was morphine 1/4 gr., scopolamine 1/150 gr., atropine 1/100 gr., and oxygen given during the whole operation through an intrapharyngeal tube.

I have had only one death among the many patients operated on in two hospitals and two private nursing homes. This was a private patient, a woman, and while the pentothal was being administered I painted the face with iodustrial spirit. The patient ceased to breathe, and in spite of artificial respiration she died almost at once, before I had time to arrange the towels or commence operation. The pre-anaesthetic in this case was omopon 1/3 gr., scopolamine 1/100 gr., and atropine 1/100 gr. The anaesthetist, who is highly skilled and has administered many anaesthetics for me, said the death was due to my applying the iodustrial spirit while he was inducing anaesthesia, so now my first rule is never to go near the patient until he is fully under the anaesthetic, applying cocaine in the bedroom before the patient is carried to the theatre. My second rule is to have picrotoxin in every theatre in which I operate, as unfortunately there was no picrotoxin in the theatre on that fatal day, and I consider the drug far superior to coramine or oxygen in such a case. My usual

anaesthetist administers oxygen during the whole operation inserting a small metal mouth tube before commencing the anaesthetic, and then he inserts a curved rubber tube attached to a metal tube into the pharynx, through which he administers oxygen.

To sum up in nasal operations safety is produced by (1) never touching the patient until the anaesthetist says the patient is not only asleep but also well under the anaesthetic, (2) never operating without having picrotoxin at hand for intravenous injection, (3) having a tube in the pharynx for the continuous administration of oxygen, which renders the second safeguard unnecessary except for my own peace of mind, and (4) giving a minimum dose of morphine or omopon—i.e. 1/6 or 1/8 gr. never 1/4 gr.—as I believe a contributory cause of death in my one fatal case was the administration of too large a dose of omopon.

These extra notes might be added to Dr Sandiford's most helpful advice—I am, etc.

Harro, etc.

W. S. THACKER NEVILLE

### Ether and the Oxford Vaporizer

SIR—I was sorry to see a letter in your correspondence columns deprecating the use of ether in the Oxford vaporizer. At the Wellhouse Hospital, Barnet, we have used this machine for some considerable time for the anaesthetization of many hazardous cases and our results have been quite strikingly successful. In case some practitioners should feel that the use of ether is out of date and that they are not doing their best for their patients I should like to record a recent case.

A man aged 40 was admitted as an air raid casualty. He had received blast from a bomb on his left side and the whole of the left side of his body was peppered with innumerable fragments of glass, some of which had passed into the abdomen. It was felt that he was suffering from intraperitoneal haemorrhage as well as very severe shock. Ten days previously he had undergone the operation for artificial pneumothorax for tuberculosis on his right lung, the one remaining lung being on the blasted side. It became evident that to save his life an exploratory laparotomy must be done.

A request was made to the surgeon to use local anaesthesia but he requested ether through the Oxford inhaler, and I agreed to administer it. He was given endotracheal oxygen-ether from the Oxford vaporizer. The spleen was found ruptured and was removed but the haemorrhage continued, so the surgeon had to make a thorough exploration. In the mesentery numerous branches of superior mesenteric artery were found bleeding and a number of vessels had to be tied. There were eleven perforations in the jejunum, and it was obvious that the intestine would have to be resected to include the damaged mesentery, and this was done with end-to-end and precautionary side-to-side anastomosis. The abdomen was closed after an operation lasting one hour and forty-five minutes from start of anaesthesia to completion. The patient made swift and uncomplicated recovery. There was no post-operative chest or any other kind of trouble.

Now this is only one of the many difficult and dangerous cases which come our way with frequency. I believe that ether is still the best anaesthetic for these cases and that the Oxford vaporizer is the best way of administering ether—I am, etc.

New Barnet.

JOHN ELAM

### Pentothal Anaesthesia

SIR—I have read with great interest the letters of Drs F. W. Roberts and H. B. C. Sandiford (June 17, p. 825) on the administration of pentothal. An ancient pentothal "fan," I have used it very extensively indeed since it came on the market, and have never yet experienced a fatality following its use, I attribute this to the fact that I have a very lively respect for this powerful anaesthetic agent. To avoid fatalities I would insist on the following.

1. It should be administered by experienced anaesthetists only. No rank-and-file medical officer, in fairness to the safety of the patient, should be allowed to use this powerful—dangerous, if you like—drug.

2. It should never be administered to casualties suffering from severe haemorrhage or prolonged exposure.

3. It should never be used in toxic or debilitated cases.

4. It should be used with the very greatest care following injection of morphine, especially after repeated injections. The respiratory depression caused by pentothal adds to and accentuates the similar action of the morphine, leading in many cases to some anxiety.

5. The solution of pentothal should never exceed 5%; the more serious the case the weaker the solution.

6. An assistant should *always* be at hand to see that no occlusion, partial or otherwise, of the air passage occurs; *the jaw must be held up*, otherwise severe spasm may occur.

7. Don't hurry anaesthesia by rapid administration; 2 to 3 c.cm. in the first minute—no quicker; subsequent administration should be slower.

8. When the patient is surgically anaesthetized stop the administration, and only when necessary continue the injection 1 c.cm. at a time as required.

9. The following should always be at hand: oxygen, picROTOXIN, ephedrine, and coramine; and, needless to say, the doctor conducting the anaesthetic should know how and when to use them.

The dose required to produce anaesthesia varies enormously; hence the required experience. To illustrate this wide range of dosage I cite three cases of my own.

1. M., aged 17. Operation, extraction of four teeth. 1½ g. only just produced the necessary anaesthesia.

2. M., aged 37. Operation, nasal septum. Premedication 1/100 gr. atropine and 1/4 gr. morphine. 2 g. required to produce anaesthesia. Respirations and pulse normal. Twenty-five minutes after the injection the patient was talking quite normally.

3. F., aged 34. Previous history of tuberculosis but no actual lesion. Operation, hysterectomy for fibroids. Premedication 1/100 gr. atropine and 1/4 gr. morphine. Pentothal requested, to be followed by N<sub>2</sub>O and O. One large ampoule of pentothal (1 g.) dissolved in 20 c.cm. water. Of this 7 c.cm. produced surgical anaesthesia. Fifteen minutes later patient started to move; 3 further c.cm. in three minutes was injected. Five minutes later respirations stopped, pulse feeble. The syringe was withdrawn, gentle artificial respiration and continuous oxygen were started. Two c.cm. picROTOXIN intravenously and coramine intramuscularly were given. The operation was so far advanced that it had to be completed. After fifteen minutes respiration restarted and pulse very much improved. The operation was finished successfully, and after four hours the patient was fully awake and her condition was good. The whole operation—lasting 45 minutes—was performed on 1/2 g. of pentothal and the premedication.

Even the most experienced anaesthetist, exercising the greatest care and vigilance, will get, when he least expects it, a reminder that pentothal anaesthesia is not always "child's play."—I am, etc.,

OSWALD J. MURPHY,

Dublin.

Hon. Anaesthetist, St. Vincent's Hospital.

### Metatarsalgia

SIR,—As a unit medical officer in the R.A.F. I see numerous cases of painful feet, and I was particularly interested in the letter by Mr. A. C. Fisher (May 27, p. 731) on the subject of metatarsalgia.

The term "metatarsalgia" may be applied to several conditions, but the one to which Mr. Fisher refers is clearly the static or relaxation variety which follows unaccustomed standing or walking (particularly the former, in my experience), and I think few will disagree with his statement that a metatarsal bar is singularly ineffective in its treatment. I cannot agree, however, that the existence of an anterior transverse arch of the foot is a piece of anatomical fiction, for, although flattened at every step, it is there to be seen in the normal foot, and is in fact restored when fallen by the very exercises described by Mr. Fisher. Moreover, the arch can be exaggerated by voluntary activity of the muscles of the foot. Surely, too, the large thick callosities so often seen beneath the head of the third metatarsal are sound evidence that in this condition more pressure than normal is being borne at this site—i.e., the arch has fallen.

However, the main point of this letter is to support the treatment which Mr. Fisher describes and to stress the importance of foot exercises in the prevention of painful feet. Being convinced from the effect of rest, and from the history of prolonged standing almost invariably given, that the condition results from muscular fatigue, I keep the patient in bed for two days before commencing the exercises with the patient seated and his feet on the floor. As the power of flexion of the toes increases the feet can be made, by alternate contraction and relaxation of the muscles, to crawl forwards along the floor in caterpillar fashion. This exercise is continued at first for five minutes and later ten minutes every hour until the patient can pick up a handkerchief with his foot. In the

early stage hyperhidrosis of the feet is usual, and much relief is given by contrast foot-baths twice or thrice daily. Before discharge it is impressed on the patient, as Mr. Fisher points out, that he must continue the exercises whenever he is standing, alternating them with rocking slowly up and down on the toes.

Having experienced this condition personally, I can confidently say that the whole-heartedness with which it produces and the mark and lasting relief afforded by redeveloping the muscles. I am, etc.,

A. STANDEVEN, F.R.C.S. Ed.,  
Fl. Lieut. R.A.F.V.R.

### Cold Agglutinins

SIR,—In your leading article on cold agglutinins (July p. 16) you state that "an abnormally high titre of cold agglutinins has been found in the serum in a variety of diseases but most constantly in atypical (virus) pneumonia and trypanosomiasis, in both of which diseases the reaction is of diagnostic value." It may be of some interest to state that some weeks ago I examined six samples of serum, sent me by the courtesy of the Director of Medical Services, Uganda for cold agglutinins. The sera were separated from the patient cells before being dispatched, and it was therefore not possible to test the former against Group O cells. The methods I used were similar to those given by Turner *et al.* (*Lancet* 1943, 1, 765), and my results were completely negative. A cases were proved ones of sleeping sickness, and the sera were tested for sterility on arrival.

Obviously no conclusions can be drawn from such a small number of cases, but it may be that haemautoagglutination in this disease is not so common as some authors and textbooks would lead one to believe.—I am, etc.,

Godalming.

KENNETH FROOVE.

### Estimation of Dental Caries

SIR,—There are several criticisms which could be made of the report on the improved dentition of London school-children (June 24, p. 837), but I wish to confine myself to one point only—namely, the method of examination adopted for classification of degrees of caries. It is absolutely impossible to gauge the extent of carious destruction with a mirror and probe examination only, and it is frequently impossible to detect interstitial caries except with x-ray films. I do not think that any dentist of experience who has consistently used x-ray films to check his routine examinations would dispute this statement.

Where caries has destroyed a large part of the crown the condition is clear, but Lady Mellanby seems unaware of the fact that a tooth may show only a slight stain, and, on drilling, it may be found that the caries has penetrated to the pulp tissue.

Dental research on the lines adopted by Lady Mellanby should only be undertaken if it is realized that: (a) x-ray examinations must be made; (b) every tooth showing signs of caries must be drilled to ascertain the extent of penetration of the caries. If it is not possible to conduct the examinations in this way then the research should not be undertaken.—I am, etc.,

Oxford.

DOROTHY SMITH.

### Ophthalmologist and Optician

SIR,—I have followed with interest the recent correspondence on the status of the sight-testing optician, and feel that there are important points of view which have not yet been stated. I am one of the small handful of men who, before entering medicine and practising ophthalmic surgery, were opticians, and who should perhaps be in a position to view the question from a different angle from the purely medical and optical factions.

First, it must be realized that the sight-testing optician is essentially a product of the evolution of our present social system, and he has developed in response to a public demand for a retailer of spectacles who could at the same time advise as to the nature of the lenses required. In fulfilling this demand the optician has set himself voluntary, but at the same time fairly high, educational standards to ensure that the service he renders shall be of a definite value, and not only does he aim at becoming proficient in refraction but also at being capable in the detection of such abnormal conditions as should be referred to a medical man.

Secondly, it must, I think, be admitted by the medical profession that earlier in this century, during the period in which big development in the optical profession took place, the combined facilities offered by the ophthalmic surgeon and the dispensing optician were both inadequate and too expensive for the community as a whole.

Thirdly, even to-day, if all refraction work of the community was undertaken by the ophthalmic surgeon he would be grossly overworked and unable to give proper attention to what should be his chief activity—the care of the diseased eye. Moreover, if all refraction was done by medical men the proportion of ophthalmic work which might be labelled ophthalmic medicine and surgery would be very small giving rise to the alternative of (a) The employment of skilled surgeons with highly specialized knowledge in the mechanical measurement of errors in healthy eyes (b) The creation of a body of medical men to be engaged solely in refraction and the reference of pathological conditions to his more skilled colleague. My comments on this are (1) it would result in complete waste of medical training, knowledge, and skill that could be better employed in some other branch of medicine, (2) the optician properly trained in clinical methods could do the work.

There are I know, many in the medical profession who regard the sight testing optician as an evil. To them I would suggest that he must be regarded as a necessary evil and that all possible must be done to minimize any harm which they consider he might do. The means for this are in my opinion obvious. Improved educational facilities must be afforded the optician, and this can be done both by the medical profession as a whole and by its members individually. For myself, I owe my initiation into ophthalmology to those optical organizations which instituted examinations for which I originally studied. I am indebted to the optical profession for a wide experience in refraction and the recognition of ocular disease, and I have to thank an income derived from optics for my medical training. To pay those debts I consider it a moral obligation to further in any way possible especially in the field of education the cause of the optician.

I have recently seen a document purporting to quote a letter from an ophthalmic surgeon who was at one time like myself an optician. This gentleman has, apparently, nothing good to say for the optician, optical organizations, or the requirements and facilities of optical education, and I cannot but feel how much better it would be for him to offer his criticism in a constructive and helpful manner to the optical profession to which I am sure he owes his original interest in ophthalmology.

I was recently consulted by the Joint Advisory Committee to the Optical Profession (which represents some half-dozen organizations with I believe a total membership of over 8,000) regarding the future of optical education. Would it not be to the benefit of the community as well as the medical and optical professions if that committee had the advantage of the advice co-operation and practical help of leading and truly representative members of the ophthalmic section of the medical profession?—I am, etc.,

London W 1

GEOFFREY EBBAGE.

### A National Pathological Service

SIR—It is indeed an interesting article that you published in your issue of June 10 on a national pathological service. It is very significant of the times in which we are living that a self-constituted group of leading pathologists should thus gratuitously undertake what even inveterate Governmental planners have not carried out.

There is abroad, not only in the medical profession but throughout the world, an entirely erroneous idea that the sorrows of the universe can be obviated by man-made plans. That most of these plans must be products of the essentially finite mind of man appears never to have been considered. Any hastily conceived plan or written scheme must necessarily be non-elastic and entail a measure of compulsion, more or less rigid, on the public and professions concerned. This present eruption of planning is surely the outward sign of a disease of the "body politic." There appears to be no method of assessing how widespread is the infection without recourse to the medium of publicity.

The plan put forward appears to partake of the full virulence of any and all of the plans for the compulsion of the public. Unfortunately the fact that these medical planners are prominent in their profession may blind the eyes of the rest of their colleagues to the essential unsoundness of some of their suggestions which while they embody some very useful and desirable points also indicate a desire to meddle with matters entirely outside their scope.

It is worthy of comment that the 'planners' are all largely of the academic type. That they should advocate the correlation of pathology under their own aegis is perhaps not difficult to understand. Unfortunately there must be a suspicion that these authors aspire to be the constituent members of the Gestapo-direction of the new plan. An indication of their outlook is the naive suggestion that coroners' work should come under their protection and care. That coroners' work is in the hands of general practitioners is not a fact. Most coroners' work is in the hands of specialized pathologists and more and more is coming into their hands. Those concerned with this subject realize that there is so much coroners' work that it would not be fair for senior hospital pathologists to be expected to undertake it. Crime quite frequently does come to light during the performance of routine coroners' necropsies, is it suggested when this occurs that the senior hospital pathologist "should drop the inquiry and hand it over to the medico-legal officials, or what?" It is perhaps worthy of consideration that these ardent planners have not condescended to ascertain facts nor so far as can be seen to ascertain the views of those engaged in coroners' morbid anatomical work, neither have they, apparently, made any approach to the Coroners' Society.—We are, etc.

E. E. HEANEY  
H. M. STANLEY TURNER,  
DAVID HALER,  
Guildford Practitioners' Group

### Medical Training

SIR—Criticism of the medical curriculum is a perennial subject, and doubtless there is something to be said for improvement in the courses of study for medical students, but one wonders if the wholesale criticism so often indulged in is not too severe. The test of anything is how it works when put into practice and one definite test of the medical curriculum is found in seeking to apply in primitive conditions what has been taught in student days, for in primitive conditions one has to start from the foundation by gathering together the required equipment, and even to erect the necessary buildings for carrying out medical practice as inculcated by our teachers.

For almost twenty years I have been in medical work in the African bush and veld, and the experience gained has made me grateful to professors, lecturers and the writers of medical textbooks. The chief regret has been that more was not made of student days. The daily dispensary has remained of absorbing interest. During the first five years after graduation there was hardly a day so which one did not encounter something that had been heard of or read about but not seen previously. How thankful one has been for the many hints garnered from teaching surgeons and physicians, helps which could be recalled with pleasure to oneself and profit to patients. So much has this been so that the conviction has grown that every scrap of teaching and experience can be made use of when out in the wilds on one's own.

For example, on one occasion I was confronted in the bush by a man with a dislocated shoulder, brought by a crowd of raw Africans. No anaesthetic was immediately available and without it there was failure in applying the standard Kocher's method for reduction. There seemed nothing for it but to have the patient taken by canoe to our hospital, which was twenty miles away. Then there flashed across the memory an afternoon in a surgical dispensary of a Glasgow infirmary, when a surgeon dramatically reduced a shoulder dislocation by laying the patient on the floor, standing on a chair and using the muscles of the patient's arm by pulling steadily on them for three minutes, then jumping over the patient's body and letting the arm drop in the passing. This method was hopefully attempted in front of the gaping crowd, and, coming off first attempt, rejoiced them because it so much savoured of the magic which African hearts love. That Glasgow surgeon will ever be gratefully remembered by his student. Such incidents could be multiplied indefinitely.

Thousands of patients are helped every year at the outposts of Empire by the application of the teaching which was given



by those whose work is so much criticized. If advice may be given to students, it would be along the line of absorbing all the knowledge they can from their teachers and textbooks. Such instruction, along with the help given by trained European nurses, is the biggest factor in postgraduate work abroad. Even the preliminary sciences should be studied gladly, for they provide a good base. The teaching of anatomy is most often the butt for criticism. Looking back one is not aggrieved at the amount of detail which had to be assimilated, rather the regret is that so much of what was taught has been allowed to slip the memory.

Professors, medical curriculum, British Medical Association, medical textbooks—all come in for sharp criticism. Professors are not always interesting lecturers, we know, but we are indebted to them, and their fairness in examinations is remembered with gratitude. It may be possible to improve the medical curriculum, but it is to be remembered that it has been built up after much thought, trial, and error. The British Medical Association may have its faults, since it is composed of human beings, but medical life and practice in the backwoods would lose much if the pages of the *British Medical Journal* were not available for perusal. Medical writers may give us dry books at times, but their compact volumes guide us out of many difficulties. One colleague, who built up a successful surgical practice, while operating used in his early days to have a number of books stuck up in the operating theatre, all open at the appropriate pages ready for reference in emergency, and he would have repudiated the suggestion of a critic to burn such tomes.

To criticize is easy, cheap, and destructive; but to lecture, demonstrate, and write is difficult, costly, and constructive. Let us give honour where honour is due.—I am, etc.,

Scottish Livingstone Hospital, Molepolole, S. Africa. P. M. SHEPHERD.

### Character and Personality in the Medical Student

SIR,—Evolution has shown that in a self-sufficient community we have to have our dustmen as well as our doctors. The dustman is just as much of a specialist in his job as the doctor is in his and just as important. Heredity and environment are by no means negligible factors in a child's upbringing, and therefore we tend to look for our future dustmen among the children of dustmen and our future doctors among the children of doctors. Presumably when we painted ourselves with woad and lived in caves we were approximately equal in wealth, eminence, and social position. As time went on differences in social position due to differences in character and ingenuity developed, until at the present time we find ourselves members of a very complex community with its many specialized jobs and many gradations of wealth. This evolution was gradual, and inevitable.

As well to remember that legislation should always be enacted for the good of the majority and not for the good of a few exceptional cases. To illustrate: legally it is criminal to induce an abortion except for certain specified reasons, and in the exceptional case of a girl being raped and becoming pregnant the law offers no remedy. The Planning Committee of the College of Physicians takes the opposite view to this legal axiom, and for the sake of the few exceptional cases of dustmen's children wanting to become doctors throws open the portals of medicine to everyone.

I congratulate most warmly Dr. E. D. Broster on his courageous letter (May 27, p. 729). I feel it is high time that we paid tribute to our men of letters and our great industrialists instead of sneering at them in a manner calculated to gain momentary favour for ourselves in the eyes of our dustmen—a habit that is becoming far too fashionable nowadays. Let us realize that, in general, the possession of wealth, intelligence, and individualism is not a thing to despise, and that through centuries of evolution the doctor has achieved a certain social standing with a certain reputation for manners, courtesy, and sympathy which make him as acceptable in the tenements of the poor as in the palaces of kings.

In view of the foregoing I find it hard to appreciate the sentiments implied in Dr. H. E. Vickers's letter (June 17, p. 828), and wonder if he seriously asks us to put the clock back 2,000 years.—I am, etc.,

Menston, near Leeds.

R. JOHN GOURLAY.

### Spanish Medicine

SIR,—It would be hard to compile a more misleading article than the one on Spanish medicine which appeared in your issue of June 17 (p. 820). Will you afford me space to correct two major absurdities which are representative of a constant recurring theme in the literature of modern amateur historians.

The first is a well-known myth about Michael Servetus. Your correspondent may have intended to deceive; I prefer to believe that he is ignorant either of the facts or of the plain meaning of his own words. However that may be, Servetus had no ecclesiastical music to face on account of his attack on Galen; nor did he fly from Catholic Spain to Geneva. He left Spain in 1529 as the secretary of the Emperor's confessor and spent the rest of his life wandering about Europe. His discovery of the lesser circulation was probably made at Paris, and, so far as is known, brought him neither ecclesiastical censure nor medical renown. He then wrote a book on theology, controverting a dogma which was dear to Calvin—the consubstantiality of the Father and Son in the Trinity. Calvin denounced him to the French Inquisition, from the prisons of which he escaped after a brief confinement, only to suffer death by burning at the hands of Calvin.

The second is summarized by your correspondent in a grandiloquent sentence: "The reason for this poverty of medical science . . . must surely be sought in the anachronistic survival of that spirit of authoritarianism which is the mortal enemy of experiment and discovery." For those of us who believe in the virtues of democracy and the vices of authoritarianism it would be nice if this were so, but, of course, it is nonsense. One could adduce countless examples, beginning with Galen (that ingenious experimenter who discovered the secretion of urine by the kidneys), to disprove this thesis; I shall content myself with three modern ones. (1) Both Pasteur (who lived and died a Catholic, by the way) and Claude Bernard received their first encouragement from Napoleon III, a free-thinking authoritarian. (2) The greatest advances in German medicine have all occurred under authoritarian regimes; the discovery of the antibacterial potency of sulphonamides by Domagk is only the latest example of a long series which stretch back to the beginning of the nineteenth century. (3) Pavlov commenced his great work under the Czars and finished it under the Bolsheviks. Stalin, who is probably the most convinced authoritarian of all time, liberally encourages medical research.

It would indeed be much easier to argue in favour of the exact opposite of your correspondent's thesis; but the clear truth is that medical advances are quite independent of political or ecclesiastical regimes. They depend largely on the wealth and education of the country concerned. Spain is poor and her people have had few opportunities of secondary and university education, because she has been ruled for 100 years by an oligarchy of more or less corrupt politicians who were more concerned to expropriate than to obey the Catholic Church.—I am, etc.,

Dublin.

T. W. T. DILLON.

Dr. Alexander Lipschutz, director of the department of experimental medicine of the National Health Service at Santiago, Chile, has been awarded the second \$2,000 prize given by Dr. Charles L. Mayer and administered by the National Science Fund of the National Academy of Sciences, New York. The prize was offered for an outstanding contribution made in 1943 to present-day knowledge of factors affecting the growth of animal cells with particular reference to human cancer. The recipient of the 1942 award was Dr. Charles Huggins, professor of surgery at the University of Chicago. During the last six years Dr. Lipschutz, together with the Chilean scientists working in his laboratory, has studied the fibromyomas of the uterus which can be induced in guinea-pigs by injecting certain sex hormones of the female. The growths closely resemble the fibromyomas ("fibroids") which occur in women during the childbearing period, and Dr. Lipschutz has shown that, like these they dwindle and vanish when the stimulation of the sex hormones is withdrawn, as happens after the menopause in women. He and his associates have sought means to prevent the occurrence and enlargement of the growths while the hormones are still acting, and recently they have found that some other hormones, from other organs, have this effect, as do also certain substances synthesized by chemists. The molecular configurations responsible for the influence of the antifibromatous agents are now under investigation.



## Obituary

PROF. J. SHAW DUNN

Dr. A. PINEY writes:

May I pay a tribute to the memory of John Shaw Dunn, who held the chair of pathology in Birmingham when I was lecturer in pathology? The obituary notice in the *Journal* ignores the qualities of Shaw Dunn as a teacher and as a man. He was an excellent and lucid exponent of pathology, and everyone who attended his demonstrations in the post-mortem room was enthralled by his clarity. Admittedly, for a time after he started his work in Birmingham, both students and junior pathologists were very much in awe of his rather cold manner. It was not long, however, before he was described in the students' magazine as "a facultative humorist of the dry type"; and his personal popularity became so firmly established that there was much regret when he went to Manchester. Others who have worked with Shaw Dunn more recently than I can doubtless add much to our knowledge of him; but I feel strongly that the extreme honesty of mind, the care in the preparation of lectures, and the essential kindness and humour of this outstanding figure among modern pathologists should be emphasized.

Dr. WILLIAM HABGOOD, who died in retirement at Bourne-mouth on June 6, aged 81, was medical officer of health for Sutton, Surrey, from 1908 to 1934. He studied medicine at King's College Hospital, and after qualifying as M.R.C.S., L.R.C.P., and L.S.A. in the early 'eighties, took the Brussels M.D. degree in 1888, and the D.P.H. of the English Conjoint Board in 1893. Before his appointment at Sutton and Cheam Dr. Habgood had been assistant M.O.H. at Cardiff and at Nottingham and assistant school medical officer under the Surrey Education Committee. He joined the B.M.A. in 1887, was secretary of the Section of Psychology at the Annual Meeting of 1891, and vice-president of the Section of Medical Jurisprudence at the Aberdeen Meeting in 1914.

Dr. HILTA INES CHRISTINA MORLEY, with her husband, Stephen Charles Morley of the Nigerian Marine Department, has died by enemy action at sea. Her maiden name was Pfister and she had a distinguished student career in the University of Western Australia, Perth, where she graduated B.A. (with first-class honours) in 1920, and in the University of Edinburgh, where she graduated M.B., Ch.B. (with first-class honours) in 1925. Dr. Morley had been lecturer in physiology at the University of Birmingham, medical officer to St. Alfege's Hospital, Greenwich, and senior house-surgeon to the Elsie Inglis Maternity Hospital, Edinburgh. She joined the B.M.A. in 1926 and took the D.P.H. of the Conjoint Board in London in 1931. Until lately she had lived at Cheltenham.

With the passing of JOSEPH WALKER, M.R.C.S., L.S.A., on June 18 at the ripe age of 93 years the Liverpool Division has lost a courtly Victorian physician. He first settled in the district at Kirkby in 1888, and in 1899 came to Bootle, where he practised for 40 years before retiring to Formby. He joined the B.M.A. in 1884 and quickly became interested in medical politics. He was Representative for Liverpool Division at six Annual Meetings, and had been chairman of the Division. He took a great deal of interest in the first National Health Insurance Act, and though he never joined the panel he was always ready to help those practitioners who wished to join; he served on the Bootle Insurance Committee for some years and went as a representative of the Bootle Local Medical and Panel Committee to the Annual Panel Conference. He also took a great interest in the Royal Medical Benevolent Fund, and for many years was honorary secretary for Bootle. In motoring he was one of the pioneers, and I well remember his De Dion single-cylinder car. He was an avid reader of his *Journal*, and whether it was an academic leading article or a medico-political point which affected the profession generally, he was as ready to discuss the one as he was to repudiate the other; his grasp of the essential point was great, and his judgment almost unerring and at times uncanny. To the younger generation of doctors he was most kind, always ready to help with sound, fatherly advice, tempered with a gentle humour that endeared him to all fellow practitioners and patients alike.—E. I. C.

Dr. JEAN GWENNETH BRABNER died by enemy action last month while on hospital duty. She was the elder daughter of Mr. and Mrs. W. W. Brabner of Harley, Loughton, Essex, and only entered the profession this year, qualifying as M.R.C.S., L.R.C.P., and joining the British Medical Association.

The death is announced at Sandgate, Kent, of Dr. WALTER DENBY, formerly of Bradford, aged 83. He graduated M.B., C.M. at the University of Edinburgh in 1887 and proceeded M.D. in 1898. After service as house-surgeon at the Bradford Royal Infirmary he practised for 30 years in Great Horton Road, Bradford, and was senior surgeon to St. Catherine's Home for Cancer and Incurables. Dr. Denby joined the British Medical Association as long ago as 1888; he retired from work in 1924.

## The Services

The announcement concerning Capt. R. Fletcher, R.A.M.C., published in a *Supplement to the London Gazette* dated April 6 and in the *Journal* of April 29 (p. 605) as mentioned in dispatches should have read Capt. (Temp. Major) R. T. Fletcher, R.A.M.C.

Owing to a printer's error the name of Wing Cmdr. G. B. Grayling, R.A.F.V.R., published in the *Journal* of July 1 (p. 29) as mentioned in dispatches, was incorrectly spelt.

### CASUALTIES IN THE MEDICAL SERVICES

Capt. SAMUEL CHARLES HOLLAND HOOD was killed by enemy action in Normandy on July 13 at the age of 25, being struck by a mortar shell while actually attending to wounded. He received his education at Tonbridge School, Caius College, Cambridge, and the Middlesex Hospital. The final part of his clinical training was carried out at the Royal Hospital, Wolverhampton, and he obtained the Conjoint diplomas in 1942 and the M.B., B.Ch. the following year. Mr. R. Milnes Walker writes: After qualifying he held for a short time a resident post at the Hallam Hospital, West Bromwich, and was subsequently house-surgeon at Wolverhampton. While there he won the respect of all those who worked with him by his conscientious attention to his duties and the diligence with which he carried out his work. He was rapidly developing a sound critical judgment. His especial interest lay in the study of diseases of the chest, and he had hoped after the war to follow this up by further study of tuberculosis. While at Cambridge he was a member of the Cambridge University Scientific Expedition to North-East Greenland. His commanding officer writes in glowing terms of the exceptional way in which he carried out his work during the first difficult days in Normandy.

Wounded—Temp. Major F. L. Cane, War Subs. Capt. C. Moore, War Subs. Lieut. A. S. Smith, R.A.M.C.

Died of wounds—Capt. C. H. Blackham, R.A.M.C.

Reported prisoner of war—Capt. G. S. Hodge, R.A.M.C.

## Universities and Colleges

### UNIVERSITY OF BIRMINGHAM

At a Congregation on July 1 the following degrees were conferred:

Hon. M.D.—H. Guy Dain, M.B., LL.D.  
Hon. M.Ch.W.—W. Warwick, James O.B.E., FRCS.  
F.N.M. M.B. Ch.B.—R. Asley, R. F. Baird, Kathleen J. Bee, Katharine N. Bentley, D. H. Blake, M. B. Catherine, Hilary B. J. Cooke, J. Cox, J. H. Cox, D. F. Davies, H. Geuter, Marguerite C. B. Grove, H. Y. Hain, F. M. Hall, H. Hughes, C. V. Kaula, J. G. Kendall, M. M. Lidgate, J. A. Litchfield, M. J. Lower, I. F. G. W. Marson, Winifred M. Mitchell, E. H. Mucklow, T. Mucklow, K. O. M. B. O'Meara, E. A. O'Neill, N. L. Owen, J. A. P. Pearce, P. G. H. Pollitt, IG. W. Poole, R. D. Poole, R. J. P. Push, E. T. Radford, R. G. W. Reeves, R. L. S. Richard, J. E. F. Riley, Audrey F. Roberts, B. S. Rose, R. W. Spencer, L. S. Stephens, E. J. Wadge.

The following scholarships, medals, and prizes have been awarded:

Queen's Scholarship (third year), L. W. Robinson; (fourth year), J. M. D. Roberts. Ingleby Scholarship, J. M. Mynors. Fowler Memorial Medal, Margaret D. Thompson. George Memorial Medal, Margaret L. Hampton. Priestley Smith Prize in Ophthalmology, Butterworth Prize, and Queen's Scholarship (final year), Theresa Lazar. Queen's Scholarship (fifth year), J. R. G. Bastable. Leith-Newman Prizes in Pathology (fourth year), Medical, R. F. Marun; Dental, E. A. Marsland. Thompson Prize in Anatomy (third year), L. W. Robinson. Russell Memorial Prize, F. G. W. Marson. Windle Prize in Anatomy, M. G. Fitzgerald. Barratt Nelson Memorial Gold Medal, O. P. Gray.

†Distinction in Medicine. ‡Distinction in Surgery.

### UNIVERSITY OF DUBLIN

The following medical degrees were conferred on June 28 in the School of Physic, Trinity College, Dublin:

M.D.—F. S. Stewart.  
M.B., B.Ch., B.A.O.—M. L. Abrahamson, S. Barnes, R. W. Barter, F. J. Burns, D. D. Crilly, J. J. Cussen, H. E. Devlin, L. Doyle, B. V. Earle, R. E. Fenelon, Mary Fitzmaurice, D. A. Good, W. E. R. Hackett, H. R. Hanna, Millicent R. Hopkins, W. H. Houston, A. R. B. Jackson, W. G. Keane, R. D. Levis, D. D. McGrath, M. S. Millard, J. R. Moore, Betty R. O'Grady, E. G. Rednan, J. P. Rees, H. H. Robinson, L. M. Roe, Margaret E. Rutherford, S. N. Rutherford, W. H. Rutherford, J. B. Ryder, Betty D. Scott, J. M. Stewart, V. O. Stewart, C. W. Sweetnam, A. B. Walsh, Mary L. Grove-White (formerly Wilson), W. T. C. Wilson.

## UNIVERSITY OF LEEDS

The following have been successful at recent examinations:

M.D.—S. Wray.

FINAL M.B., CH.B. (Part I):—Rhoda M. Allison, Betty S. Astle, Joan L. Awmack, J. G. Beinstead, 2G. L. Bickler, E. G. Brewin, J. L. Broadbent, 2A. K. Daniels, 1J. Davies, P. B. Dewes, O. P. Edmonds, G. R. Fryers, R. L. Gibson, Pauline H. Goss, Gertrude Harris, M. H. M. Harrison, J. R. Heseltine, Mary A. Hewett, J. D. Holdsworth, Dorothy D. Jones, L. Langton, F. A. Lodge, F. D. Lumb, 2F. McKennell, D. H. McMillan, Marjorie S. Oxley, J. G. Pearson, R. E. Riley, Joan M. Robinson, L. B. Robinson, 2R. J. Scothorne, H. Shooman, 12F. G. Smiddy, J. G. Smirk, Stella A. Spight, G. M. Thornton, E. J. S. Townsend, L. E. Wear, 2R. W. Wilkinson, 2Elizabeth Wilman, L. E. Wood, 2A. S. Woodcock, Ellen L. M. Wreford, H. J. Wright, A. D. Zermansky, D. Zimmerman, Therapeutics: Betty S. Astle, Joan L. Awmack, 3G. L. Bickler, J. L. Broadbent, K. J. Burnett, P. S. R. Burrell, A. K. Daniels, 3J. Davies, P. B. Dewes, R. L. Gibson, Pauline H. Goss, D. G. Hardy, Elizabeth M. Hargreaves, 3M. H. M. Harrison, Edith V. Heritage, J. R. Heseltine, Mary A. Hewett, J. D. Holdsworth, Dorothy D. Jones, Catherine M. Lamplugh, 3L. Langton, F. A. Lodge, J. McKennell, D. H. McMillan, J. G. Pearson, R. E. Riley, Joan M. Robinson, L. B. Robinson, R. J. Scothorne, H. Shooman, R. S. Soman, F. G. Smiddy, Stella A. Spight, G. M. Thornton, L. E. Wear, R. W. Wilkinson, Elizabeth Wilman, L. E. Wood, A. S. Woodcock, Ellen L. M. Wreford, 3H. J. Wright, A. D. Zermansky, D. Zimmerman.

<sup>1</sup> Distinction in Public Health. <sup>2</sup> Distinction in Forensic Medicine.

<sup>3</sup> Distinction in Therapeutics.

## UNIVERSITY OF LIVERPOOL

The following candidates have been approved at the examinations indicated:

M.D.—G. J. C. Brittain, P. Jones.

M.B., CH.B.—12J. V. Shephard, Part III: P. M. Edis, K. B. N. Freeman, N. J. Gourdji, Ethel J. Higgit, Constance G. Lec, Margaret J. Lezama, J. K. Meiring, Margaret Slater, A. Stone, Barbara K. Thompson, R. S. Williams, Passed in Separate Subjects: E. H. Ansell and A. Griffith (Medicine, Obstetrics, and Gynaecology), D. A. Harbord (Medicine and Surgery), Part II: H. B. Andrews, A. D. Charnley, E. Cooper, 3K. R. Dumbell, S. Gillis, J. T. W. Jones, S. Lipton, J. B. Roberts, Passed in Separate Subject: M. M. I. el Haddad (Public Health).

<sup>1</sup> Second-class honours. <sup>2</sup> Distinction in Surgery. <sup>3</sup> Distinction in Public Health.

## UNIVERSITY OF MANCHESTER

The following candidates have been approved at the examinations indicated:

M.D.—H. W. Clegg, E. L. Jones, 1E. L. Patterson, 2F. Stratton, Elizabeth C. S. Williams, R. V. Wright.

FINAL M.B., CH.B.—346R. W. Burslem, 3J. H. Diggle, 3Constance M. Duddle, 345John Hewett, 3P. Jewsbury, 344L. A. Liversedge, 34S. Olecky, 3A. E. Thomas, F. Bailey, D. G. Berry, Dorcas M. M. Dutton, J. D. Heppleston, R. Heirons, 6Marion E. Jepson, F. Latham, Margaret M. Lawton, J. Leary, Marian B. T. McIntosh, Joan A. Mettam, B. Nicholson, T. A. Nowell, Nancy B. Penney, Leslie Rose, B. Samuels, P. W. E. Sheldon, J. A. Shrigley, H. Tabush, G. S. Tupman, W. V. Wadsworth, G. H. Watson, B. Wilkins, Part I (Forensic Medicine and Hygiene and Preventive Medicine): Ruth A. Almsworth, Constance Atkinson, George Bennett, J. L. Braithwaite, Merton Brookes, N. J. Caldwell, Ethel F. Caplan, Dorothy B. Charlton, C. L. Dubberley, Mary E. Eagles, S. S. Epstein, G. C. Fletcher, J. H. H. Gibson, Doreen H. Hayes, F. Howarth, P. Jewsbury, Margaret Laycock, L. A. Liversedge, Kathleen V. Lodge, K. Lowe, B. Marsden, Kathleen P. E. Mumford, Sylvia N. Nabarro, J. A. Noble, Joan E. Nuttall, M. H. Oelbaum, S. Olecky, A. O. Osbaldeston, N. J. Ronsak, E. P. Samuel, M. G. Saunders, Cecilia M. Smellie, J. P. Smith, Margaret E. Tate, Margaret M. Tutton, Marie R. West, Alice R. E. Widdows, J. D. Willis, Eric Wood, J. Wiseman.

<sup>1</sup> Gold medal. <sup>2</sup> With commendation. <sup>3</sup> Awarded second-class honours. <sup>4</sup> Distinction in medicine. <sup>5</sup> Distinction in surgery. <sup>6</sup> Distinction in obstetrics.

## ROYAL COLLEGE OF SURGEONS OF ENGLAND

On July 6 three Fellows were elected into the Council to fill the vacancies caused by the retirement in rotation of Sir Robert Kelly, Mr. C. Max Page, and Major-Gen. W. H. Ogilvie. The following Fellows were elected:

William Heneage Ogilvie (Guy's)	572
Charles Max Page, C.B., D.S.O. (St. Thomas's)	490
Geoffrey Langdon Keynes (St. Bartholomew's)	341

The following were the other candidates:

Robert John McNeill Love (Royal Northern Hospital)	284
Perceval John Moir, M.C. (General Infirmary, Leeds)	257
Victor Ewings Negus (King's College Hospital)	216
Robert Milnes Walker (Royal Hospital, Wolverhampton)	209
Arthur Dickson Wright (St. Mary's)	183
Herbert Henry Sampson, O.B.E., M.C. (Queen Elizabeth Hospital, Birmingham)	180
Rodney Honor Maingot (Royal Waterloo Hospital)	167
Charles Alexander Wells (Royal Liverpool United (Royal Southern Hospital))	166
Stanford Cade (Westminster)	147
Charles Walter Gordon Bryan, M.C. (St. Mary's)	79

In all 1,238 voted; in addition 3 votes were found to be invalid. Major-Gen. W. H. Ogilvie, Mr. C. Max Page, and Air Vice-Marshal G. L. Keynes are all elected for the full period of eight years.

An appeal for funds to provide a General Orde Charles Wingate Memorial Ward in the Princess Tsehai Memorial Hospital at Addis Ababa was launched at a meeting of friends of Ethiopia held in London recently. Donations may be sent to the hon. treasurer, Lord Horder, c/o H. Reynolds and Co., 1, Bloomsbury Court, High Holborn, W.C.1.

## Medical Notes in Parliam

## Feeding Scottish School-children

The House of Commons discussed the Scottish education Committee of Supply on June 4. Mr. JOHNES that there was an increase in the general aid grant at to £436,000. Of this, £398,000 would go to the e authorities and the balance to technical colleges and institutes generally. The increase of £398,000 to ti authorities included a grant of £184,000 for me; milk in schools. The school-feeding grants had rise £471,000 to £655,000. This campaign for feeding in which was launched in the autumn of 1941, had been with increasing vigour. The number of children receive rs at schools had increased from 50,000 in Decembe to 175,000 in February, 1944, and during the past y numbers receiving dinner had increased by 50,000 n receiving lunches by almost 2,000. The percentage n meals at school was now over 25, an increase of 6% figure for 1943 and of 14% on that for 1942. The nu pupils receiving milk at school, as apart from mea increased by 14,000 during the past twelve months a now almost 69% of the entire school population of S.

While school medical examinations had been restri most parts of the country, what evidence there was remainder continuing examinations went to show that of the school-child was steadily improving, and in Glas particular the height and weight of the school-child b entry to the registers and at the school-leaving dates materially improving over the figures for the last pre-war

## Diagnosis of Smallpox at Mount Vernon Hospital

On July 4 Mr. VIANI asked the Minister of Health, i nexion with the announcements of his Department in the and on the radio in regard to the outbreak of small Mount Vernon Hospital, why no mention was made of t that the disease was introduced into the hospital by a r nated soldier from the Middle East who was wrongly dia as suffering from measles and chicken-pox, why the patie not isolated, how this wrong diagnosis arose, and what s proposed to take to minimize the risk of similar mista future. Mr. WILLINK said that a statement to the effec eated in the first part of the question was issued by his I ment and was published in the medical press and in at le lay newspaper. He was informed that the patient was is first for measles and chicken-pox, and later, as soon as sm was diagnosed, in a smallpox hospital. The signs and sym observed by competent medical officers did not lead th diagnose smallpox. This diagnosis was made retrospec in the light of subsequent events. Diagnosis was a matt the medical officer in attendance, but, since many medical had had no opportunity of familiarizing themselves with s pox, he had enrolled in each region a panel of experieed to assist in diagnosis.

## Medical Services of Ministry of Pensions

Introducing, on July 7, the Estimates for the Minist Pensions, Sir WALTER WOMERSLEY said his medical staff tinued to set themselves a high standard of professional administrative efficiency. In recent weeks Mr. Paling an had visited a number of Ministry hospitals. Everywhere found complete efficiency and readiness to meet the he calls which must come as the war progressed. In spite o man-power difficulties medical and hospital staffs woul found ready to meet all the demands upon them. One o Ministry's hospitals had been put to a severe test, as it called upon to assist the Service Departments by acting clearing station for casualties brought back to this cou from the time of the landing in Normandy. Many hundr men had passed through it, leaving as soon as they were n for removal to another hospital for prolonged treatment. arrangements had been completely satisfactory to the Se Departments. Another hospital had been adapted as a hospital for battle casualties coming from a clearing sta There, also, all requirements were fully met. Up to Apr 1944, officials of the Ministry of Labour interviewed 150 disabled persons in hospital so that the question of emp ment could be considered before discharge. Care was t during hospital treatment to rehabilitate the disabled man make him as fully able to work as possible. The resu been that 35,000 of those interviewed were able to take i which they knew to be available for them, and 88,000 suit for immediate employment were at once placed in jobs.

he remainder 11,000 were found to require training which would fit them for full employment. The number of cases in which the question of employment presented great difficulty was 2,231.

#### Limitation of Doctors' Lists

SIR LEONARD LYLE inquired on July 6 whether, in case of any shortage of doctors to meet the requirements of a State health insurance scheme applicable to everybody, it was proposed to remove any limit on the number of panel patients registered with a medical man, or to use compulsion to bring in a sufficient quota of doctors. Mr WILLIAMS replied that it was not proposed to compel any doctor to take any part in the new service. The appropriate limits to the number of patients whose care a doctor should be able to undertake within the service would need to be considered fully with the medical profession when the proper time came.

**Criminal Lunatics**—On July 4 Mr HERBERT MORRISON, replying to Dr Salter, said that the numbers of persons certified insane under Section 2 of the Criminal Lunatics Act, 1884, in prisons and Borstal institutions and removed to mental hospitals, including Broadmoor Asylum during each of the last five years were: 1939, 88, 1940, 83, 1941, 64, 1942, 86, and 1943, 69.

**Deaths from Cancer**—Mr WILLIAMS informed Mr Leach on July 4 that the numbers of deaths from cancer registered in England and Wales during the years 1939 to 1943 were: 1939, 67,154, 1940, 68,922, 1941, 69,227, 1942, 70,419, and 1943, 72,158 (provisional).

**Institutional Accommodation for Tuberculosis**—On July 4 Captain McEWEN informed Sir Waldron Smithers that at March 31, 1944, the latest date for which figures were available, the number of tuberculous cases in England and Wales which had been awaiting institutional treatment provided by tuberculosis authorities for a period of more than ten days was 3,960. The figure for Kent at the same date was 236 cases.

**Admission to Sanatoria**—SIR WALDRON SMITHERS inquired on July 6 whether it was the policy to admit advanced cases of tuberculosis to sanatoria or to select those who were more likely to recover or to admit patients in accordance with the date of recommendation. Mr WILLIAMS answered that the admission of tuberculous persons to hospitals or sanatoria was the responsibility of the tuberculosis authority, acting on the advice of its appropriate medical officer. There were differences in practice, but it was general to select patients for admission on clinical grounds and not in accordance with the date of recommendation. In general, selection for admission to particular institutions was made on the merits of the individual cases.

#### Notes in Brief

The Minister of Health stated in the House of Commons recently that the number of new cases of tuberculosis in England and Wales notified in 1943 showed an increase of 18.4% over 1939, but the number of deaths which was considered the true guide to the incidence of the disease, showed an increase of only 0.1% over the same period.

## Medical News

The twenty-third annual general meeting of the Medical Society for the Study of Venereal Diseases will be held on Saturday, July 22, at 2.30 p.m. at 11, Chandos Street, Cavendish Square, W.1. After the transaction of business Dr J. A. Scott will give an address on venereal diseases to the Soviet Union.

It has been decided to postpone the conference on "The Nutritional Role of the Micro-flora in the Alimentary Tract," which the English Group of the Nutrition Society was to have held on Saturday, July 22, at the London School of Hygiene and Tropical Medicine. An announcement of the revised arrangements will be made later.

The Joint Committee for Soviet Aid, honouring the memory of the Soviet General Vatuln, who died in April of this year, has launched a £20,000 fund for medical supplies and comforts for the Red Army and the liberated peoples of the Soviet Union. Among the first donations to this fund was one from General Eisenhower, who sent the following message: "The death of General Vatuln at Kiev is an irreparable loss, not only to the Soviet Union but also to the United Nations. His name will always live in the annals of great military leaders. I can imagine no finer memorial to a soldier than the provision of medical supplies and comforts to the fighting men of his country and the peoples they have liberated. I should like personally to contribute to your campaign." Cheques for the fund should be made payable to the hon. treasurer, Sir Peter Chalmers Mitchell, Joint Committee for Soviet Aid, 171, St. Stephen's House, Westminster, London, S.W.1.

The Minister of Supply has appointed Prof. H. Raistrick, F.R.S., as honorary scientific adviser on penicillin production. Prof. Raistrick is a member of the General Penicillin Committee and holds the chair of biochemistry at the London School of Hygiene and Tropical Medicine (University of London).

Through His Majesty's Ambassador in Chungking the Director of the Chinese National Central Library generously offers to provide British scholars with Chinese material for specialist researches, and to arrange for its translation into English if desired. The Library will also forward lists of books available to interested institutions in this country. The British Council, in gratefully acknowledging this offer, has undertaken to act as intermediary on the British side, and will answer inquiries about the scheme, which should be addressed to the Director, Books Department, British Council, 3, Hanover Street, London, W.1.

The Ministry of Health has informed local authorities that information obtained through Regulation 33B may be disclosed to medical authorities of H.M. Forces or those of the United States or other Allied or associated Forces so far as this is necessary to secure examination and treatment of persons alleged to be sources of infection. Local authorities should send particulars of any member of these Services who is named on a Form I received by the medical officer of health to the medical authorities of the Service concerned.

There are still more than 3,000,000 children in England and Wales unprotected against diphtheria, states a Ministry of Health appeal to the country's 25,000 chemists and druggists in a special bulletin sent to the *Pharmaceutical Journal* urging them to recommend immunization. By the end of last year the number immunized in England and Wales under local authority arrangements was 4,880,000, and it is estimated that the total then stood at 46% of all children under 15. About two thirds of those between the ages of 5 and 15 but only one third of the under fives, who are more susceptible to the disease, were then protected. Twenty nine out of every thirty children who died from diphtheria were not immunized. The number protected last year was 1,051,660 against 1,399,751 the year before and, it is pointed out, if this reduction continues, we shall hardly be keeping pace with the birth rate.

On April 15 the Save the Children Fund (20 Gordon Square, W.C.1) attained its twenty-fifth anniversary. The fund is the only international organization for child welfare in the world. Founded after the last war as a measure of relief for child victims, it has expanded to a world-wide organization for child welfare and has extended its influence to 40 different countries. In collaboration with the Council of British Societies for Relief Abroad, the officially recognized body for the co-ordination of voluntary relief effort, it is sending highly trained units to a foreign base for service in whatever lands they may be asked to work in. They will concentrate on the care of children and in co-operation with the national organizations of the Save the Children International Union where they exist, will be prepared to assist in the reorganization of child welfare work.

The Minister of Health has reappointed the Advisory Committee on the Welfare of the Blind for a further period of three years. The committee is constituted so as to afford representation to the local authorities concerned with the working of the Blind Persons Acts, and to voluntary associations for the blind, as well as to organized blind workers.

The Association of Scientific Workers has issued from 73, High Holborn, W.C.1, a memorandum on "A Post-war Policy for Science," adopted by its council as a statement for discussion which it hopes to expand later in further publications. The reference to medical research runs as follows: "The present organization, including philanthropic foundations, universities, hospitals, manufacturing firms, etc., will obviously continue after the war. This varied organization is not necessarily bad, but may leave large and notable gaps. The Medical Research Council should enlarge its activities and undertake a more effective co-ordination of those bodies. It should extend its use of teams to tackle special problems and should support more permanent full-time research workers. Research institutes should maintain closer contact with hospitals. There should be considerable central and local expansion of industrial medicine. This might include the establishment of a central institute for industrial pathology and similar subjects. Application of existing knowledge to the benefit of the community is partly a problem of social organization. For this reason the A.S.W. has for some time supported a State Medical Service. As a problem of internal organization, better clerical assistance, uniform medical records, better assistance in diagnosis and access to data would reveal new information about morbidity and expose new problems. The medical sciences will also face the problem of a shortage of personnel. This will be relieved to some extent by workers demobilized from the Services but further facilities for training will have to be established."

The December, 1943, issue of the *Bulletin of the History of Medicine* is devoted to Vesalius.

The issue of the *Schweizerische Medizinische Wochenschrift* for April 15 is dedicated to Dr. Ernst Oppikofer, professor of oto-rhino-laryngology at Basle, on the occasion of his 70th birthday.

The late Dr. C. E. Douglas of St. Andrews, among other charitable bequests, left £1,000 to the British Medical Association's Charities Fund.

## EPIDEMIOLOGICAL NOTES

## Discussion of Table

In England and Wales during the week the incidence of whooping-cough, scarlet fever, and measles dropped by 204, 93, and 85 respectively. There was a slight rise (31 cases) in the notifications of diphtheria; during the past five weeks the average number of cases of this disease has reached the low level of 478. The local trends of scarlet fever underwent little change during the week. Although there were fewer notifications of whooping-cough, the largest local variations were rises in Cheshire and Warwickshire—which reported respectively 47 and 40 more cases than last week—and a decrease of 40 cases in Kent. London and Lancashire each had 60 fewer cases of measles than last week, and Middlesex 40; the greatest rises in this disease were 57 in Southampton and 47 in Kent.

Dysentery notifications went up by 10 during the week. The chief outbreak was in Glamorganshire 59 (Penarth U.D. 46, Cardiff C.B. 11). The other large returns were from Lancashire 31, Sussex 16, Yorks West Riding 11, Warwickshire 10, London 10.

In Scotland notifications of measles were 147 fewer than last week, whooping-cough 44, and scarlet fever 27. Glasgow reported 37 and Edinburgh 13 of the total of 88 cases of dysentery—a total 25 higher than last week. Of the 22 cases of typhoid fever 19 were notified in Glasgow.

In Eire the notifications of diphtheria fell from 82 to 55. The largest return for measles was Clare, Ennis U.D. 42. One case of typhus fever was reported from Galway, Oughterard R.D., this being the fifth case recorded in Eire in the last six weeks.

In Northern Ireland all the 45 notifications of measles and 26 of the 56 cases of scarlet fever were recorded in Belfast C.B.

## Week Ending July 1

The notifications of infectious diseases in England and Wales during the week included: scarlet fever 1,437, whooping-cough 2,382, diphtheria 432, measles 2,503, acute pneumonia 558, cerebrospinal fever 44, dysentery 135, paratyphoid 2, typhoid 10.

## Tuberculosis during 1914-18 and 1939-43

In 1914 and again in 1939 the outbreak of war was the direct cause of a rise in tuberculosis mortality. The deaths rose during 1939-41 and then fell; in 1914-18 the mortality continued to increase throughout the war. The deaths for the two periods in England and Wales are:

Year	Pulmonary	Non-pulmonary	Year	Pulmonary	Non-pulmonary
1914	37,838	12,460	1939	21,542	4,081
1915	40,803	13,492	1940	23,660	4,434
1916	40,769	13,089	1941	23,633	5,037
17	42,335	13,599	1942	20,989	4,560
18	45,338	12,735	1943	21,340	4,310

The rise in mortality during 1939-41 affected mainly children, old men, and young women. The relative increase for all ages was approximately the same for both sexes. During 1914-18 the increased mortality was concentrated on ages 5-45, with a peak at ages 15-20. The females suffered a higher relative increase than did the males. The percentage increases in death rates from 1914 to 1918 during young adult ages from all forms of tuberculosis were 42, 20, 20 for males aged 15-19, 20-24, 25-34, and 48, 39, 30 for females.

## Table Correction

In the epidemiological table printed at page 32 of the issue of July 1 the notifications for influenzal pneumonia and for primary pneumonia were reversed in the four columns for 1944. Thus the notifications for England and Wales for influenzal pneumonia should have been 738, for London 61, for Scotland 200, and for Eire 26; for primary pneumonia there should have been no notifications for England and Wales or for London (these being included under influenzal pneumonia as usual), 5 for Scotland, 2 for Eire, and 8 for Northern Ireland.

A report of the conference on the part which social workers can play in the Beveridge plan for social security, which was held in London last year by the British Federation of Social Workers, has now been published and can be had from the offices of the Federation, 5, Victoria Street, S.W.1. It contains the text of the four addresses (also some discussion), including that by Mr. Somerville Hastings on the place of the social worker in a unified health service, and that by Prof. Sargant Florence on the importance of trained personnel.

## INFECTIOUS DISEASES AND VITAL STAT

We print below a summary of Infectious Diseases and Statistics in the British Isles during the week ended 1

Figures of Principal Notifiable Diseases for the week and those for corresponding week last year, for: (a) England and Wales (London included) (administrative county). (c) Scotland. (d) Eire. (e) Northern

Figures of Births and Deaths, and of Deaths recorded under each infection are for: (a) The 126 great towns in England and Wales (including London (administrative county)). (c) The 16 principal towns in Scotland. (d) The 13 principal towns in Eire. (e) The 10 principal towns in Northern Ireland.

A dash — denotes no cases; a blank space denotes disease not not no return available.

Disease	1944					1943 (Corresponding)		
	(a)	(b)	(c)	(d)	(e)	(a)	(b)	(c)
Cerebrospinal fever ..	53	2	32	2	1	64	4	28
Deaths ..	—	—	—	—	—	3	1	1
Diphtheria ..	487	33	119	55	17	582	30	148
Deaths ..	4	—	—	5	—	14	2	2
Dysentery ..	201	10	88	—	—	107	16	108
Deaths ..	—	—	—	—	—	—	—	—
Encephalitis lethargica, acute ..	2	—	—	1	—	3	1	—
Deaths ..	—	1	—	—	—	—	—	—
Erysipelas ..	—	—	39	8	6	—	—	38
Deaths ..	—	—	—	—	—	—	—	—
Infective enteritis or diarrhoea under 2 years ..	38	7	13	11	3	46	13	10
Deaths ..	—	—	—	12	—	—	—	—
Measles ..	2,538	139	282	129	45	5,774	331	322
Deaths ..	—	—	2	—	—	2	—	1
Ophthalmia neonatorum ..	74	5	10	—	—	85	5	16
Deaths ..	—	—	—	—	—	—	—	—
Paratyphoid fever ..	7	1	1 (B)	5 (B)	—	11	1	1
Deaths ..	—	—	—	—	—	—	—	—
Pneumonia, influenza* ..	452	17	5	5	6	553	24	2
Deaths (from influenza) ..	12	—	1	—	—	8	—	—
Pneumonia, primary ..	—	—	187	13	9	—	15	184
Deaths ..	—	23	—	11	—	—	—	7
Polio-encephalitis, acute ..	1	—	—	—	—	—	—	—
Deaths ..	—	—	—	—	—	—	—	—
Polio-myelitis, acute ..	15	—	2	1	—	5	1	3
Deaths ..	—	—	—	—	—	—	—	—
Puerperal fever ..	—	4	13	—	—	—	1	13
Deaths ..	—	—	—	—	—	—	—	—
Puerperal pyrexia† ..	138	9	25	1	1	157	17	17
Deaths ..	—	—	—	—	—	—	—	2
Relapsing fever ..	—	—	—	—	—	—	—	—
Deaths ..	—	—	—	—	—	—	—	—
Scarlet fever ..	1,451	90	185	18	56	1,630	156	243
Deaths ..	3	—	—	—	—	—	—	46
Smallpox ..	—	—	—	—	—	—	—	—
Deaths ..	—	—	—	—	—	—	—	—
Typhoid fever ..	10	1	22	12	1	11	—	6
Deaths ..	—	—	—	—	—	—	—	11
Typhus fever ..	—	—	—	1	—	—	—	—
Deaths ..	—	—	—	—	—	—	—	—
Whooping-cough ..	2,424	233	153	63	18	2,330	119	240
Deaths ..	11	1	1	4	1	13	3	6
Deaths (0-1 year) ..	303	36	58	31	14	290	44	22
Infant mortality rate (per 1,000 live births) ..	—	—	—	—	—	—	—	—
Deaths (excluding stillbirths) ..	4,777	1,206	634	197	118	3,967	537	552
Annual death rate (per 1,000 persons living) ..	—	—	13.9	12.8	—	—	—	12.6
Live births ..	7,575	840	1,048	449	278	7,030	857	932
Annual rate per 1,000 persons living ..	—	—	21.3	—	—	—	—	20.2
Stillbirths ..	198	13	35	—	—	236	24	33
Rate per 1,000 total births (including stillborn) ..	—	—	32	—	—	—	—	29

\* Includes primary form for England and Wales, London (administrative county), and Northern Ireland.

† Includes puerperal fever for England and Wales and Eire.

‡ Owing to evacuation schemes and other movements of population, death rates for Northern Ireland are no longer available.

## Letters, Notes, and Answers

communications with regard to editorial business should be addressed to THE EDITOR, BRITISH MEDICAL JOURNAL, B.M.A. HOUSE, TAVISTOCK SQUARE, LONDON, W.C.1. TELEPHONE: EUSTON 2111. TELEGRAMS: *Altoleor Western*, London. ORIGINAL ARTICLES AND LETTERS forwarded for publication are understood to be offered to the *British Medical Journal* alone unless the contrary be stated.

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M.A. SCOTTISH OFFICE: 7, Drumsheugh Gardens, Edinburgh.

### ANY QUESTIONS?

#### Diagnosis of Acute Abdominal Disease

*Q.—Pethidine is coming into prominence as a pain-relieving drug, and in many cases is replacing morphine. Can pethidine be given in cases of acute abdominal pain in which the diagnosis is not clear and the patient needs watching, without the fear of physical signs being removed, as in the case of morphine?*

*A.—*The question at issue is whether pethidine will relieve the pain of colic but not that of peritonitis. It is generally accepted that this drug relieves spasm, though it cannot be relied upon completely to do so; but its effect in peritonitis is variable—it may act as morphine does, but again it is unreliable. It would therefore appear to be a most unsuitable drug to use in an undiagnosed case. Furthermore, there are reliable antispasmodics such as the nitrites, or calcium salts given intravenously, which are effective only in relieving colic. It must be pointed out, however, that experiment with drugs is not to be favoured as a method of establishing the nature of acute abdominal disease.

#### Treatment of Infantile Uterus

*Q.—A patient aged 18 has complained of a primary type of dysmenorrhoea for the past three years. On examination under anaesthetic she has a uterus one inch long, anteverted and ante-flexed. She has no other signs of any endocrine upset. Would she benefit from any hormone treatment? If so, would you give details of the preparation, dosage, and length of time it should be continued?*

*A.—*This is clearly a case of infantile uterus and it is quite likely that it will respond to treatment with oestrogens. The synthetic estrogen, stilboestrol, is easily obtainable and should be tried first. A dosage of 3 mg. a day is recommended, and this should be given only in the first half of the cycle—i.e., for a fortnight after the onset of the menstrual period. The patient should be warned that it may be three months or more before she experiences any benefit from the treatment. Stilboestrol causes nausea and vomiting in about 20% of non-pregnant patients. Should this occur, another synthetic product, hexoestrol, should be tried in the same doses. Hexoestrol causes vomiting in only about 5% of non-pregnant patients. Should neither stilboestrol nor hexoestrol be tolerated, oestradiol benzoate in doses of 50,000 i.u. should be given by injection twice weekly in the first half of the cycle. Treatment should be continued for six months and the patient then re-examined to see if there has been any increase in the size of the uterus. If the uterus has enlarged and the symptoms are relieved, no further treatment will be required. Hormone treatment in these cases should be combined with general hygienic measures, such as regular exercise in the open air, attention to constipation, and so on. Cases that are refractory to hormone therapy present a difficult problem, but if hormone treatment fails and the dysmenorrhoea is severe enough to incapacitate the patient, a presacral neurectomy might be considered.

#### Enlarged Tonsils

*Q.—In view of the diversity of opinion, can you recommend the best line of treatment for enlarged tonsils in a child aged 2, no mouth breathing at present, otherwise healthy but liable to recurrent colds?*

*A.—*There is scarcely enough information to answer this. Are the glands in the neck enlarged? Have there been any attacks of tonsillitis? Does the enlargement date from a recent acute specific fever? It is disappointing to remove tonsils for recurrent "colds," which would be worth while deciding whether these "colds" are caught from some other member of the household or if they develop

spontaneously. In the latter case what is the state of the antra? It would be worth while using some nasal drops such as ung. hyd. nit. dil. 30 gr., arachis oil to 1 oz. If the tonsils look unhealthy and the child is at all co-operative, painting them with Mändl's paint might be considered.

#### Deafness in a Young Man

*Q.—A man aged 33 has otosclerosis which first manifested itself at the age of 16, when he suffered much from nasopharyngeal catarrh; but there was never any Eustachian obstruction. Bone conduction is quite good. The hearing slowly and steadily deteriorated until a few years ago, since when there has been very little, if any, change. There is no tinnitus or any other complication, and the general health is good. His mother suffered in a lesser degree at the age of 27, but improvement followed after a few years without any treatment.*

*A.—*It is impossible to say without examining the patient whether he is suffering from a chronic adhesive process which has become established and stationary, or from otosclerosis, and even on examination it might be difficult to make a decided diagnosis. If the case is one of otosclerosis, the history both familial and personal being rather in favour of this, the deafness is likely in the long run to be progressive. No treatment locally is of any avail whatever, and these patients are subjected to incessant exploitation. A suitable hearing aid, if the degree of deafness demands it, is the best means of overcoming the disability. The operation of fenestration of the labyrinth was referred to on page 445 of the *Journal* of March 25, 1944; the purpose of this is to improve the hearing by making a permanent opening into one of the semicircular canals, the lateral canal being usually chosen. This, however, could not be recommended without a careful examination and evaluation of the deafness in the particular case, and the results are uncertain.

#### Treatment of Lumbago

*Q.—A patient has for many years suffered from attacks of lumbago. Recently these attacks have become more severe, and occasion great distress and incapacity. Treatment, including infiltration with local anaesthesia, has been unavailing. The muscles affected are those of the lumbosacral region. What is the modern conception of this disease, and how is it best treated?*

*A.—*Further investigation of this case would appear to be required, including x-ray examination of the lumbar spine and sacro-iliac region—antero-posterior, lateral, and oblique. Some anatomical abnormality may be present predisposing to strain; this appears to be frequent in the presence of sacralization of the fifth lumbar vertebra, or the similar condition, "lumbarization" of the first sacral segment. If there is any evidence that the attacks are apt to follow any physical effort, particularly bending, wearing a properly fitted belt might be helpful, but stress must be laid on such a belt being designed to give genuine support. Many of the belts worn by victims of lumbago are worse than useless. Capener, in a Hunterian Lecture in 1941, dealt with the anatomical basis of the strains liable to occur in this region. The acute attacks may be due to spasm of the quadratus lumborum and associated muscles.

If physical causes can be excluded, gout may be the cause, and an examination of the blood for the uric acid content may throw a light on the problem; anything over 4 mg. of uric acid per 100 c.cm. will be suggestive. If this should prove to be the case, cinchophen will be the appropriate remedy for the acute attacks in doses of half a gramme thrice a day for three days, followed by an interval of from five to seven days. Between the attacks an eliminant such as diuremil may be taken with advantage. When testing for the blood uric acid the sedimentation rate should also be determined. It may be slightly accelerated in gout, but any marked increase will indicate the probability of an infective origin, and search should be made for the probable focus, which may very possibly lie in the prostate though not necessarily being gonorrhoeal in nature. In any case rectal examination is desirable. As general lines of treatment, heat, massage, and manipulation will be indicated; and a course of treatment at a spa, which would probably mean the use of such methods together with measures to promote elimination, might be a profitable way of spending a holiday.

#### Treatment of Molluscum Contagiosum

*Q.—A young woman has molluscum contagiosum on her face, confirmed microscopically. The treatment prescribed is the usual one of excision and cantharization. This I have done on several occasions. Fresh crops appear at intervals of about 10 days. Is there any other and more satisfactory way of treating this condition?*

*A.—*In molluscum contagiosum pricking the lesions with a sharp scalpel, squeezing out the contents, and spotting with tincture of iodine is almost invariably successful. In view of the simplicity and certainty of local treatment, the use of sulphonamides, as recently recommended, seems hardly called for.



**Possible Thyroid and Ovarian Deficiency**

**Q.**—A married woman aged 36 (1-para) has felt the cold intensely for the last few years, has suffered from chilblains, and has noticed an increased growth of hair on the upper lip. During this time menstruation has been less profuse, her periods lasting only about three days. What endocrine treatment, if any, would be useful?

**A.**—The story suggests the onset of thyroid and ovarian deficiency, a not uncommon combination and one which might almost be expected in view of the common origin in the basophil cells of the pituitary factors controlling thyroid and ovarian function. Thyroid should be given by mouth, starting with a dose of 1 gr. every morning and gradually increasing until either the result is achieved or symptoms of intolerance occur. Oestrogenic treatment—e.g., hexoestrol by mouth, 5 mg. twice daily—should be given, but not continuously. It is better to instruct the patient to take the drug for a fortnight only, after the end of each menstrual period. The natural oestrogen tide is thus very roughly copied and the regularity of menstruation unaffected in most patients.

**Prophylaxis in Allergic Child**

**Q.**—I should be grateful for advice on the immunization against diphtheria of two children, now aged 7½ and 6 years, who in infancy showed intense allergy to all forms of milk, with severe anaphylactic reactions during attempts at desensitization. They also showed a tendency to develop sensitivity to other protein foods. During the past two years the only allergic symptoms have been three slight attacks of asthma in the older child (each associated with coryza), and a tendency to develop sensitivity to fish and eggs in the younger (with papular urticaria and oedema of the hard palate as symptoms). Neither child has been vaccinated. There is a family history of allergy in both parents.

**A.**—Many an immunologist would Schick-test the children and, if they were positive, would give a small dose—e.g., 0.1 c.cm. of A.P.T. (not T.A.F. or T.A.M.). If no local or general reaction occurred, he would probably give a second dose of 0.2 c.cm. a fortnight later, followed by a third dose of 0.2 c.cm. a fortnight later still. Such a procedure might work satisfactorily. For my part, I should be extremely circumspect with such highly allergic children. I should Schick-test. If any "pseudo"-reaction occurred—even pseudo and positive—I should be hesitant to go further (hoping that the reaction indicated a trace of potential immunity). Only under parental pressure and assumption of responsibility would I give prophylactic, choosing, of course, A.P.T. I should start with minute doses—e.g., 0.1 c.cm. of a 1:10 dilution. In the absence of any troublesome local or general reaction, I should next day give 0.1 c.cm. of undiluted A.P.T., followed by two further doses of 0.2 c.cm. at fortnightly intervals (see *Journal*, 1940, 1, 292; 1942, 1, 534; and *Lancet*, 1936, 2, 310).

**INCOME TAX****Purchase of Practice: Loan from Insurance Company**

T. has bought a practice with the aid of an insurance company, repaying £500 a year—roughly £350 premium and £150 interest. Is he entitled to any deduction for these payments?

\*\* So far as the payments represent premiums for insurance on his life, T. is entitled to the statutory "life insurance relief," to be claimed by filling up the appropriate space on the income tax return form. So far as they are payments of interest no allowance is due, but presumably the income tax on that portion of the payments is deducted so that T. pays only a net amount and receives an allowance in that way.

**"Pay as you Earn"**

A. retired three years ago, but has in the last two years been serving on medical boards. The fees constitute his only earned income. Some other retired members of the board are not being dealt with under "pay as you earn." Why is this?

\*\* If the other members have no professional earnings other than these fees they would in the ordinary course have tax deducted under the "pay-as-you-earn" system, unless the various allowances to which they are entitled exceed the fees from the board. But until the system has been working for some time differences of practice are not unlikely to occur. It should be remembered that whether tax is deducted or not does not alter the amount ultimately to be paid.

A. R. last year "earned spasmodically, doing house jobs and locumtenent work"; this year he has an assistantship and pays tax under the "pay-as-you-earn" system. Must he pay last year's tax as well?

\*\* Yes. The professional work last year was carried on in a manner which brought the earnings within the field of assessment under Schedule D. If he had been an assistant last year assessable under Schedule E there would have been some relief due to him, but that relief does not apply to tax under Schedule D.

**Information from Bank Account**

E. L. has been asked by the inspector of taxes to let him the amount standing to his credit at the bank at April 5, 1944. He would prefer to quote only the difference between these figures and not the figures themselves.

\*\* We should advise our correspondent to quote the figures for in spite of the fact that they may disclose to some extent amount of "savings." A statement of total income, which required from everybody, shows particulars of property and income, so that some inference as to the extent of "saving" usually possible to the inspector of taxes when dealing with accounts.

**LETTERS, NOTES, ETC.****The D.P.M.: A Minimum Requirement**

"MAJOR R.A.M.C., SENIOR PSYCHIATRIST," writes: It is generally welcomed that the standard of the diploma in psychological medicine has been raised. It is also a wholesome advance that this diploma will be made the minimum requirement for those wanting to practise as specialists in psychiatry, psychology, or mental deficiency. The present annual value of the diploma is £50—not an outstanding reward for passing a two-part examination requiring at least months' special training, apart from the extensive study and practice that alone can give the beginner his basic knowledge of "what is all about." But whether the purposes of the diploma are served by making the highest possible knowledge of neurology its condition seems very problematic. The practice savours of introduction of an intelligence test factor into the exam., for it is that only those who can raise time, interest, and gift for a subject in which they are not going to practise can ever hope to be given permission to exercise their talents or achievements as doctors of the mind. Thus a mental deficiency officer of a score years' standing will be declared unfit for his job, while the youngster who time and opportunity to sweat hard in neurology will take his diploma with a wet diploma in his hand. At one time the policy was to encourage the G.P. to take up psychology. There used also to be provisions for separate examinations for psychological medicine for mental deficiency. To-day anyone entering hopefully for the latter course would wait in vain for an opportunity for declaration of his choice, and the busy G.P. is not given any better chances the fresher. Nor are any allowances made for those serving H.M. Forces, who may not have had a chance in years to sit microscopical slides or formalin specimens kept in museums. Those who took a D.P.M. course in the first year of the war must feel that their teachers have misled them completely about the standard requirements if they presented themselves four years later. I feel now that the brilliant young neurologist can easily pass both parts of the exam. without, for that matter, convincing us that he will really be a first-rate psychiatrist or psychologist. If the standard of the examination is a raised standard of efficiency of person engaged in psychological medicine or mental deficiency, the present policy must be considered a failure.

**Grenz Rays**

Dr. Z. A. LEITNER (London, W.1) writes: Your questioner (*July 24*, p. 862) might find further information about Grenz rays in following recently published papers: *Brit. J. Radiol.*, 1938, 11, 59; *Proc. Roy. Soc. Med.*, 1943, 36, 428; and *Brit. J. Phys. Med.*, 1946, 6, 114.

**Offers of Hospitality for Doctors' Children**

Dr. X., practising in Huddersfield, inquires whether a colleague in London would like to evacuate a child because of the danger from the flying bombs. The doctor in question, who has a daughter aged 9, kindly offers to accommodate a girl of about 10 years of age.

Dr. Y., of Teignmouth, Devon, who has a large empty bedroom in one double and one single bed, offers to accommodate accompanied children of a London colleague, on condition that the accompanying parent will be prepared to look after their room and help generally in running the house. Only such payment as would cover expenses would be expected. Dr. Y. adds: "Later on if the doctor himself could snatch a few days we could probably find him in."

Any readers interested in either of these offers may communicate with the Secretary at B.M.A. House, Tavistock Square, London, W.C.1.

**Visits of Indian Scientists: Correction**

On page 577 of the *Journal* of April 22 there was a reference to the report of the Delhi Correspondent of the *Times* regarding the forthcoming visit of Indian scientists to England. Among the persons included in the delegation we mentioned "Col. H. L. Bhatia, Deputy Director of the Indian Medical Service." The correct name and designation of this officer are: Col. S. L. Bhatia, M.C., M.S., Deputy Director-General, Indian Medical Service, New Delhi.



LONDON SATURDAY JULY 22 1944

## SOME PROBLEMS IN RIBOFLAVIN AND ALLIED DEFICIENCIES\*

BY

HUGH S. STANNUS, M.D., Ph.D., F.R.C.P.

I have chosen as the subject of these lectures one which I think may be discussed with advantage just now when nutrition is a matter very much to the forefront in Britain, when the problem of malnutrition among the native inhabitants of our Colonies is still awaiting solution, and when plans for feeding the starving peoples of enemy-occupied countries are being considered. First, I shall discuss a syndrome recognized many years ago and then later further defined, and its relation to the condition to which the term "ariboflavinosis" was assigned by Sebrell and Butler (1938). I shall then suggest a tentative explanation of the pathogenesis of the signs and symptoms of riboflavin deficiency and of their peculiar localization, based on an anatomico-physiological consideration of the capillary vascular system. In this abridged form it will not be possible to do more than give an outline of my thesis, and much detail and full references will perforce be omitted.

## Early Personal Observations

Just over 30 years ago—in 1912–13—I published an account of the first outbreak of pellagra to be recognized in Africa, apart from Egypt, when I was afforded the opportunity of proving for the first time that that disease had no intrinsic relationship with the consumption of maize, as the subjects, long-term prisoners in Nyasaland, had been maintained on rice. I drew attention to a group of symptoms which tended to precede the onset of the more classical signs of pellagra by many months or which, indeed, persisted without those signs appearing. This group of symptoms included soreness of the tongue and lips, with a very characteristic lesion at the corners of the mouth; associated with a similar condition about the nostrils, the palpebral fissures, the free border of the prepuce, the vulva and anus, together with a dermatosis of the scrotum, often also involving the skin of the adjacent part of the thigh.

More important still, it was found that the syndrome above described, in its less fully developed form limited usually to the affection of the corners of the mouth, lips, and tongue, was not uncommon among the general native population. Further inquiries elicited the fact that this affection occurred in other parts of East Africa, and two interesting points came to light—first, that the condition, associated with obscure nervous symptoms, was common among native children at a mission boarding-school in Zanzibar; and, secondly, that their symptoms cleared up when they returned to their villages for the long vacation.

I had noted among my prison cases various neurological symptoms, including deafness and diminution of vision with loss of pupillary sphincter tone, but did not, at that time, associate them with the syndrome under discussion. I believed that pellagra and this syndrome were the result of dietetic deficiency; but these were early days, just about the time when Funk was engaged in preparing Factor B and when the word "vitamine" was introduced.

The importance of these early observations lay in the fact that this was the first time that attention had been drawn to the occurrence of this group of symptoms, due to a dietetic deficiency—dissociated from pellagra. Each, as a symptom occurring in pellagra, was in no way new, as a perusal of the writings of the older pellagrologists from Casal (1730) downwards will show.

In 1911 I drew attention to a long-forgotten description by Strachan (1888) of a condition among natives in Jamaica, believed by him to be "malarial multiple peripheral neuritis," in which mention is made of practically all the same symptoms; and in 1930 I pointed out the resemblances between a condition described by Scott (1918) as "central neuritis" of toxic origin, among Jamaican labourers, and the syndrome under discussion.

## Collected Observations

Later, in 1936, I collected together and reviewed a number of interesting observations which had been published in the meantime upon conditions which I considered were akin to the original syndrome. I used the expression "pellagra-like conditions" to focus attention upon malnutrition as the basis of causation. The close connexion was obvious then, as it is now, when we recognize the close relationship between nicotinic acid and riboflavin in the vitamin B<sub>3</sub> complex and the relation of each to pellagra.

Among these observations were a number which had reference to an affection only of the tongue, lips, and the angles of the mouth. These I shall not consider further. (Blacklock, Sierra Leone, 1925; Jamin, Tunisia, 1925; Nogue, Dakar, 1925; Mathis and Guillet, Dakar, 1925; Gayot, Dakar, 1920; Brocq and Paultrier, Fréjus, 1928, 1939; also Barlovatz, Congo, 1940.) It will not be possible either to discuss here the very interesting condition occurring among infants in East and West Africa and elsewhere which I have referred to as infantile pellagra, but in which riboflavin deficiency probably plays a major part.

The remainder, to which have been added a few published more recently, are shown in the Table (under D) for the sake of brevity. They constitute, I believe, a series showing manifestations of the same syndrome in more or less complete form. The disparities may be explained in part, I think, by the fact that in some cases the descriptions are not very full and are obviously incomplete, the period of observation is short, and opportunities for exhaustive examination are lacking. In other cases want of exact parallelism may be due to variations in the comparative intensity and duration of the causative process.

Fitzgerald Moore's observations are of particular importance, for to him belongs the credit of recognizing that the disease which was rendering thousands of natives nearly blind was due to a dietetic deficiency and was amenable to treatment with marmite. His first paper was published in 1930. From this and those published subsequently, and a number of personal communications, a fairly complete picture of the affection can be drawn—one that reproduces the original syndrome described, but unassociated in any way with the dermal and other classical symptoms of pellagra. The second communication of importance was that by Landor and Pallister in 1935. They

\* The Lumenian Lectures (abridged) delivered before the Royal College of Physicians of London, April 18 and 20, 1944.

Table showing Manifestations of the Syndrome according to Various Authors

			Tongue	Lips	Angular stomatitis	Nostrils	Canthi	Prepuce	Vulva	Anus	Scrotum	Groin	Face	Body	Vision	Hearing	C.N. System	Mental	Conjunctiva	Photophobia	Limbic plexus	Corneal vascularization	Myelodysplasia
A. Stannus .. ..	Central Africa	1911-13																					
B. Strachan .. ..	Jamaica	1888																					
C. Scott .. ..	Jamaica	1918																					
D. Bradley .. ..	Seychelles	1928																					
Wright .. ..	Sierra Leone	1928																					
Fitzgerald Moore ..	Nigeria	1930																					
Fitzgerald .. ..	Assam	1932*																					
Nicholls .. ..	Ceylon	1933																					
Dumont .. ..	Congo	1934																					
Landon and Pallister ..	Malay	1935																					
St. John .. ..	Barbadoes	1936																					
Aykroyd et al. .. ..	India	1936																					
Menger .. ..	Solomons	1936																					
Browne .. ..	British Guiana	1939																					
Wilkinson and King*	Hong Kong	1944																					
E .. ..	Spain																						
F .. ..	United States	1938-41																					

\* Published since these lectures were delivered.

described a condition which practically duplicated that recorded by Fitzgerald Moore. They showed that recovery took place when treatment with autoclaved yeast or autoclaved marmite was given. Fitzgerald Moore's cases also responded to the same preparations. This result excluded vitamin B<sub>1</sub> as a factor in causation. Fitzgerald Moore was also able to show that vitamin A played no part, and later that nicotinic acid had no curative effect. That author was more particularly interested in the ophthalmological condition. In early cases complaining of dimness of vision, with, or with a history of, sore lips and sore tongue, no changes were found in the fundi. Later, pallor of the temporal halves of the disks was noted, in some optic atrophy, in others signs of optic neuritis. Central scotoma and some retraction of fields were demonstrated in a few cases. Loss of pupillary tone and photophobia were also noted. The nervous symptoms, apart from loss of visual and auditory acuity, consisted of some mental dullness, a sense of muscular weakness, ataxia, and paraesthesiae.

It is of interest to recall the fact that Goldberger and Tanner in 1915 and 1925 produced experimentally some of the symptoms of this syndrome and referred to them as "pellagra sine pellagra," as I had previously done, but they were apparently unaware of my observations. It is also of interest to remark the similarity of the signs and symptoms in animals—the rat and the dog—but space will not allow of their discussion here.

At the end of 1938 Sebrell and Butler published their preliminary note on "Riboflavin Deficiency in Man." Nicotinic acid and riboflavin had then been isolated from vitamin B<sub>2</sub>-complex. The results of experiments on animals fed riboflavin-free diets and certain observations on nicotinic-acid-treated pellagrins led these observers to repeat Goldberger and Tanner's feeding experiments. Of 18 women so treated 10 developed in from 94 to 130 days lesions on the lips, at the angles of the mouth, in the vestibule of the nose, etc., comparable to those described by Goldberger and Tanner and those described by myself—a fact which the authors immediately recognized. These lesions cleared up under treatment with riboflavin.

Thus then was given the first demonstration of the relationship of some part of the original syndrome with riboflavin deficiency. These authors suggested that "the term ariboflavinosis be added to the nomenclature of the vitamin-deficiency diseases, as a designation for the clinical condition due to riboflavin deficiency." Since there is reason to believe that death ensues long before the advent of a-riboflavinosis, I prefer to use the term "hypo-riboflavinosis."

During the following three or four years other symptoms were added to the original "ariboflavinosis" syndrome by

observers in the United States, chief among them being Sydenstricker and his colleagues, the diagnostic criterion in a cases being a response to riboflavin therapy.

Again, though there are differences between the symptom and signs enumerated under ariboflavinosis and those included in the older syndrome, I think that they may be looked upon as differences in degree and that they may be explained along the lines above mentioned (see Table, F). Further, many of the groups of symptoms, combined into a series of overlapping syndromes due to malnutrition during the Civil War of 1936-9—described by Spanish observers although, as they stated, unfamiliar to them—reproduced those which I have shown were recognized years before (see Table, E). The symptoms will be dealt with in greater detail when I come to speak of their pathogenesis.

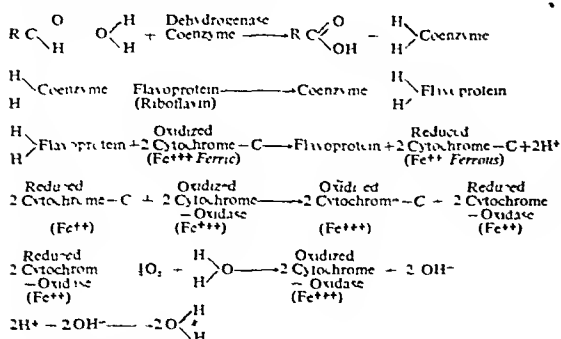
Although there are reasons, on epidemiological grounds, for believing that all the signs and symptoms I have grouped together should be considered as parts of a single clinical entity due to riboflavin deficiency, we cannot at the present time exclude the possibility that some other factor—perhaps some other member of the vitamin B<sub>2</sub> complex—plays a part. For the sake of brevity, however, in what follows I shall speak only of hypo-riboflavinosis.

### The Action of Riboflavin

Riboflavin is generally held to be present in the cells of every tissue of the body. Like other members of the B group of vitamins—not in themselves enzymes or catalysts, but components of chemical combinations, known as coenzymes, which in conjunction with specific proteins, the apo-enzymes, form a number of systems essential for the breakdown of carbohydrates with the release of energy little by little—riboflavin, combined in the form of a flavoprotein, acts by alternately accepting and releasing two atoms of hydrogen, and thus participates in a number of reactions in connexion with carbohydrate metabolism; and among them that which forms the link between the anaerobic dehydrogenase system and the aerobic cytochrome : cytochrome-oxidase : oxygen system. Oxidation may be defined as the change of an atom or ion from a state of lower valence to a state of higher valence. Reduction is the reverse. Oxidation in the sense of biological oxidation of carbohydrate may be effected by the addition of oxygen, by the removal of hydrogen, or by the withdrawal of one or more electrons (or negative charges), without the equivalent transfer of oxygen or hydrogen.

All the stages of the complicated series of processes involved in the release of energy from the carbohydrate molecule are not well understood, but the following schematic set of equations will serve to demonstrate the principle involved and

indicate the close association of riboflavin with the utilization of carbohydrate and oxygen



Since riboflavin is associated with intracellular catalytic processes any deficiency may be expected to give rise to a metabolic disturbance in every cell of the body

In the past it has been customary when thinking of any tissue merely to assume a cellular deficiency of riboflavin without considering how that deficiency comes about. I propose, therefore to discuss some part of this problem

### The Role of the Capillary System

Perhaps we do not always realize that the vascular system has been developed for a single purpose—that of carrying to the immediate environment of each individual cell all the essentials to satisfy its needs, thus creating an environment comparable to that of a unicellular organism. The actual living parts of complex organisms are embedded in a fluid matrix constituting an internal environment the constitution of which normally remains constant—a condition referred to as homeostasis or homeokinosis. Claude Bernard (1878) was the first to realize this truth, crystallized in his expression—

*La fixité du milieu intérieur est la condition de la vie libre.*  
This theme was further developed by Cannon (1930), and later was the subject of discussion by Barcroft (1934). Mechanisms have been developed in the body whose sole object is the preservation of this constant. As stated by Cannon "The membranes which separate the vascular from the interstitial compartment and those which separate the latter from the intracellular compartments have peculiarities of permeability which maintain an unequal distribution of solutes in the three compartments." Exchanges in one or other direction are effected by vascular adjustments controlled, it is now generally recognized, by a "capillariomotor system," independent of the rest of the vasomotor system, by hormones, by local metabolites, etc.

The capillary system is therefore of prime importance, its welfare essential for the maintenance of the tissues in health, yet when Krogh (1929) published his monograph, *The Anatomy and Physiology of the Capillaries*, he remarked "The capillaries constitute the most essential part of the circulatory system" but added, "They have been neglected in an extraordinary way."

Much work has been done on the subject by a number of investigators, including Dale (1918-19), Krogh (1929), Lewis (1927), Bordley *et al.* (1938), Wright and Duryee (1933), the Clarks (1931-2), Sandison (1928), Cobb (1927-32), Zwiessach (1937-40), Sanders, Eberl and Florey (1940) etc., but space forbids anything but mention of their names.

I cannot here go into more detail, but must be content to point out how great is the part played by the capillary system, how many its functions in the economy of the organism, and how vast its field of action.

To give a single example from Krogh—he calculated that the capillaries supplying the muscles of an adult man which number 1,350 per square millimetre in transverse section, would measure 100,000 kilometres if joined end to end—i.e., would go twice round the world. Their surface would be 6300 square metres. A simple calculation shows that if packed into a solid mass these endothelial cells would form an organ of

some size. The time has passed when the capillary endothelium was looked upon by the older physiologists as a passive, inert membrane, like a piece of gelatin governed only by simple physical laws. It is a tissue of great activity; it must need a considerable amount of energy in order to carry on its functions yet nothing is known concerning the metabolism and respiration of its cells.

Many may have tacitly taken it for granted that a tissue which is in direct contact with the blood stream had merely to pick up what it wanted without any vital process being involved, but this is not consonant with Nature's methods. It may be assumed—and I think the assumption is warranted—that the endothelial cell respires in the same way as the cell of any other tissue and that for its metabolic processes it must be supplied with sugar, oxygen, and all those other elements essential for cell life including riboflavin. Having made this assumption I am going to suggest that in the event of a deficiency in any one of these elements or in some one of the elements—namely riboflavin—the capillary endothelium will be one of the first if not the first, of the tissues to suffer the effects of interference with normal respiration and metabolism. The result of this anoxia, in the wide sense of the term, upon the capillaries is a derangement of function which I shall refer to as "capillary dysergia," with the development of loss of tone, dilatation and decreased flow. This in turn leads to a disturbance in the surrounding *milieu intérieur* and so to a metabolic disorder of the cells of the neighbouring tissue.

It is generally agreed that the relative number of capillaries is such, and their disposition so devised, as to accommodate the metabolic needs of each tissue in the body. This being so, I have suggested that manifestations of riboflavin deficiency will become apparent first in those tissues with high metabolic activity and a high degree of capillarity. By capillarity I mean the relative number of capillaries normally present in a tissue. The signs will be capillary dilatation, obviously only to be determined in some tissues, the symptoms, impaired nutrition and impaired function of the tissues. It is upon this basis that I propose to offer an explanation of the nature and distribution of the signs and symptoms of hyporiboflavinosis.

(To be concluded)

## TWO YEARS OF MILITARY PSYCHIATRY IN THE MIDDLE EAST

BY

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In his article "Three Years of Military Psychiatry in the United Kingdom" (*BMJ* 1943 1, 1) Brigadier J. R. Rees has presented a general survey of Army psychiatry in this country, setting out its development and present tendencies. The present article gives a survey of Army psychiatry in its application to an expeditionary force engaged in an active theatre of war.

### Development and Organization

The development of a psychiatric organization in the Middle East dates from the appointment in Aug. 1940, of a Consulting Psychiatrist to the Middle East Force. The entry of Italy into the war in May, 1940, had marked the inception of a new phase in the military situation of the Middle East. With the arrival of large and constantly increasing drafts of men from all parts of the Empire it became evident that the provision of an adequate and organized psychiatric service was likely to become a matter of some urgency. The history of the psychiatric organization in the Middle East originating as above, has been one of continued expansion. Before the arrival of the Consulting Psychiatrist no special facilities existed for the diagnosis and treatment of psychiatric cases which were of necessity admitted either to the ordinary medical wards of a general hospital or as in the case of psychotics, to small observation wards attached to two or three of the established military hospitals.

The situation in Aug., 1942, provided an interesting contrast. In place of the original limited observation wards there were by that date specialized psychiatric hospitals, centres, and psychiatric sections of convalescent depots. In addition to the original Army Consulting Psychiatrist, who, with the help of two specialists in psychiatry, was responsible for all the psychiatric cases arising not only in the Army but also in the Royal Navy, R.A.F., and the various Dominion and Allied troops, there were thirteen Army specialists in psychiatry and at least an equal number of graded specialists and medical officers solely engaged in psychiatric work, as well as psychiatrists attached to the other Services and the Dominion Forces.

In any consideration of the organization and work of the psychiatric services in the Middle East it is essential to realize the extent of the area concerned and the associated difficulties in travel and communication. The area included Egypt, Palestine, Syria, the Sudan, Eritrea and Abyssinia, Libya, Cyprus, and originally Iraq and Iran. The vastness of this area bore a direct relation not only to the problems arising in establishing a co-ordinated and organized psychiatric service itself but also to the problem of arranging for the evacuation of psychiatric cases; for example, the evacuation time between the forward areas in the Libyan campaign and a suitable base hospital or centre was rarely less than seven days, and was generally associated with a maximum degree of mental and physical stress and strain.

A second problem of very considerable practical importance was the wide diversity of races and nationalities encountered. During the course of 12 months in one centre alone, patients of the following nationalities were admitted (in addition to British and Dominion troops): French, Greek, Polish, Czechoslovak, Russian, Cypriot, Maltese, Palestinian (Jewish, Arab, and Christian), Turkish, Mauritan, Seychelles, Chinese, Portuguese, and various African races, including Kaffirs, Basutos, Bechuanas, Matabeles, Zulus, Swahilis, and Abyssinians. In addition German and Italian prisoners of war were admitted for treatment.

### Incidence

The actual numerical incidence of psychiatric breakdown was considerable; but, judged in relation to the total numbers involved and to the extreme degrees of mental and physical stress and strain present in so many cases, it was perhaps surprising—as Surg. Capt. Curran has recently pointed out in reviewing naval cases—not that so many but rather that so few breakdowns occur. It is clearly undesirable at this stage of the war to give statistics of actual figures in detail, but it may be stated that the annual incidence of neurosis in the Middle East during the last two years has shown no significant variation from the figures obtaining in the last war.

It must always be remembered, however, that statistics and percentages by themselves give a very partial and inadequate picture of the situation as a whole. The amount of time and difficulty involved in the handling, evacuation, and treatment of psychiatric casualties is often out of all proportion to the actual numbers involved; and the potentially "infective" nature of psychiatric casualties is always a factor of considerable importance. There can be little doubt that if adequate selection of personnel had been employed before men were sent to a battle area a very marked decrease in the incidence of neurotic breakdowns, and a great improvement in the prognosis when breakdown did occur, might reasonably have been expected.

The aetiology of psychiatric breakdown may best be considered under the two main headings of predisposing and precipitating factors.

### Predisposing Factors

#### (a) Psychopathic Constitution

The very great importance and significance of a psychopathic constitution, both as an aetiological and as a prognostic factor, was shown repeatedly throughout the period under review. An analysis of all admissions to one psychiatric centre during a six-months period showed that no less than 21.7% of neurosis and 23.8% of psychosis cases had suffered from a previous neurotic or psychotic breakdown: these percentages were even

more marked in regard to officers, among whom, in the same series, 46.2% of neurosis and 37.5% of psychosis cases had had a previous breakdown. A further analysis of the same series showed that, in addition, 38% of all anxiety neurosis and 33% of all hysteria cases showed evidence of markedly abnormal personalities before their present breakdown. The term "markedly abnormal" is here used advisedly: all these patients had shown evidence of relatively gross psychopathic traits in their previous histories, usually extending over a period of many years and dating from childhood and adolescence. These psychopathic traits were all of an accepted, obvious, and easily recognizable type, such as would have been clearly revealed by any careful case history; they did not rest on any abstruse or controversial psychopathological theory.

The significance of a psychopathic previous history was shown at every stage of the individual's military career. Many of these men broke down under the initial stress of embarkation for over-seas or during the voyage; and many required admission to hospital immediately upon arrival in the Middle East (thus 36 cases were admitted direct from convoys to one centre alone during the second quarter of 1942). A much larger number of individuals of this type broke down within a few weeks of arrival, and were completely unable to readjust themselves to the conditions of overseas service. An even larger proportion broke down before ever reaching a forward area. Cases of neurotic breakdown can conveniently be differentiated into cases of "battle neurosis" (cases breaking down under the stress of battle) and "neurotic sick" (cases occurring without relation to battle stress). An analysis of one large series of cases showed that 79% of the neurotic sick had a bad previous history, as against only 22% of the battle neurotics.

These factors are of the highest importance, because in the elimination of the misfits, of the chronic neurotics, and of the psychopaths lies the most direct and most hopeful method of prevention available to us. Very little can be done in an actual battle area to limit or alleviate the stresses and strains or to alter the adverse environment; and, given sufficient stress and strain, any person may break down. We can, however, and we should, sift out those who are likely to break down early—the weaker brethren, those who can cause difficulties and disharmonies and perhaps even disasters out of all proportion to their numbers, and whose presence constitutes a continued if only a potential menace to the morale of the group as a whole.

#### (b) Psychopathic Family History; (c) Morale

The significance of a psychopathic family history, although rather more difficult to assess, should not be underestimated; approximately one in five of all admissions in the above series showed evidence of a markedly psychopathic family history.

The question of morale, with all its implications, was of course of fundamental importance: faulty morale, indifferent training, or poor discipline provided a fruitful soil for the development of psychiatric breakdown. The series of African campaigns has proved beyond all shadow of doubt that half-trained, irresolute, incompetent men are useless in modern battles. The modern soldier, more perhaps than ever before, has got to be alert, competent in the use of arms of several varieties, self-sufficient, and resolute in situations in which he must act alone—situations often encountered by the need for dispersal.

### Precipitating Factors

#### (a) General

**Domestic Separation.**—The disruption of family life, the impossibility of obtaining home leave, and the prospect of indefinite separation from the home and family were factors of the greatest importance, especially if—as was often the case—there was associated anxiety over illness of relatives, financial stress, rumours of marital infidelity, or news of enemy air raids near the individual's home. Much anxiety was felt throughout the command during the Battle of Britain, and quite a large number of serious breakdowns were precipitated by the news of certain towns at home having been bombed. These facts are perhaps of additional significance in the light of the recent R.A.F. offensive against the Ruhr. In this

connexion the very great importance of a regular and reasonably rapid mail service was in constant evidence—delay, irregularities, or non-arrival of mail were potent causes of anxiety and depression even in the most stable personalities.

**Climate.**—The trying climatic conditions prevailing in the Middle East—extremes of heat, shortage of water, flies, sand, and dust—were all important precipitating factors; on the other hand, it should be stressed that the effect of climate and temperature is essentially indirect, and is not in itself a direct cause of psychiatric breakdown: such terms as "tropical neurasthenia" are misleading, and are best avoided.

#### (b) Battle Stress

The term "battle neuroses" was, as already stated, applied to those cases of neurosis precipitated by the actual conditions of battle. Any of the above more general factors were, of course, liable to be associated in varying degree in the causation of battle neuroses, especially when combined with prolonged loss of sleep and extremes of physical stress and fatigue, and, conversely, the fact that the breakdown occurred during battle does not necessarily indicate that these battle conditions were in themselves more than incidental factors in the causation. In the great majority of cases of battle neuroses, however, the immediate precipitating factors could be accepted as being the actual conditions of enemy action.

The nature of the battle stress varied considerably with the theatre of operations concerned. In many cases the first symptoms of breakdown had appeared after the campaigns in Norway and France; in others, in East Africa or Syria. The majority of cases originated during the various Libyan campaigns or during the evacuation of Greece and Crete; or, in naval cases, during the course of the long and arduous naval operations in the Eastern Mediterranean. Without any question the most important single precipitating factor in the production of battle neurosis was continued dive-bombing or machine-gunning from the air, in the absence or relative absence of aerial protection, and most particularly when experienced under conditions of inactivity without the possibility of retaliation. The importance of this form of attack was shown repeatedly, and was out of all proportion to the actual number of fatalities caused.

The importance of the above factors was most pronounced during the earlier stages of the campaign, especially during the evacuation of Greece and Crete.

Table I shows the percentage of total cases (in a series of 633 consecutive admissions to one psychiatric centre) resulting from battle stress in the varying types of neurosis: figures for certain psychotic reactions, associated in origin with severe battle stress, are given for purposes of comparison.

TABLE I

Anxiety neuroses	..	..	..	..	..	..	63.2
Hysteria	..	..	..	..	..	..	26.8
Other neuroses	..	..	..	..	..	..	19.0
Schizophrenia	..	..	..	..	..	..	23.4
Manic-depressive psychosis	..	..	..	..	..	..	7.7

The actual degree of battle stress varied, of course, very widely, ranging from sporadic high-level bombing to prolonged shelling, repeated immersions (in naval cases), and similar forms of severe stress. It is, however, of importance to note that breakdown from battle conditions was throughout the period relatively uncommon, and has become increasingly less frequent.

#### Clinical Types

**Physical Exhaustion.**—A recent analysis of battle casualties evacuated from a forward area showed that four out of five cases classed as "N.Y.D.N." were in reality cases of fatigue and exhaustion, and were without any deeper psychiatric significance. The importance, from the point of view of both prognosis and disposal, of establishing the true nature of these cases has been recognized in the revised *Nomenclature of Mental Diseases*, now in official use in the Army.

**Neuroses.**—The largest group of cases included under this title were those of anxiety neurosis, which accounted for over two-thirds of the total neurosis cases. Hysterical reactions occurred less commonly, accounting for approximately 20% of total neurosis cases. Experience in the Middle East therefore confirms the experience of other observers—that hysterical conditions are very much less frequent in this than in the 1914-18 war.

**Anxiety Neurosis.**—In the acute anxiety reactions precipitated by battle stress, disorders of behaviour were often prominent: acute panic reactions were common, often associated with episodes of extreme aggression or even violence. Semi-stuporous states were also of frequent occurrence. A querulous, resentful, anti-social attitude was often found in anxiety neurotics under treatment. Table II shows the percentage incidence of the main presenting symptoms in a group of 215 anxiety neurosis cases admitted consecutively to one centre.

TABLE II

Depression	..	..	..	..	..	..	43.8
Anxiety	..	..	..	..	..	..	47.0
Headaches	..	..	..	..	..	..	42.3
Insomnia	..	..	..	..	..	..	38.3
Cardiovascular symptoms	..	..	..	..	..	..	30.5
Gross tremors	..	..	..	..	..	..	25.8
Gastro-intestinal symptoms	..	..	..	..	..	..	22.0
Acute panic reactions	..	..	..	..	..	..	22.0
Lassitude	..	..	..	..	..	..	19.7
Associated hysterical reactions	..	..	..	..	..	..	16.5
Phobias	..	..	..	..	..	..	11.2
Lack of concentration	..	..	..	..	..	..	11.2
Memory defects	..	..	..	..	..	..	4.5
Frequency of micturition	..	..	..	..	..	..	2.7

The above analysis makes no pretence to scientific accuracy either in terminology or in other ways, but it is perhaps of interest as a rough index of the relative frequency of the common symptoms. Two points of interest emerge from a study of these figures—the predominance of depression as a symptom, and the relative infrequency of psycho-omatic symptoms of the cardiovascular type. The importance of depression as a presenting symptom was, in fact, even more marked than the above figures suggest, inasmuch as a certain group of cases usually diagnosed as anxiety neurosis had in the above series been classified separately as "reactive depression."

**Hysteria.**—Table III shows the relative frequency of occurrence of the main symptoms in a group of 71 hysterical cases admitted consecutively to one centre.

TABLE III

Amnesia	..	..	..	..	..	..	21.0
Convulsions	..	..	..	..	..	..	19.6
Paralysis or paralysis	..	..	..	..	..	..	18.2
Fugues	..	..	..	..	..	..	14.0
Blindness	..	..	..	..	..	..	5.6
Vomiting	..	..	..	..	..	..	5.6
Involuntary movements	..	..	..	..	..	..	4.2
Somnambulism	..	..	..	..	..	..	2.8

The cases of dissociation—amnesia and fugues—thus constitute the largest group (35%), and are commoner than cases of the conversion type.

**Psychopathic Personality.**—These cases accounted for approximately 6% of the total neurosis admissions to one centre; as might be expected, however, the difficulties presented by individual members of the group in treatment and disposal more than compensated for any numerical inferiority. It is notable, and in keeping with experience, that less than 10% of these cases were associated in origin with actual enemy action. One special group of these cases—the homosexuals—presented problems of especial difficulty in the Middle East, in relation both to treatment and to disposal; apart, however, from stressing the inadvisability of sending innate homosexuals (if diagnosed) to the Middle East or to any similar overseas station, it is not possible here to enter into any more detailed discussion of the clinical aspect of these cases.

**Obsessional Neurosis.**—Fully developed obsessional states were rare, but, when they did occur, were usually of unfavourable import and unlikely to respond to ordinary forms of treatment.

**Psychoses.**—The total number of psychotic cases admitted to hospitals and centres was considerably in excess of expectation. This excess could be explained by various factors—the most important being the wide variety of nationalities encountered, including large numbers of coloured troops, in whom the correct assessment and diagnosis of disorders of behaviour presented many difficulties.

**Schizophrenia.**—This was by far the most frequent psychotic reaction, accounting for rather more than 50% of the total psychotic cases. As noted during the last war, schizophrenic reactions developing during war were often of a more benign type than those developing under the more ordinary conditions of civil life.

**Manic-depressive Psychosis.**—Cases of manic-depressive psychosis accounted for approximately 30% of all psychotic cases; mania and melancholia were the presenting phases in an approximately equal number of cases.

**Other Psychoses.**—Psychoses attributable to infection (either acute or chronic) were uncommon. A very small number of cases of cerebral malaria occurred, and only one case of dementia paralytica (a Cypriot) was found in a series of over 1,200 admissions to one centre. Mental symptoms associated with heat hyperpyrexia were seen in a few cases, but in only one case in the above series was there any serious residual mental abnormality. A large number of

cases of pellagra were seen on one occasion among native troops; it was difficult to assess the degree of mental abnormality, if any, in these cases owing to language difficulties, but there was no evidence of behaviour disorders or gross mental change. Alcoholism in its various manifestations was fairly common, ranging from acute alcoholic episodes to chronic alcoholism and delirium tremens. Cases of psychosis in association with drug addiction were rare, consisting mostly of hashish addiction among the local native troops. A stuporous state lasting from 24 to 48 hours, and resulting from the consumption of "doped" alcohol in certain of the local establishments, was at one time fairly common, and led at first to some difficulties in diagnosis. Although epilepsy was fairly common, epileptic psychosis was rare.

**Head Injury.**—Psychosis associated with cerebral trauma was uncommon. The series of 633 admissions to one centre included only eight cases of post-traumatic personality change; this figure is, however, to some extent misleading, as the great majority of head-injury cases were admitted to and treated in the special neuro-surgical centre, and in consequence only cases with gross mental change were likely to be admitted to a psychiatric centre. From the somewhat restricted experience of post-concussional and head-injury cases gained at a psychiatric centre, the general impression was obtained that such cases are unsuited for service in tropical or subtropical climates.

**Intellectual Defect.**—Cases of congenital mental deficiency or of mental dullness and backwardness were unduly common, especially during the earlier part of the period under review. In the above series of 633 admissions there were 14 cases of mental dullness and backwardness and 27 cases of mental deficiency; of the mental defectives 23 were of the higher-grade, 2 of the medium-grade, and 2 of the lower-grade feeble-minded type. In seven cases there was a long record of delinquency and three had been certified as mental defectives before enlistment. The total number of mentally defective or dull and backward cases was very much greater than that given above, as many such cases were disposed of as out-patients and did not require admission to hospital. The following example provides a rather significant instance of this:

Twenty-seven men out of a draft of 80 posted to a certain unit were considered by the commanding officer as unfit to carry out the specialized duties required in this unit. On the advice of the unit medical officer they were referred to a psychiatric centre for an opinion. As a result of a careful and detailed investigation of each case, combined with intelligence tests, 7 were found to be higher-grade feeble-minded defectives; 11 were mentally dull and backward, and a further 6 were of subnormal intelligence, and unfitted for any form of specialized training.

**Delinquency.**—An increasingly large number of delinquents were referred to psychiatric hospitals or centres for an opinion, ranging in degree from the mildest cases of "absence without leave" to hardened recidivism. The commonest type of case, and the type that presented the greatest difficulty in diagnosis, was that in which a state of amnesia or fugue was put forward as a defence for absence without leave or desertion.

**Malingering.**—Deliberate malingering was in our experience rare; there were, however, the usual number of somewhat dubious borderline cases, which caused certain difficulties in diagnosis.

### Treatment

In a general survey of this nature it is possible to give only a very brief summary of the various forms of treatment employed, and the principles underlying their application. In no field of medicine, and more particularly of military medicine, is the dictum "Prevention is better than cure" more applicable than in the handling and treatment of cases of psychiatric breakdown. It is far too late to start preventive measures—to develop selection of personnel, in other words—in an actual theatre of war; the best selection in these circumstances tends to be a haphazard and fortuitous process, and more often it will resemble a process of salvage rather than selection.

Selection, then, should start before entry into the Army; it should continue throughout the stage of training; and it should apply particularly to all drafts for overseas service, most particularly of all for overseas service in an active theatre of war. It should always be remembered that a soldier may be called into action the moment he arrives in a new country, often with little or no possibility of adaptation to a strange land, to a trying climate, or to the stresses and hazards of active warfare. It is useless to send men over-seas where their previous history indicates that early breakdown is likely—and this applies not only to cases of neurosis but to chronic delinquents: it was the somewhat bitter experience of most observers—combatant officers as well as psychiatrists—that the

character of the delinquent does not undergo any curious reformation or metamorphosis on leaving these shores. However careful selection may be, a certain number of cases of psychiatric breakdown will continue to occur, although here again much will depend on the general morale and *esprit de corps*, and on the training and efficiency, of the unit as a whole.

The conditions of present-day warfare, especially in the desert, present much difficulty in the handling and treatment of psychiatric casualties. Evacuation is lengthy, involved, arduous, and exacting; opportunities for adequate treatment in the field are few and the difficulties of such treatment may seem at times overwhelming. On the other hand, the further back a psychiatric casualty is evacuated the less is the probability of his ultimate return, the worse is the prognosis as regards his ultimate efficiency as a soldier, and the more serious may be the effect upon the other members of the unit.

Treatment therefore must be immediate; its application must be measured in terms of minutes rather than hours, and of hours rather than days. It must be immediately effective and it must remain effective. It must be simple, uncomplicated and at the disposal of every R.M.O. It is unlikely the specialist advice will be available in more than a small percentage of cases, and the R.M.O. must therefore have working knowledge of their diagnosis and treatment. The only feasible method of immediate treatment is by physical measures; the cardinal factor throughout is rest, and in these circumstances rest can only be procured by full sedation. The choice of sedative depends on various factors, one of the most important naturally being the range of drugs actually available. Alcohol and morphine are of use in emergencies, but the small bulk and ease of administration of the barbiturates (e.g. barbitone or phenobarbitone) make these drugs the most generally acceptable. Intramuscular injections should be given where necessary. The dosage must be adequate; too little is usually given, and it is important that adequate sedation be maintained throughout the period of evacuation to the base, if such evacuation should prove necessary.

The methods of treatment applied in the later stages do not differ materially from those applied to the neuroses in general. Prolonged narcosis was used extensively in the treatment of acute anxiety states in base centres and hospitals, and was found in most cases to be the method of election. It is of some importance to note that prolonged narcosis presents certain dangers in tropical or subtropical climates, and several cases of hyperpyrexia occurred during treatment, presumably due to disturbance of the heat-regulating mechanism.

The intravenous injection of a suitable barbiturate, reinforced by suggestion and the appropriate psychotherapeutic measures, proved a most valuable form of treatment in effecting the removal of conversion symptoms or the restoration of memory in hysterical amnesias or fugues; in many cases the early application of these measures restored function and allowed of return to duty without evacuating the patient to the base.

Emphasis has been laid above on physical methods, which indeed, provide the only practicable form of first-aid treatment in the great majority of cases in a forward area. In the psychiatric hospitals and centres at the base a much wider scope and range of treatment was available and used. Psychotherapy was employed—usually in its simpler forms—in all cases, and under the general heading of psychotherapy may be included the invaluable help rendered in many cases by the chaplains of the various denominations and by such organizations as the S.S.A.F.A. Fully equipped occupational departments were provided in each centre as well as the various recreational activities and excellent libraries provided by the B.R.C.S. The importance of semi-military training in the treatment of neurosis cases, not only for its own sake but as a preparation for return to duty, was recognized, and such training was used to an increasing extent. An insistence on a reasonable degree of military discipline in the treatment of neurosis cases in general was considered of great importance and produced very beneficial results.

### Prognosis: Results of Treatment

It was decided at the beginning of the period under review that as a matter of general policy it was of the utmost impor-



tance to retain, so far as was possible, all cases in the command on at least some form of duty, and to confine evacuation out of the command to psychotic cases and those neurosis cases in which, for various reasons, the ultimate prognosis was regarded as very unfavourable. As a result of practical experience this policy was further developed, and it was decided that psychotic cases, after recovery and if considered suitable on other grounds, should also be retained in the command. This rather radical revision of policy in the case of psychotics was adopted only after careful consideration, but has already proved successful in practice.

The following statistics are of interest in assessing the prognosis and the results of treatment. In a series of 350 consecutive cases of neurosis discharged from one psychiatric centre during the six-months period July to Dec., 1941, 71.5% were returned to duty (53.7% to full, 17.8% to base duties); the average duration of stay in hospital for these cases was 25 days. During the three-months period April to June, 1942, 625 neurotic and 216 psychotic cases were discharged from one hospital; of the former group 92% were returned to duty (61% to full, 31% to base duties); of the latter 70% were returned to duty (48% to full, 22% to base duties).

*Follow-up.*—A careful follow-up system was employed throughout the period under review. An analysis of the results of the follow-up suggested that not more than 5 or 6% of cases required readmission to hospital or centre; this figure compares satisfactorily with those given for the war of 1914-18. It should be remembered that such cases of relapse as do occur do not necessarily represent a pure loss to the Services; during the interval before relapse occurs they may be, and in very many cases were, of the greatest value to the Army.

### Conclusions

The results obtained during the two-year period under review have been reassuring, and the high proportion of patients returned to duty has demonstrated the practical value of specialized psychiatric units and treatment. The indifferent quality of many of the drafts sent over-seas was often only too obvious, and has been indicated in some detail in the earlier sections of this paper; not only were many of these men unsuitable for service over-seas, but in many instances they were, as has been stated elsewhere, "candidates for hospital treatment on enlistment." It is clear that the efficiency of an expeditionary force must suffer if it includes large numbers of officers and men who, by virtue of their previous histories, are likely to develop a psychiatric breakdown.

The value of an organized system of personnel selection was thus shown in a very practical form throughout this two-year period, and it is difficult to avoid the conclusion that, had the system of personnel selection which is now applied to all recruits on joining the Army been applied from the beginning of the war, a very large proportion of the psychiatric casualties in the Middle East would have been avoided.

### Summary

An account is given of the organization and development of the psychiatric service in the Middle East Force.

Details of the incidence of psychiatric breakdown in the Middle East Forces are provided.

The various aetiological factors are discussed, with particular reference to the significance of a psychopathic previous history in determining the likelihood of future breakdown.

A brief account is given of the various types of clinical cases encountered.

Details are presented of the main forms of treatment employed.

An analysis is given of the results of treatment, with details of the percentages of cases returned to duty.

The very great importance of personnel selection is stressed.

I wish to record my gratitude to Brig. G. W. B. James, M.C., Consulting Psychiatrist, Middle East Force, to whose inspiration, energy, and wide understanding the organization and developments described above are due, for his advice in the preparation of and his permission to publish this paper; to Brig. H. A. Sandiford, M.C., Director of Army Psychiatry, and Brig. J. R. Rees, Consulting Psychiatrist to the Army, for their continual encouragement and assistance; and to the medical and nursing staff and the R.A.M.C. personnel of No. 1 Psychiatric Centre, M.E.F., whose enthusiasm and co-operation made possible so many of the results detailed above.

## DIAGNOSIS AND TREATMENT OF LESIONS DUE TO VESICANTS

BY

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In spite of the increasing air superiority of the United Nations the possibility of gas being used in this war cannot be ignored. The enemy might use it during any critical stage of military operations. Moreover, it would be dangerous to assume that we shall never see any cases suffering from the effects of gas, as they may result from accidents which occur from time to time. Methods of defence rapidly overtake new and unexpected methods of attack, so that no weapon ever again achieves its initial success. Had the Germans appreciated the success of their first gas attack in the last war the final result might have been very different. Should gas be used we can expect it on a large scale, with indiscriminate mixing of blister, choking, and harassing varieties—the characteristic smell possibly being disguised—plus high-explosive and incendiary bombs. With this in mind, it is important to simplify the anti-gas teaching, so far as is possible, reliance being placed on a few common-sense principles.

The gas discipline of the Services has received a great deal of attention and is so good that nothing but a nuisance effect is likely to be achieved against them. Civilians, however, who have not received special training are likely to be far more vulnerable, and the effect of panic must not be overlooked. It is essential for the able-bodied to help themselves by means of the gas-mask, removal of clothes, and immediate treatment with ointment, leaving the official anti-gas parties free to handle those who cannot help themselves.

The first attack may be at night, and if the action of the gas is a delayed one its presence may not at once be recognized. In consequence, the medical profession will be faced with a large number of cases suffering from lesions of the eyes, respiratory tract, and skin, some hours after the time for effective prophylactic treatment has passed. Subsequent attacks will be countered more easily, as the population will be prepared and suitable prophylactic measures can be taken immediately.

In order that protection may be available at the earliest moment the clinical diagnosis of the first cases is most important, and will largely be the doctors' responsibility. If the doctor suspects gas has been used he should at once get in touch with the nearest A.R.P. Report and Control Centre, whose responsibility it is, so as to obtain confirmation from their Gas Identification Officer. We must remember that the lethal effects of any gas are most commonly produced by inhalation, the next most serious danger being injury to the eyes. Skin lesions, although a major nuisance, will cause less loss of life than similar conditions due to thermal burns, and are certainly less severe than the injuries caused by high explosives. The gas-mask must always be the first line of defence, and it is important never to lose sight of this when devising other methods for prophylaxis. The immediate removal of contaminated clothing is equally important, as it reduces the risk of injury to the person concerned and the possibility of spreading the material to others.

### MUSTARD GAS

#### Prophylaxis

*Eyes.*—Constant protection of the eyes by the eye-shield or gas-mask is of first importance. If liquid should enter the eye immediate mechanical removal by copious washing with water, saline, or other bland fluid is essential. If carried out within two to three minutes of contamination it will probably save the eye; if delayed for longer it is of little value. Care must be taken to see that material from the surrounding skin is not washed into the eye. However, if the eye is affected only by vapour, washing will do more harm than good. So much stress has been laid on the importance of early irrigation of the eyes that there is a tendency to forget that it is equally important to get rid of contaminated clothing. If help is available the two should be done coincidentally.

*General Principles for Skin Cleansing.*—Three methods are available—mechanical removal, dilution and removal by washing, or chemical neutralization—before the vesicant can penetrate and produce its local and systemic effects. As the effective dosage of liquid

vesicant is very small mechanical removal can never be completely efficient. Washing must be prolonged, with many changes of water, and the danger of spreading the vesicant rather than eliminating it is very great. In many cases the gas-mask must be removed in order to wash the whole body effectively, with consequent risk to the eyes and chest. Chemical neutralization must therefore be the method of choice, followed, if possible, by bathing.

In the last war mustard gas was the vesicant used and bleach cream the most readily available antidote. At the beginning of this war the authorities took steps to provide facilities for treatment by bleach cream on a large scale. However, the difficulty of doing this comprehensively is obvious. To be completely effective the bleach cream must be freshly prepared and be applied with the bare hands immediately after contamination. It is equally important to remove it by washing, as it is a severe skin irritant—a point which is often overlooked. Another disadvantage of bleach cream is that it is not readily portable and does not keep. Subsequently, anti-gas ointments were introduced for use in the field, as they could be carried easily and had good keeping qualities. Anti-gas ointment No. 1 is excellent against mustard gas, but is of little use against lewisite. Because of its skin irritancy it has to be washed off after use. It has been rendered obsolete by better ointments which deal with both mustard gas and lewisite. Anti-gas ointment No. 2, which is on sale to the public, is very effective, but becomes irritating if covered with clothes or bandages. Subsequent numbers now being prepared, but not at present available to the public, have the advantage of being innocuous to the skin, though not more effective than No. 2.

When handling a contaminated case there are two points to be considered: first, the avoidance of injury to the contaminated person; and, second, the prevention of transference to others. Avoidance of injury will depend on the immediate removal of clothing if it has liquid on it or has been worn in an atmosphere containing vesicant vapour, followed by suitable treatment of the contaminated skin. Transference to others will be avoided by suitable treatment of discarded contaminated clothing. The danger of transference from the skin of a patient is negligible unless actual liquid is visible. In fact, if you cannot see anything on the skin it is safe to assume that absorption or evaporation has taken place and the patient can be handled with comparative immunity, particularly if the hands are first protected with anti-gas ointment. No chemical neutralization should ever be carried out if actual lesions are developing, as such treatment will increase the severity of the final lesions; at this stage careful washing with an antiseptic solution is the only useful treatment. The condition of the patient is of first importance, and cleansing only a secondary consideration: better the contaminated living than the decontaminated dead.

Hair contaminated by liquid mustard gas should be treated with bleach cream followed by washing (or by rubbing in anti-gas ointment, which may then be washed off, or removed by kerosene if this is available). In some cases, to facilitate treatment it may be necessary to remove the hair. If the patient is injured and contaminated, clothing may be removed and ointment applied to the skin, always bearing in mind the danger of increasing the shock. Removal of mustard gas from the damaged tissues is a problem that will have to be left in the hands of the surgeon. It is worth while to remember that neutral hyperchloric solution (1% available chlorine) has some value as a decontaminant.

### Diagnosis

It must be borne in mind that exposure to vapour of vesicant gas affects the organs in the following order of susceptibility: eyes and alimentary tract, respiratory tract, skin, general system. The severity of the lesion is dependent on the concentration and the length of exposure, so that liquid for a short time, or vapour for a long time, can produce identical effects. Without protection or prophylactic treatment multiple injuries of varying degrees will occur.

**Eyes.**—The initial effect of mustard gas in the eye is negligible even on the entry of liquid. The onset of symptoms occurs a few hours after exposure. The eyes become irritable and severe pricking pain develops: lacrimation, photophobia, and blepharospasm are the usual symptoms of mustard gas keratitis. The physical signs usually seen are redness and swelling of the lids, congestion of the conjunctiva, and corneal haze, which can be seen by the naked eye in the more severe cases, but which is visible only by slit-lamp examination in the milder ones.

**Alimentary Tract.**—Epigastric pain, vomiting, and diarrhoea occur coincidentally with the eye symptoms, but tend to settle rapidly in most cases.

**Respiratory Tract.**—Sore throat develops in 12 to 24 hours after exposure, with a dry irritating cough. Subsequently vesicles may appear on the soft palate and the fauces. Later the voice is lost, and in bad cases ulceration of the trachea and upper bronchi follows. Bronchopneumonia and any form of septic lung condition (bronchiectasis, lung abscess, etc.) may occur in severe cases. It is important, if anaesthesia is contemplated, to remember the delayed

action on the respiratory tract. The use of ether at this stage will certainly increase the severity of the lung condition when it declares itself.

**Skin.**—Irritation and redness appear 6 to 8 hours after exposure, followed by erythema, marked oedema, and finally vesication. In vapour exposures the genitalia are particularly vulnerable. In the most severe skin cases large white areas like pigskin, with surrounding groups of vesicles, are encountered, the most characteristic feature being the wide area of erythema and oedema surrounding each blister. Small blisters may at first appear and later join together to form large flabby bullae which are easily ruptured. Crops of blisters may occur up to the tenth day after exposure. Invariably there is a characteristic purplish discoloration of the affected skin and itching. Brown pigmentation may occur after healing and persist for a long time. When large areas are involved a condition closely resembling shock, with a low blood pressure and haemoconcentration, is not uncommon.

**Systemic Effects.**—In severe cases the bone marrow may be affected, with development of an agranulocytic type of anaemia. Damage to the liver and kidneys is also recorded.

### Treatment

**Eyes.**—Immediate and copious irrigation of the eyes is of the utmost importance in the event of liquid contamination, and has already been stressed under "Prophylaxis." Once the initial irrigation has been carried out it should not be repeated, either for liquid or for vapour contamination, as it does more harm than good. If the eye is painful relief is best obtained by the use of a mydriatic—either atropine 1% or hyoscine 0.5%—instilled two or three times a day until the pupil is fully dilated, whereupon it should be stopped unless relapses occur with contraction of the pupil. If dilatation does not take place readily a specialist's advice should be sought. Bandaging the eye should be avoided, but the use of a paper or cardboard shade is comforting. Sulphaacetamide (albucid) drops may be used in the early stages as they minimize the risk of secondary infection and are comforting, but once full dilatation of the pupil has been attained the pain disappears. Local anaesthetics are best avoided, but a central narcotic may be indicated in the early stages, before dilatation of the pupil. Antiseptics should be avoided as they tend to injure the already oedematous corneal epithelium. The copious discharge, which has the appearance of pus but in fact rarely contains bacteria, will usually disappear in 3 to 4 days if the pupils are kept dilated. Crusts round the lids can be removed with cotton-wool swabs and paraffin applied along the lid margins to prevent sticking. The psychological effect of an injury to the eye is considerable, so every effort should be made to reassure the patient by showing him that he has not lost his sight and by persuading him to return to a normal life at the earliest opportunity. The subsequent treatment of the complications should always be in the hands of an ophthalmic specialist.

**Alimentary Tract.**—As there is no specific treatment for the abdominal pain and vomiting they must be symptomatically dealt with.

**Respiratory Tract.**—The cough may be controlled with codeine and inhalation of tinet. benz. co. The use of sulphonamides should be reserved for the treatment of infective lung conditions. It is probably unwise to employ them prophylactically, as the majority of mild cases make an uninterrupted recovery.

**Systemic Effects.**—Particular attention should be paid to the condition of the blood; as with any extensive burn, haemoconcentration will call for plasma. The onset of agranulocytosis is marked by an early leucocytosis followed by a leucopenia which may appear as quickly as the third day after exposure. If the use of sulphonamides is contemplated blood counts must be done repeatedly to make certain that agranulocytic changes are not taking place. During administration the fluid intake must be sufficient to ensure the passage of 1,000 c.cm. of urine a day.

**Skin.**—There is nothing mysterious about the treatment of the skin lesions. They are slow to heal, prone to sepsis, and respond badly to any form of tanning treatment. As is the case with the treatment of thermal burns, avoidance of sepsis, rest of the injured part, control of oedema, and relief of pain are the four principles which must be constantly kept in mind. Resort to any form of prophylactic ointment when a lesion is visible is to be condemned. The exudate from the blister is innocuous. Before starting treatment remove hair with clippers. The question of what should be done with the blistered skin is a difficult one and must depend on the condition of the blisters when first seen. Leaving the skin intact has the advantage of reducing pain, preventing excessive exudation and shortening the time of healing. There is no doubt about its value in small uncomplicated cases. However, the presence of dead skin in the later stages of treatment, or of skin that is detached and not covering the raw area, will encourage sepsis, so it should be removed. Aspiration of tense intact blisters is usually advisable. In all cases the affected part should be cleansed by gentle wash-

with soap and water, or a bland antiseptic such as 8% dettol or 1% cetavlon. If the latter is used the part should be washed with normal saline before any dressing is applied. This should be followed by the application of sterile oily dressings, such as tulle gras, vaselined gauze, paraffin, cod-liver oil, arachis oil, etc. Amyl salicylate is a very comfortable dressing, but cannot be used on the face or genitalia, or when the blisters are broken. However, it is of considerable value in reducing oedema in the first four days of treatment. Sterile sulphalanilamide 3 to 5%, incorporated in the dressings, or powdered on to the affected area before the dressing is applied, will help to combat subsequent infection in areas where it is likely to develop. It should not, however, be used as a prophylactic routine over large areas, as the danger of absorption subsequently increasing the aggranulocytic changes is always present. The lesions are likely to increase and the exudate from them is considerable during the first few days, so care must always be taken to see that the dressings are adequate in size and thickness and that they are held in position by bandages. Reasonable pressure helps to immobilize the part and so controls the exudate. Sticking-plaster should be studiously avoided. Dressings should be changed as seldom as is compatible with the patient's comfort.

Subsequent treatment will depend on the progress, but it should follow the lines which would be adopted with lesions of a similar appearance due to other causes, such as thermal burns and septic conditions of the skin. The value of covering the raw granulating area with perforated oiled silk, cut to the right size and held in position by a layer of zinc ointment, applied to the normal surrounding skin, is considerable. It is comfortable, the exudate can escape easily, and dressings can be changed without damage to the new granulations, as the oiled silk can be left *in situ* for many days without disturbance. It may be necessary to resort to a skin graft in the third-degree cases in which large areas are involved; but this, of course, will be impossible until the slough has separated and the sepsis has been controlled.

### Prognosis

**Eyes.**—In the majority of cases affected by mustard gas the prognosis is good if the initial treatment has been prompt. The possibility of a functional photophobia must always be kept in mind. However, before this diagnosis is made observation by an ophthalmologist with a slit-lamp is necessary.

**Respiratory and Alimentary Tracts.**—In the milder cases recovery is usually complete, without residual damage, but it may take a considerable time. Lung complications are the most common cause of death. The possibility of residual fibrosis of lung and bronchiectasis must not be overlooked.

**Skin.**—As with thermal burns, in those cases in which the damage is either of the first or second degree—that is, erythema or erythema plus blistering—healing takes place in 14 to 21 days and complications are not common. However, in cases which progress to the third degree and in which loss of the whole true skin occurs, sepsis is a frequent complication and many weeks may elapse before healing takes place. Fortunately, most vapour burns do not go beyond the second degree, and so contractures and scarring are rare; however, the possibility of their development must be borne in mind in cases which become infected or are of the third degree. Pigmentation will almost invariably be present, but usually fades in a matter of months. Severe or repeated burns leave the skin very prone to staphylococcal infection. Prolonged exposure, either to small amounts of vapour or to repeated small burns, tends to produce a condition of hypersensitivity.

**Systemic Effects.**—In severe cases the systemic effects may produce fatal results as they are difficult to deal with. However, patients are more liable to die from lung complications than from agranulocytosis.

## LEWISITE

### Prophylaxis

Although many of the principles mentioned for prophylactic treatment are common to both mustard gas and lewisite, it is important to keep a few special points in mind with the latter.

**Eyes.**—Owing to intense pain and spasm of the eyelids after liquid lewisite has entered the eyes, removal by washing is extremely difficult and almost useless. Recently B.A.L. ointment, which is a specific for arsenical vesicants and of great value in the treatment of the eyes, has been developed. The instructions for applying B.A.L. ointment to affected eyes are as follows:

Place ointment upon the index finger and rub firmly between the eyelids. Pull down lower lid and insert more ointment. Close lids and rub firmly. An excess should be smeared over the lids, and the process repeated at the end of one hour.

The pain attending lewisite contamination of the eye is relieved by the application of the ointment. If B.A.L. ointment is applied within two minutes of the time of contamination complete cure may be expected; complete cure may still result if it is applied within five minutes. The amount of final damage increases with further

delay, so that if it is used after 30 minutes most eyes will eventually become sightless; beneficial effects, however, may be observed in some cases if treatment is given as late as one hour. No beneficial effects on eyes contaminated with mustard gas can be expected from the use of B.A.L. ointment should not be used unless one is sure that lewisite or other liquid arsenical vesicant has entered the eyes, as it produces marked blepharospasm, which may last for an hour or more. When attempting to separate mustard gas and lewisite cases it is well to remember that lewisite produces immediate and severe eye effects, whereas with mustard gas there is a delay of several hours.

**Skin.**—Lewisite lesions of the skin, as will be shown later, become obvious in about half an hour after they are sustained. Bleach and anti-gas ointments are not quite so efficacious with lewisite as they are with mustard gas, the danger of rapid absorption and systemic effects being greater. These can be countered by bathing the affected part with 20 vols hydrogen peroxide and afterwards leaving a compress of this liquid over the affected area. B.A.L. ointment will prevent vesication and systemic effects if applied within a few minutes and will mitigate the severity of the effects even if applied so late as one hour after contamination.

B.A.L. ointment will be held centrally under the E.M.S., and will not be issued at present.

### Diagnosis

**Eyes.**—If liquid lewisite enters the eye immediate and intense pain and severe blepharospasm will occur, a corneal haze developing at once. Lewisite vapour produces an immediate but less painful reaction.

**Alimentary Tract.**—Effects will be similar to those of mustard gas, but will occur earlier.

**Respiratory Tract.**—The irritant effect of the vapour is severe and comes on in a few minutes.

**Skin.**—Tingling usually occurs soon after liquid lewisite reaches the bare skin. Subsequently the blisters which develop will be localized and tense, without surrounding erythema.

**Systemic Effects.**—If a large dose of liquid lewisite is allowed to remain untreated on the bare skin death may occur from acute arsenical poisoning. Lewisite, in addition to the marked effect produced on the liver and other internal organs, appears to have a selective action on the common bile duct and gall-bladder, with resulting haemorrhagic ulceration. Unlike the effect of mustard gas, the bone marrow in fatal cases is not found to be pale and agranulocytosis has not been recorded.

### Treatment

The value of B.A.L. ointment has already been mentioned in prophylaxis. Subsequent treatment should be on the same lines as for mustard gas, particular attention being paid to the possible systemic effects. As with mustard gas, it has been definitely established that the exudate from lewisite blisters is innocuous.

### Prognosis

This is similar to that outlined under the heading of mustard gas, except that special mention should be made regarding injury to eyes. With lewisite injury to the eyes, unless B.A.L. ointment is rapidly available, the prognosis is bad.

### SUMMARY

**Protection.**—(1) Avoid splash by remaining under cover. (2) Protect face, eyes, and lungs by gas-mask whenever gas can be detected by smell. The sense of smell rapidly becomes fatigued. (3) If contaminated by liquid remove the outer clothing at once. If it has been worn in a gaseous atmosphere remove it at the earliest possible opportunity. (4) Treat liquid contamination of the skin by mechanical removal, anti-gas ointment, or bleach cream if available, followed by washing if possible. Washing with soap and water alone may spread contamination. (5) If liquid enters the eye and no immediate painful reaction occurs mustard gas may be assumed; it must be removed at once by profuse irrigation. If an immediate reaction and pain and blepharospasm occur, arsenicals should be assumed and B.A.L. ointment should be applied. (6) Anti-gas ointments Nos. 1 and 2 and bleach cream are all skin irritants, and must be washed off if they are used. (Note: Anti-gas ointment No. 1 is obsolete.) (7) If there is no visible liquid on the skin it can be assumed that the patient is safe to handle. (8) The antidote for lewisite on the skin is hydrogen peroxide 20 vols.

**Treatment of Eyes.**—(1) Constant irrigation is detrimental. (2) Bandaging must be avoided. (3) Protection from the light by cardboard eye-shades is permissible. (4) Do not use local analgesics or antiseptics. (5) In bad cases a mydriatic should be used until pupillary dilatation is achieved. (6) Sticking of the lids can be avoided by smearing them with paraffin. (7) Sulphacetamide (albicid) drops relieve discomfort and combat subsequent infection. (8) B.A.L. ointment, if applied early, is a specific for eye and skin damage due to arsenical vesicants.

**Treatment of Skin.**—(1) Do not use any prophylactic treatment when the skin is showing actual signs of damage, unless lewisite is suspected by early skin changes. The value of B.A.L. at this stage is considerable. (2) Remove hair from affected area with clippers. (3) Clean the part with bland antiseptic. (4) Leave blisters intact whenever possible. (5) Remove redundant skin only if it is unavoidable. (6) Apply a sterile oily dressing. (7) Sulphonamides can be used to counteract infection if no systemic effects are present. (8) Any form of coagulant treatment is contraindicated. (9) Never change a dressing unless it is absolutely necessary. (10) After the first few days each case must be treated on its merits, keeping in mind the actual clinical manifestations rather than their origin. (11) The exudate from mustard gas and lewisite lesions is innocuous. (12) In serious cases it is essential to watch the condition of the blood so that appropriate action can be taken to counteract any adverse effects.

A list of those appointed by the E.M.S. to assist in the treatment of gas casualties will be found in the E.M.S. Instruction No. 283 (revised June 1, 1943).

I should like to express my gratitude for the help received from Dr. Stopford Taylor on the treatment of skin, Mr. T. J. Phillips on the treatment of eyes, and Brig. Pollitt on the treatment of burns. The staffs of the Ministry of Home Security, the Emergency Medical Services, the Passive Air Defence, and the Ministry of Supply have also given me much valuable information.

## RUPTURE IN A SUPPOSED LOWER SEGMENT CAESAREAN SECTION SCAR

by

D. W. JAMES, M.B., B.S.

Owing to the increasing popularity of the lower segment operation, rupture of a Caesarean scar during a subsequent natural labour is becoming a rare accident. The following case is reported in order to show that the possibility of rupture should always be considered, even when the scar is believed to be in the lower segment.

### Case History

**Previous Operation.**—The patient was a para-1 aged 35. No accurate notes of the former operation could be obtained. It was performed at an R.A.F. hospital, and personal contact with the medical officer who performed it was impossible, as he is now abroad. The abdominal scar extended from the umbilicus to the suprapubic region in the midline. So far as could be ascertained from the hospital, a "lower segment" Caesarean section had been performed on Feb. 18, 1939, for an extended breech presentation with a small pelvis. Version having failed, the patient was delivered before the onset of labour of a living child weighing 5 lb. 4 oz., and she made a good recovery.

**Second Pregnancy.**—This was uneventful throughout. She had been warned early in the pregnancy, in view of her previous operation, that it would be necessary for her to be delivered in hospital according to the usual custom. During the last few weeks of her pregnancy she was kept under close observation for signs of overstretching of the uterine scar, but nothing abnormal was apparent. At 38 weeks the vertex was presenting and the head was well engaged in the pelvis with the occiput anterior. Although the promontory could be felt at a little over 4 inches, disproportion appeared to be negligible. At her last attendance at the antenatal clinic the uterine scar again appeared to be perfectly satisfactory, and it was decided that a natural labour should take place under observation in hospital.

**Onset and Progress of Labour.**—Labour began naturally on the expected date, and the patient was admitted to the Maternity Unit of the North Herts and South Beds Hospital with vague labour pains at 7 a.m. on Feb. 11, 1943. The membranes were intact, the head was engaged in the L.O.A. position, and there was nothing to indicate that the course of labour would be abnormal. At 11.30 a.m. on the same day it was noticed that the lower part of the abdominal scar was a little prominent in the suprapubic region. The appearance suggested, in fact, that the bladder was not completely empty. A catheter was passed, and 2 oz. of urine withdrawn without alteration in the abdominal contour. The maternal pulse was 80 at this time. The limbs were easily felt under the scar, but there was no local pain or tenderness. The cervix admitted one finger and contractions were weak. She remained perfectly comfortable, with occasional weak contractions, until 4 p.m., when she suddenly vomited and complained of sharp pains in the lower abdomen. Her general condition was good, but her pulse rose to 100. The lower part of the abdominal scar was plainly larger than before, and on palpation gave the impression that the limbs were just under the skin. There was now some local pain and tenderness, and with each

contraction the lower part of the scar bulged in the suprapubic region. Impending rupture of the uterine scar was diagnosed, and it was decided to perform an immediate laparotomy. Half an hour later she began to complain of continuous pain, and the bulge had extended along the entire length of the abdominal scar. By the time the patient was in the operating theatre, at 5 p.m., foetal parts were easily felt under the skin, and it was evident that rupture had occurred.

**Operation.**—Anaesthesia was induced with gas and oxygen and maintained with the addition of trilene. On opening the abdominal cavity through a midline incision free blood and liquor were encountered. The arm and shoulder of the foetus presented through an irregular laceration, which appeared to extend from below on the right side of the lower uterine segment to a point higher up on the left side of the body of the uterus. A leg was seized and the child delivered through the rupture by the breech. After a short period of asphyxia it recovered and cried almost at once. After separation and removal of the placenta and membranes it could be seen that the rupture extended well up into the body of the uterus close to the origin of the round ligament on the left side. The edges of the wound were badly lacerated, friable, and infiltrated with blood-clot. There was also considerable haemorrhage between the layers of the broad ligament on the left side. A subtotal hysterectomy, with conservation of the ovaries, was therefore performed, and the abdomen closed. Immediately after the operation the patient's condition was fairly good. Her pulse was 120. A blood transfusion had been started when it was decided to perform hysterectomy and 500 c.cm. was given rapidly, followed by a further 500 c.cm. by slow drip on her return to the ward. Three hours after the operation her pulse was 96 and her general condition much improved. The puerperium was apyrexial; she was allowed up on the 14th day, and she returned home after three weeks, breast-feeding the baby.

**Pathological Report upon the Uterus.**—I am indebted to Dr. W. W. Woods, of the Institute of Pathology, London Hospital, for a description of the specimen, as well as of microscopic sections through the old Caesarean section scar. "The specimen is the upper part of a parturient uterus. It measures 13 cm. long in the posterior wall and from 9 to 12 cm. long in the anterior wall, and 11 by 7 cm. across the fundus. The appendages are absent. The serosa is smooth. The lower edge of the posterior wall is the cut edge of hysterectomy. In the anterior wall the lower edge of the specimen is the rupture. Immediately above the rupture, and partly in it, the old Caesarean scar is faintly seen as a contracted area of myometrium with a few tags of omentum adherent to it. The rupture and scar pass obliquely across the anterior wall from the right side at a point 9 cm. below the uterine attachment of the right ovarian ligament to end in the left side at a point 1.5 cm. below the left ovarian ligament. The scar is therefore in the body of the uterus and not in the lower segment. In the microscopical sections made across the rupture evidence of the scar is seen as an area of fibrosis, with contraction, in the myometrium. There is continuity of muscle fibres through the scar."

### Discussion

Commenting upon the few cases of rupture of a lower segment scar that have been reported, Marshall states: "There is more than a suspicion that in several of these cases the incision was not wholly confined to the lower segment, and that it was the corporal part which subsequently ruptured." Although he was referring chiefly to the vertical incision, this criticism might well be applied to the case reported above. In fact, it is clearly shown by the pathological report that the incision was placed entirely in the body of the uterus, although it was evidently intended to be in the lower segment.

The oblique direction is not easily explained. Whether the incision was intended to be vertical, or whether this was the result of an asymmetrical curve upwards in a transverse incision it is impossible to say. The patient was not in labour at the first operation, and it is possible that the development of the lower segment was defective or that it was difficult to define. Nevertheless it emphasizes once more the importance of a really low transverse incision.

Certain conclusions may be drawn from this case with regard to previous Caesarean operations in general: (1) That full notes of a previous Caesarean operation should always be obtained if possible. (2) That the abdominal scar is not necessarily a true indication of the nature of the uterine scar. (3) That great vigilance is necessary in all cases previously delivered by Caesarean section and subsequently allowed to deliver by natural labour, which must take place in a hospital. (4) That definite signs of overstretching of the scar usually precede the

actual rupture, and that rupture may occur with only weak contractions. (5) That the prognosis depends upon the time elapsing between rupture and laparotomy.

Early diagnosis of impending rupture should reduce the mortality to a minimum. In the case reported only a few minutes elapsed between rupture and the delivery of the child. A little earlier and the uterus might have been saved; a little later and two lives might have been lost.

I wish to thank Mr. Eardley Holland for his valuable criticism and suggestions, and for his permission to publish this case.

## MEIGS'S SYNDROME

### HYDROTHORAX AND ASCITES IN ASSOCIATION WITH FIBROMA OF THE OVARY

BY

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Pleural effusion and ascites may be found in association with cardiac, renal, or hepatic disease, and in the absence of any such clearly defined clinical syndrome are commonly attributed to carcinomatosis or tuberculosis. The association of simple fibroma of the ovary with ascites is well known, free fluid sufficient to be recognizable clinically being found in 75% of cases. Pleural effusion in association with ascites and fibroma of the ovary is a rare condition. Only 28 cases have been reported in the literature, 27 of these being from America and one from Great Britain. It is our purpose to describe two such cases which have recently occurred in Aberdeen, as we believe that others may go unrecognized and, since ascites and hydrothorax immediately suggest an inoperable growth, some patients may have died unnecessarily. This is suggested by the fact that patients who were very seriously ill have made excellent recoveries after operation.

#### Previous Cases

The first case was reported by Cullingworth in 1879, and the patient died without operation. The condition was first described in 1892 by Lawson Tait, who advocated exploring the abdomen in patients with abdominal and chest fluid, for he considered that this combination did not always mean cancer. There was no further reference until 1923, when Hoon of the Mayo Clinic reported two cases. Meigs (1934) referred to 3 cases, reported 4 in collaboration with Cases in 1937, and in 1939 summarized 15 more cases. Later, in 1940, this total was increased to 18, while in 1943 further cases were described by Meigs *et al.*, bringing the total of authentic cases described in America to 27. Rhoads and Terrell first used the term "Meigs' syndrome" when reporting a case in 1937. In Dec., 1943, Gild described one case in England.

#### Recorded Signs and Symptoms

In the majority of cases the history was that of dyspnoea, loss in weight, fatigue, cough, and pain in the chest, while on physical examination a massive pleural effusion was found in association with a greater or less quantity of abdominal fluid together with a pelvic tumour. The tumour may be a large and easily palpable mass associated with a clinically undetectable quantity of abdominal fluid or, alternatively, may be no larger than a walnut, only discoverable in the presence of considerable ascites, at operation. In all cases the pleural effusion has been of a massive nature causing collapse of the lung on the affected side and displacement of the mediastinum. The condition may occur at any age, the oldest patient being 73, and it has even been found complicating pregnancy. The right side of the chest is more often and usually more extensively affected than the left. There is no recurrence of the effusions after removal of the tumour, and indeed spontaneous resolution

of the chest occurs within a few weeks. This is in marked contrast to what happens before operation, when, following the removal of large quantities of fluid, the chest fills up again in a matter of a few days, or in some cases within 24 hours. In some instances there is so little fluid in the abdominal cavity that paracentesis may fail to locate it, but some will always be found at operation.

#### Case Histories

**Case 1.**—An unmarried woman aged 59 was admitted to the gynaecological ward of the Aberdeen Royal Infirmary with a complaint of breathlessness for the past year. She had noticed a lump in her abdomen for about the same period. The last menstrual period occurred ten years previously. The patient was emaciated and slightly orthopnoic. There was a right pleural effusion, producing a mediastinal shift to the left. The abdomen was distended by a large irregular cystic swelling arising from the pelvis and reaching above the umbilicus. Vaginal examination revealed a small uterus distinct from the tumour. X-ray examination disclosed a large chronic effusion almost completely filling the right chest. The sputum showed no evidence of tubercle bacilli. The blood sedimentation rate was 15 mm in the first hour. Almost five pints of straw-coloured fluid was removed from the right pleural cavity. Bacteriological and pathological examination of this fluid failed to show evidence either of tuberculosis or of malignant disease. Laparotomy by Prof. Baird two weeks after admission demonstrated a big unilocular cyst about 8 in. in diameter attached to the left broad ligament. There was a small quantity of fluid in the peritoneal cavity. The cyst was removed and the abdomen closed. Histologically the tumour was shown to be a cellular ovarian fibroma with marked cystic degeneration but no evidence of malignancy. Recovery was rapid and no further breathlessness has been noted. Her general condition improved steadily and the emaciation quickly disappeared. A radiograph of the chest three months after operation showed the lungs to be normal.

**Case 2.**—A married woman aged 47 who had one child, now aged 25, was admitted to Aberdeen City Hospital as a case of pulmonary tuberculosis. Her complaint was breathlessness for the past five months. The menstrual history was normal. She was a thin, rather wasted woman—breathless while lying in bed. There was a large pleural effusion on the right side with a slight mediastinal shift, and on abdominal palpation a large mass was felt rising out of the pelvis to the level of the umbilicus, but no free fluid could be detected. On vaginal examination a hard mass was very easily felt in the right fornix. X-ray examination of the chest showed a large pleural effusion on the right side. The left lung was normal. No tubercle bacilli were found in the sputum by direct film or on animal inoculation. The blood sedimentation rate was 10 mm. in the first hour. The right pleural cavity was aspirated and the fluid replaced by air. The fluid was clear, and histological examination of centrifuged deposit showed no evidence of malignant disease, while animal inoculation of two specimens failed to reveal the presence of tubercle bacilli. Subsequent x-ray examination disclosed a right hydropneumothorax with complete collapse of the right lung. In all, 35 pints of fluid were removed from the right pleural cavity. Paracentesis of the abdomen failed to elicit fluid. An exploratory laparotomy was performed by Prof. Baird two months after admission. There was less than a pint of fluid in the peritoneal cavity, and a large white lobulated tumour (7 by 6 in.) was found attached by a pedicle to the right broad ligament posteriorly. The left ovary was normal. The tumour was removed, and proved to be a typical ovarian fibroma with no evidence of malignancy. Post-operative convalescence was uneventful. Further radiographs of the chest showed rapid absorption of the right pleural effusion, and ten weeks after operation only a trace of fluid was detectable. The right lung had expanded, and the patient's general condition had greatly improved.

#### Aetiology

No satisfactory explanation exists to account for the phenomenon. The suggestions which have been offered are: (1) lack of drainage of the right chest by the azygos vein; (2) repeated minor trauma to the peritoneum by the fibroma, causing a histamine toxicosis or anaphylactic shock plus accumulations of peritoneal and pleural transudate; (3) congenital communication between the abdomen and the chest—the so-called pleuro-peritoneal canal.

None of these explanations has been satisfactorily proved. Meigs *et al.* introduced a quantity of air into the pleural cavity, the patient then being tilted into the Trendelenburg position and x-rayed without any evidence of air being forced into the abdomen. The reverse procedure, whereby a considerable quantity of air was pumped into the abdomen to the point of discomfort and dyspnoea in an effort to demonstrate any passage-way for air from the abdomen to the thorax, has also



failed. In two patients 2 c.cm. of sterile Indian ink was injected into the abdomen, and chest taps were performed later. In each case the fluid in the chest showed the same concentration of Indian ink as that in the abdomen. That the Indian ink did not arrive in the pleural fluid by way of the blood stream was considered established by study of the blood, since no evidence of Indian ink could be found in the leucocytes on microscopical examination. This experiment suggested that the abdominal fluid may arrive in the chest by the same paths as the Indian ink, or vice versa. The probability is that the pathways are lymphatics which pass through the interstices of the serosal cells under the diaphragm, thence to the supra-diaphragmatic lymphatics and so into the chest.

### Summary

Two cases of Meigs's syndrome (fibroma of the ovary with pleural effusion and ascites) are described.

This condition is probably rare, but without doubt some cases go unrecognized, since they are often ill and simulate advanced carcinoma of the ovary or severe cardiac, renal, pulmonary, or hepatic disease. This is most unfortunate, since such patients' would be denied an operation which gives excellent results.

The syndrome must always be considered in a differential diagnosis of abdominal and chest effusions, and as only one other case has been described in the British literature in the last 20 years we feel that the occurrence of two cases within a year among a relatively small population suggests that some cases are being overlooked.

We wish to thank Prof. Dugald Baird and Dr. John Smith for their interest and encouragement.

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## Medical Memoranda

### Fibrositis of the Rectus Abdominis Muscles causing Dyspepsia

Numerous cases of dyspepsia, or pain after food, fail to reveal any physical abnormality on ordinary routine examination. Even x-ray investigation of the stomach, duodenum, and gall-bladder is equally sterile of definite evidence of disease, and vague diagnoses of gastritis, duodenitis, or chronic cholecystitis are made. The patient continues to complain of indefinite pain—sometimes soon, sometimes late after food. He undergoes long courses of careful diet and takes much alkaline powder. Finally he or she drifts into a hypochondriac state, having given up all the joys of life which are associated with eating, drinking, and smoking.

In treating such cases one will be well repaid by making a careful examination for tender areas of fibrositis in the upper ends of the rectus abdominis muscles—particularly in their origins from the surfaces of the fifth to the seventh costal cartilages, the xiphoid cartilage, and the costo-xiphoid ligament. In a surprising number of cases tender nodules of fibrositis will be found, and after these have been "broken up" and treated by skilful massage the dyspeptic symptoms will disappear as if by magic and the patient will regain robust health.

I have had some difficulty in getting masseuses to carry out the treatment properly. The massage should be done with the tips of the fingers, working the skin in a circular movement and pressing upon the tender area as deeply and firmly as the patient will allow—short of bruising the tissues. Light stroking movements have as little curative effect as sticking on a ten-and-sixpenny stamp, the usual fee for the attendance. Masseurs should have three main qualifications—very sensitive fingers, should be given twice or, at the most, three times a week; there is always a certain amount of reaction and general tenderness after "breaking up" the fibrositic nodules, and this must be allowed to settle down before the next treatment is given. But, by starting with light pressure and gradually increasing it, a skilful masseur will soon take out the tenderness. An infra-

red lamp will help considerably, but it should be left with the patient to use for hours at a time.

The rectus abdominis muscle is supplied by branches from the fifth to the twelfth thoracic segments. These same segments also send branches to the coeliac plexus. Fibrositis may cause a reflex action in the abdominal organs, giving rise to spasm or dysfunction.

### ILLUSTRATIVE CASES

**Case 1.**—Mr. A., aged 52, was well till five years ago, then began to have indigestion. The pain had no time relation to food, but was sometimes relieved by it. X-ray examination showed an active and normal duodenum and gall-bladder. His sinuses were radiographed and found to be normal; likewise his spine. For a month he was "investigated" in the private ward of a large hospital, but no disease could be found, and he got only a little temporary relief from the rest. One physician told him he was suffering from aortitis, but a second negated this by means of a cardiogram. When I first saw him he looked ill and debilitated. He felt sick and had pain after every meal, but seldom vomited. When he could vomit he felt relief. He was living on a special diet of milk, fish, and breast of chicken. I asked him to put his finger on the spot where he felt pain, and to my surprise he indicated the right costal margin, where I found a patch of acutely tender fibrositis, which he would hardly allow me to touch. I massaged this, and he felt better that same day. I got a good masseuse to treat him with massage and an infra-red lamp, and in three weeks he was a perfectly well man, taking full meals with beer, and sleeping well and putting on weight. He also smoked and took cocktails with no bad results. The only medicine I gave him was 15 minims of dilute hydrochloric acid with meals, and this he discarded after two weeks.

**Case 2.**—Mr. B., aged 44, told me he had had a duodenal ulcer for the past 17 years. His gall-bladder was removed nine years ago after x rays had shown the ulcer to be healed. But three years later he had severe haematemesis, and the ulcer became active again. Since then many radiographs had shown the ulcer to be healed, but he still complained of violent pains after food, particularly at night. He had much business worry. On examination I found marked tender fibrositis in the upper ends of both rectus abdominis muscles. No medicine was given, and a course of massage and infra-red treatment cured his "indigestion."

**Case 3.**—Mr. C., aged 68. His was an old duodenal case with a history of melaena on two occasions. Recent bismuth meal examinations revealed a healed posterior duodenal ulcer. Nine months ago he began to suffer acute pain in the upper abdomen, which had no relation to food, but which was always worse at night and ever woke him up most nights. He had tender fibrositis in the right side of the right rectus muscle. I massaged this, and next day he telephoned from his home 50 miles away that he had slept all night without pain for the first time in nine months. He has had a course of massage, and has not had any trace of pain since.

London, S.W.7. R. SIMPSON HARVEY, M.B., B.S.Lond.

### Diaphragmatic Hernia with Torsion of the Stomach and Acute Obstruction

The case described below came under my care, and the operation revealed such unusual conditions that it seems worth recording.

#### CASE RECORD

Mrs. X., aged 57, was admitted on April 2, 1943, to an emergency hospital with symptoms of acute pain in the chest and distension of the upper part of the abdomen. There was a history of a diaphragmatic hernia, diagnosed and confirmed by x-ray examination at the King Edward VII Hospital, Windsor, in 1939. The symptoms at that time were of epigastric discomfort relieved by belching. The patient continued at varying intervals, and she was admitted to the same hospital in September, 1941, when she was also found to have a large inguinal hernia. A radical cure was performed on Oct. 1, 1941. The patient made an uneventful recovery, being discharged on Oct. 1. The attacks of discomfort in the upper abdomen continued at irregular intervals, and on April 2, 1943, she was seized with acute pain in the left side of the chest. This was accompanied by ineffectual attempts at vomiting. She was admitted the same evening to the emergency hospital, and on examination was found to be greatly distended in the epigastrium, the rest of the abdomen being flat. The appearance was very striking, and was clearly due to a great distended stomach. Her pulse was low (64), and temperature subnormal (96.6°). There were sounds of borborygmi to be heard on the left side of the chest.

An operation was performed without delay through a left parasternal incision. The stomach at once presented itself, very tense and like a distended rubber balloon. By passing the hand round the left-hand surface of the stomach it was possible to reach the edge of the diaphragmatic aperture, and by manipulation the inferior thoracic portion of the stomach was successfully withdrawn. At this moment this was done the whole stomach turned over from right to left. In its distended condition it was approximately 18 to 20 in. long and 8 or 9 in. in diameter. It was clear that there was no obstruction at the pylorus. By turning the stomach over to the right it was possible to see the opening in the diaphragm, which was to the left of the oesophageal opening, and admitted two fingers easily. The opening was occluded by a stout double catgut suture, and the abdomen was closed. On April 5 there were signs of left-sided basal pneumonia, which cleared up in a few days, and the patient was discharged on April 19 with no symptoms.



She was x-rayed again on June 9. This showed a rather large stomach, but no sign of any recurrence of the hernia. She has remained entirely free from gastric symptoms since her discharge from the hospital, and six months after the operation had had no further trouble.

## COMMENT

The case is interesting on account of the condition found at operation, where the stomach was twisted and enormously distended, and by the rapid recovery of the gastric functions in spite of the excessive stretching of the muscular and mucous wall of the stomach. How the torsion had occurred must be a matter of pure conjecture, but the impression at the time of the operation was that the pyloric end of the stomach had been dragged or twisted to the left side into the hernial orifice. The original radiograph, taken in 1939, showed the ordinary condition of herniation of the fundus.

London, W.1.

HAROLD GARDINER, M.S., F.R.C.S.

## Varicella and Herpes Zoster in the Same Patient

It is very unusual to encounter the characteristic eruptions of chickenpox and herpes in the same patient, and I am not aware of any record of a similar case in a child. The significant features appear to be the allergic history and the somewhat diffuse distribution of the herpetic eruption apparently involving the anterior divisions of numerous nerve roots.

The patient, a boy aged 5½ years, is an only child, sensitive, highly strung, precocious, allergic to pollens and mixed inhalants group. The father has a history of allergy in his childhood. The boy developed typical chickenpox on Dec. 29, 1943. The attack was mild, being afebrile after two days. On Jan. 22, 1944, there was an eruption of herpetic vesicles on the right side extending from the clavicle and deltoid area over the chest and abdomen to the upper half of the right thigh. The eruption was limited by the midline in front and by the mid-axillary line. Apart from the discomfort of the eruption, there were no unusual symptoms until Jan. 27, when the temperature rose to 102° F. and the next day to 104°. It gradually subsided, and was normal by Feb. 3.

On Feb. 2 he had some malaise accompanied by loss of appetite, dirty tongue, enlarged and tender liver, and pale stools; there was no obvious jaundice to the naked eye, but bile was present in the urine. This lasted two days and rapidly cleared up. On Feb. 14 he had an attack of typical asthma.

I am indebted to Dr. S. R. Foster, the family physician, for his interest and co-operation, and for some of the additional clinical notes.

Belfast.

F. M. B. ALLEN, M.D., F.R.C.P.

## Concurrent Herpes Zoster and Varicella

The following case seems worthy of record if only for its extreme rarity. The relation between herpes zoster and varicella was first noticed by J. Van Bokay in 1892. Since then the relationship has attracted much attention, and most practitioners are agreed as to the increased incidence of herpes zoster in epidemics of varicella. Up to 1930 Netter of Paris had been able to collect only 20 cases of concurrent herpes zoster and varicella, and some eminent authorities were inclined to attribute the concurrence to mere coincidence. Craoston Low has advanced the theory that both diseases are due to the same virus, in one case affecting the nervous system and in the other being blood-borne. The case described below seems to favour this theory.

A man aged 63 came to see me on March 9, 1944, complaining of pain in the left hypogastrium with a generalized rash. On examination I found typical symptoms of varicella as to both lesion and distribution. In addition the painful area showed typical herpes zoster. He stated that he had felt "off colour" on March 5. By evening he had pain in the left side and found some "blisters," and at the same time felt an irritation of the face and scalp. On the morning of the 6th he was covered with a well-developed rash. Both rashes have since run a normal course. The patient is a chronic bronchitic who has not worked for months, and he shares a house with another elderly man. There is an epidemic of varicella at the time of writing (March 29).

Additional points of interest are: (1) the coincident appearance of the rashes; (2) the age of the patient.

Warrington, Lancs.

J. J. MANNING, M.B.

The Professional Advisory Committee of the U.S. Office of Vocational Rehabilitation held its first meeting in Washington on March 3. The committee, made up of 20 specialists in medical and allied fields, was appointed to provide professional guidance in mapping the new State-Federal programme for medical and surgical care under the Barden-LaFollette Act. In opening the meeting Mr. Paul V. McNutt stressed the Federal Security Agency's desire to aid the States in providing physical restoration services which will conform to the high professional standards recognized by the national and State medical associations and by the hospital associations.

## Reviews

## GENERAL AND SPECIAL BIOCHEMISTRY

*Annual Review of Biochemistry.* Edited by James Murray Luck, Associate Editor, James H. C. Smith. Volume XII. (Pp. 704. 31s. 6d.) California: Stanford University P.O., Annual Reviews, Inc.; London: H. K. Lewis and Co.

*Vitamins and Hormones.* Edited by Robert S. Harris and Kenneth V. Thimann. With a foreword by E. V. McCollum. Volume I. (Pp. 452. 5s. 50.) New York: Academic Press, Inc.

The twelfth volume of these annual reviews is, like earlier ones, a co-operative effort of American and British experts—three chapters having been contributed by writers in this country and the other twenty-one by United States scientists. The standard of previous volumes is admirably maintained. The individual articles are detailed, highly technical, authoritative surveys generally covering a period of four or five years, which is about the time allowed by the editors before a subject is picked up again. Readers of this *Journal* will find much here that bears indirectly but fundamentally on medical practice, if sometimes possibly only on future practice; but they will also be able to read with a more direct interest chapters on nutrition in 1941 and 1942 (C. S. Lanford and H. C. Sherman), on synthetic drugs (T. C. Daniels), on the metabolism of proteins and amino-acids (H. Borook and J. W. Dubnoff), of fat (G. O. Burr and R. H. Barnes), and of carbohydrate (H. J. Deuel jun.), as well as accounts of the water-soluble and the fat-soluble vitamins (R. J. Williams and K. Hickman respectively). Of practical interest, in a rather different way, are chapters on the electron microscope in biology (L. Marton) and on microchemistry (A. A. Benedetti-Pichler), while for those with a taste for the more fundamental and theoretical sides of biochemistry H. A. Krebs has written on carbon dioxide assimilation in heterotrophic organisms, E. S. Johnston and J. E. Myers on photosynthesis, and F. Lipmann on biological oxidations and reductions. Other chapters are concerned with the primarily chemical aspects of steroids (H. Sobotta and E. Block), of proteins and amino-acids (L. F. Hewitt, R. A. Kekwick, and A. S. McFarlane), of sulphur compounds (J. C. Andrews), of carbohydrates (H. S. Isbell), of the lipids (S. J. Thannhauser and G. Schmidt), of hormones (H. Fraenkel-Conrat), of animal pigments (C. Rimington), and of viruses (C. L. Hoagland). Finally, to round off the picture, astonishingly complete for wartime, there are reviews of mineral nutrition (L. A. Maynard and J. K. Loosli) and of mineral nutrition of plants (D. I. Arnon). The book is as indispensable to research workers and teachers in or near the field of biochemistry as have been its predecessors in this excellent series.

Prof. McCollum in his foreword refers to *Vitamins and Hormones* as a new publication, as indeed he had to do when introducing a "Volume I." But those who know and possibly possess the two issues of *Ergebnisse der Vitamin- und Hormonforschung*, published by the Akademische Verlagsgesellschaft of Leipzig in 1938 and 1939, may reasonably regard this survey as more of a phoenix than a new creation. However that may be, the United States compares in every way favourably with its Swiss-German predecessor. Nothing, for example, could be better done than Prof. C. H. Best and Dr. C. C. Lucas's review on "Choline: Chemistry and Significance as a Dietary Factor"; in 60 pages, closely packed with information and discussion, they open up the allied problems of fatty livers and transmethylation, nor do they neglect to indicate emphatically where judgment must be suspended and more experiments made. Of somewhat slighter calibre, though of no less authority, is H. H. Mitchell's review of the relationships between vitamins and amino-acids. Wald's discussion of the part that carotenoids (including vitamin A) play in the photoreceptor system is perhaps the most controversial in the book; it comes from an expert with whom other experts in the field are not in whole-hearted agreement. R. J. Williams speculates interestingly on the distribution of vitamins in various tissues and organs, while Richard P. Hall discusses the more circumscribed subject of growth factors for protozoa. Norman Jolliffe and Rita M. Most contribute a discussion on the appraisal of nutritional states, practical and topical. The review of the physiology of anti-pernicious-anaemic

material by George R. Minot and Maurice B. Strauss is clearly the last word on the subject at the time of its writing. The surveys of the intermediate metabolism of the sex hormones by Gregory Pincus and William H. Pearlman and on the adrenal cortical hormone by T. Reichstein and C. W. Shoppee are of the same calibre, the latter being, apparently, the only contribution to this volume by authors not resident in North America. There is reason to believe that the editors will have arranged in later volumes for the collaboration of authors in Great Britain, for whom this first volume has set an almost terrifyingly high standard.

### THE HOSPITAL ALMONER

*Social Service in a General Hospital.* By Dorothy Manchée. (Pp. 164. 6s.) London: Baillière, Tindall and Cox. 1944.

The more the science and art of medicine advances the more does it become apparent that it is closely linked with every other branch of knowledge. The patient is not an individual in a vacuum; he can only be fully understood in relationship with his environment, his friends and family, his economic status, and his housing facilities. In this little book Miss Manchée shows not only how important these factors are, in both diagnosis and treatment of almost every patient who comes to a doctor, but also how a well-organized almoner's department in a hospital can help the physicians and surgeons in their day-to-day work. After introductory chapters on the social services, the various departments and services of a large hospital are considered from the almoner's point of view. This is followed by a very brief discussion of the clinical characteristics of various types of patient, such as the cancer case, the diabetic, the orthopaedic patient, and so on. These notes are simple, and while it might be easy to criticize some of them they are sufficiently accurate and adequate for the aspiring almoner. Then the duties of the social worker in relation to these various types are discussed. Very properly the importance of such work in relation to the V.D. department is stressed, and it is to be hoped that all those concerned will take note of this. It is easy and pleasant to undertake social work on behalf of the cripple child, but not so easy and pleasant to do this for the young woman who has fallen by the way; yet the latter needs it quite as much as the former, if not more. One most important point is stressed—that the almoner is a social worker and not a fee-snatching agency; she should be free to do her proper work, which includes the collection of money to help her patient, and there is an excellent chapter on the sources to which she may look for this assistance. The last few chapters are devoted to the instruction of the student and a general discussion of the functions of the department. A useful bibliography is appended.

While some members of hospital staffs are keen on the almoner and make good use of her, it may be suspected that the majority do not use her half enough, and everyone would well advised to read this interesting and well-written book.

### MERCER'S ORTHOPAEDIC SURGERY

*Orthopaedic Surgery.* By Walter Mercer, M.B., Ch.B., F.R.C.S. Ed. Third edition. With foreword by Sir John Fraser, Bt., K.C.V.O. (Pp. 947; Illustrated. 45s.) London: Edward Arnold.

Mercer's *Orthopaedic Surgery* has made a place for itself, as the appearance of a third edition indicates. The new volume is a few pages longer than its predecessor, though the quality of the paper and to some extent the reproduction of illustrations and the reduction of the valuable bibliography reflect the stringency of wartime publication. On the whole the layout is clear and the description lucid, so that reading is not laborious and items of interest can be easily found.

Mr. Mercer still seems unable to decide whether the syndromes between the vertebral bodies are joints or not, for, while stating that they are "not joints in the true sense of the word," he describes posterior spinal fusions as "extra-articular arthrodeses in the truest sense of the word." They are, in fact, joints, and perhaps a better concept of surgical tuberculosis would be gained by the student if tuberculosis of the spine were considered under tuberculosis of joints. Juxta-articular lesions are, indeed, the usual sites of onset, whether in hip or spine, but as a rule joint involvement soon follows in both.

A few minor points surprise us, such as that rupture of the long head of the biceps brachii is so rare that it is associated

with old fractures of the humeral neck rather than with arthritis, and that the treatment is operative repair. Again, the use of a knee cage in the treatment of torn cartilage and its ability to control rotatory movement at the knee seem open to question. Rather too much emphasis and room are accorded to operative details, and too little to the important features of treatment which precede and follow operations and which occupy most of the orthopaedic surgeon's time and interest.

The book has been brought up to date and will prove of particular value to those working for higher surgical qualifications or embarking on a surgical career. In spite of the points which invite criticism here or there, it will continue to hold an important place in the literature of orthopaedic surgery.

### Notes on Books

*The Textbook of Surgical Treatment*, edited by Prof. C. F. W. ILLINGWORTH of Glasgow and written by himself and eighteen other Scottish surgeons, appeared first at the beginning of 1943. We welcomed it as a sound and modern work likely to run into future editions. That opinion is supported by the publication within 15 months of a second edition (Edinburgh: E. and S. Livingstone; 30s.). The most notable change is in the chapter on treatment of burns, which has been rewritten by Mr. Thomas Gibson from his experience in the Burns Unit of the Glasgow Royal Infirmary.

The fourth edition of *Medical Bacteriology*, by L. E. H. WHITBY (J. and A. Churchill; 14s.), contains a new chapter on chemotherapy in the extensive section on applied bacteriology, which includes as before instructions for the laboratory diagnosis of infections listed alphabetically. Since in a total of 328 pages the book deals also with protozoology, helminthology, and mycoses, the systematic description of pathogenic bacteria has to be compressed into a perhaps unduly small space, and the intelligent reader will do well to heed the advice in the preface to consult larger textbooks for further enlightenment on some aspects of the subject.

The third edition of the valuable little textbook *Midwifery for Nurses*, by ALECK W. BOURNE, has now appeared (J. and A. Churchill; 7s. 6d.). It is full of sound common-sense teaching presented in a very readable form. Stress is given to such essentials as health of body and mind in pregnancy, delayed labour, ante-partum and post-partum haemorrhage, and sepsis. It can be warmly commended to midwives.

*Aids to Tropical Nursing*, by DOROTHY E. COCKER, sister tutor, Presidency General Hospital, Calcutta, is published at 4s. by Baillière, Tindall and Cox. This small book is one of the Nurses' Aids Series designed to provide in condensed and easily absorbable form information on tropical diseases from the nursing aspect, and this object has been admirably fulfilled. Beginning with chapters on fitness in the Tropics and the essentials of deficiency diseases, it proceeds to consider each main infection in turn. The information is accurate and singularly free from technical errors. It concludes with a summary of communicable tropical diseases, an adequate glossary, and an index. The figures are mostly temperature charts, but include simple illustrations of malaria parasites and methods of preparing blood films. There is one obvious misprint: the initials of Dr. Napier, who contributes a foreword, are L. E., not L. N. as stated.

*Doctor of Tanganyika*, by Dr. PAUL WHITE, is published by George M. Dash of Sydney, N.S.W., price 6s. This small book tells of the life and work in British Central Africa of an Australian medical missionary. Dr. Paul White is obviously self-reliant, capable, and energetic, and the possession of these qualities helped him through a vast amount of work. He built a hospital and trained native male and female assistants. The book has found great favour in Australia, where it has gone through seven editions. It depicts the life led by the primitive African tribes in Central Tanganyika Territory and the hardships these people have to undergo at the hands of witch doctors. Dr. White's story will impress on intending medical missionaries the need to become as well grounded as possible in every branch of medicine and surgery.

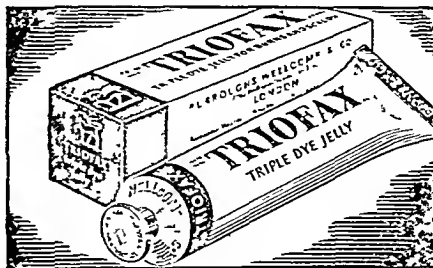
The greater part of *The Dental Surgeon's Handbook*, by MARTELL and MAX BRONNER (John Wright and Sons; 21s.), is devoted to extensive but somewhat disjointed notes on dental surgery arranged in alphabetical order. A second section is on materia medica, with a description of most of the drugs and proprietary substances used by the dental surgeon. The volume can only be regarded as a book of reference, and in this respect should be useful to some practitioners.

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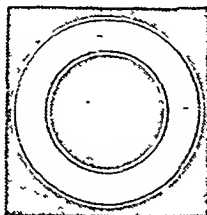
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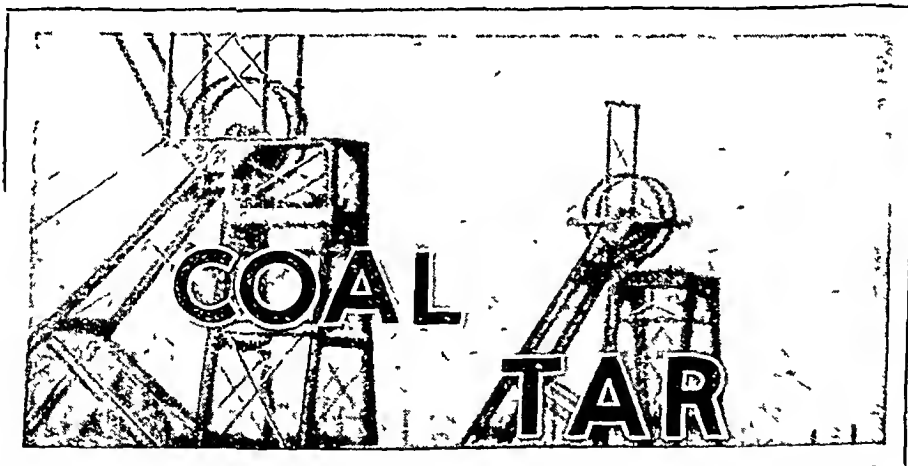
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## BRITISH MEDICAL JOURNAL

LONDON

SATURDAY JULY 22 1944

## REFORM OF MEDICAL EDUCATION

Few bodies in the history of British medicine can have had a greater opportunity or more responsibility than the Interdepartmental Committee appointed in March, 1942, under the chairmanship of Sir William Goodenough "to inquire into the organization of medical schools, particularly in regard to facilities for teaching and research, and to make recommendations." Progress in the science and art of medicine is inseparably connected with the facilities which our medical schools provide to attract the right men and to enable them to do their best work. The doctor's service to the community depends not only on his innate gifts but on the way in which he has been trained to think and do. And so the nature of medical education and the organization and facilities of our medical schools are some of the most potent factors in shaping the standard of medicine. At no previous time has there been an opportunity to survey the whole of medical education, in order to remedy its defects, with more certainty that something must be done. Change is inevitable; the destruction wrought by war and the people's desire for an improved health service make it so.

This eagerly awaited and now published report is a long one—312 pages, including 28 pages of summary—and it is impossible here to note more than a few of its chief points. The way is to be made easier for the student. All medical schools are to become co-educational. To increase the field from which students are selected, increased financial grants and a simplified machinery for distributing them are recommended. Students should not be selected on examination results alone. Accommodation should be provided in halls of residence for part of the undergraduate period, and for specific purposes in hospital during part of clinical training. The instrument of medical education should be a medical teaching centre catering for a student entry of 80 to 100 for the clinical years; and it should comprise a medical school which should be a faculty, college, or school of the university, a parent teaching hospital of 950 to 1,000 beds, and a group of neighbouring hospitals and clinics to provide supplementary facilities for clinical teaching. The governing bodies of medical school, parent teaching hospital, and associated teaching hospitals are to remain separate, but their work is to be co-ordinated by interchange of personnel and through common advisory machinery for selection of staff. In the main the details as to how these objects should be attained are left to the schools themselves. Important suggestions relating to certain schools are, however, made. In Scotland the three extramural schools in Glasgow and

Edinburgh, which, receiving no Government grants, compare unfavourably with the university schools, are to disappear. In London the facilities provided by the West London Hospital should lapse after some years; to harmonize with the redistribution of population, Caring Cross is advised to move to a site in Middlesex, St. George's to South London, and the London School of Medicine for Women to North London. All are to be complete schools in that preclinical as well as clinical facilities are to be provided, and all are advised to conform to the ideal size and pattern already mentioned. The proposal to provide in Oxford complete clinical facilities for a small number of undergraduates is approved, and the very important recommendation is added that this school should experiment in teaching. Cambridge is unsuitable at present for undergraduate clinical teaching; it should first develop postgraduate departments. No new medical schools are to be created. In view of the importance of the universities and medical schools to any national health service, they should be represented on such central and local councils as may be set up for administration.

The report points out that the accommodation and equipment of most medical schools and teaching hospitals fall far short of what is necessary for teaching and research, and recommends that grants be made to remedy these deficiencies. Teachers in both preclinical and clinical departments should be more numerous and better paid. A national range of salaries with upper and lower limits is suggested: for example, at pre-war values professors would receive between £1,500 and £2,500, demonstrators between £350 and £500, and whole-time physicians or surgeons between £1,000 and £2,000 a year, part-time teachers being remunerated proportionally to the time they give. The teaching staff in all preclinical departments and in pathology should be whole-time. As suitable men become available, every school should aim at securing whole-time professors of general medicine, surgery, and obstetrics and gynaecology; in the special departments it may sometimes be desirable for men to work whole-time in the teaching centre. Most senior clinical posts would remain part-time, but the junior posts would be full-time. All appointments should be made from the widest possible field of applicants, and above that of registrar by a small advisory council including outside experts and representing the hospitals concerned, the university, or school.

Recommendations concerning the curriculum resemble in broad outline, though differing in certain important details from, those made by the College of Physicians. Elementary physics, chemistry, and biology should be taught at school as part of general education, and continued at the medical school as part of the course in anatomy and physiology. The standard required for entry to a medical school should be midway between that of the principal and subsidiary subjects of the Higher Certificate. Preclinical subjects should be pruned of some detail and more closely co-ordinated with each other and with clinical studies. In the clinical period the main emphasis should be on basic principles and methods, and on the future requirements of the general practitioners. The important recommendations are made that much of the teaching of



operative surgery and gynaecology should be reserved for the postgraduate training of specialists. In the undergraduate period the chief emphasis in surgery should be on principles, and on the recognition, early treatment, and ultimate effects of conditions commonly met in general practice. The committee recognizes the difficulties raised by the growth of specialism in the teaching of general medicine and surgery, and recommends that to facilitate co-ordination the teaching centre should be organized into divisions of (1) preclinical studies, (2) pathology, (3) medicine, (4) surgery, and (5) obstetrics and gynaecology, each with academic heads. Senior teachers, whether whole-time or part-time, would have as now the unfettered control of the management of their patients. The importance of social medicine, psychiatry, and child health is stressed, and the desirability of students' residence during part of their training pointed out. The undergraduate course should last four and a half years, of which the first two should be preclinical. It should terminate in a final examination conducted by the university and be succeeded by a compulsory year of house appointments, on satisfactory completion of which the student would be admitted to the *Medical Register*. The qualifying examinations conducted by licensing bodies other than the universities should cease. It is pointed out that these cater chiefly for the extramural students in Scotland and for the students of the London medical schools. It is considered that if the Universities of Oxford, Cambridge, and London make their examinations conform more to the type of internal examination held elsewhere, then there should be no need for these extra examinations, which may interfere with the teaching programme of the school and which cost the student money. The committee feels that the overhaul of the whole undergraduate curriculum and a reduction in its content are so important that their accomplishment might be made a condition of any increase in the Exchequer grant for undergraduate medical education. The initiative in this matter is referred to the General Medical Council.

No reform in undergraduate medical education can be effected without the provision of proper machinery and facilities for postgraduate study. Recommendations in this respect may be considered under two heads: those for the training of teachers and specialists and those for general practitioners. For specialists and consultants the committee accepts the recommendations of the Royal Colleges that five years' training after registration is necessary. These five years are to be spent in paid appointments in general hospitals, scientific laboratories, special hospitals, and abroad. Diplomas in public health, clinical pathology, bacteriology, and tropical medicine should be awarded by the universities, the remainder by the Royal Colleges. It is considered that the only ultimately satisfactory postgraduate training for the general practitioner is his continuous contact with the work of hospitals and specialists through holding suitable clinical assistantships. But for many years refresher courses will be necessary, and these should be organized by the universities having medical faculties, and held if possible at institutions not undertaking undergraduate education. These recommendations imply the development of special hospitals as centres of

postgraduate education and research, and far-reaching proposals are made for the development of the British Postgraduate Medical School in London as a federation of general and special postgraduate institutes. The implementation of these proposals will naturally cost money. The committee estimates that to meet recurrent expenditure on undergraduate and postgraduate medical education the university schools will need additional resources which within 10 years will amount to between £1,750,000 and £2,500,000 a year, depending on expansion to meet a need for more doctors. Capital expenditure on the university medical schools is estimated at pre-war costs to be not less than £5,000,000. Finally, an Exchequer grant of £500,000 to the teaching hospitals is recommended provisionally as payment for the extra costs incidental to the provision of facilities for teaching and research. All these grants should be made through the Universities Grants Committee.

The present arrangements for medical education may be likened to a neglected garden, and these proposals to the plans of the gardener to remove weeds and dead wood and encourage growth where it promises to be productive. If the plans are carried out we may anticipate that the garden will be tidy, decorative, and above all productive. Two chief obstacles lie in the way. The first is the expense, in view of the uncertain economic condition of the country in the post-war period. But considering the relatively small sums involved, and the advantages that would be reaped by its children and its children's children, it would be short-sighted of the nation to allow difficulties of this kind to stand in the way. The second obstacle is the men. Teachers of medical students are to be given the tools so that they can finish the job. But unfortunately the post-war years will see a greater dearth of trained teachers than there has been since the end of the last war. Since 1939, staffs, particularly in the clinical departments, have been cut to the bone, and the best young men have been absorbed in the Services. If, then, the opportunity is to be taken, it is essential that our medical schools should begin as soon as possible to make more junior teaching and research appointments. The men must be trained now so that they can use the tools.

### THE WIDER DISTRIBUTION OF PENICILLIN

It has been made known in Parliament and otherwise through the lay press that penicillin is being freely used for the treatment of casualties from Normandy and is available also for the treatment of civilians injured in air raids. We are now permitted to give some account of the arrangements which have been made for this treatment, as they are contained in instructions for it issued by the War Office and the Ministry of Health. The available supplies have been enormously augmented by the generosity of the United States, and the policy adopted has been to give full doses of penicillin intramuscularly forward of the C.C.S. level and during transit to all wounded who are considered liable to develop gas gangrene or severe sepsis. Four types of wound are defined which are to be regarded as subject to this risk: those involving

extensive laceration, or destruction of muscle; those heavily contaminated or containing foreign bodies; those involving interference with the blood supply of a limb; and any wounds in cases which have "lain out" for a long period. A yellow label with the letters "PEN" is attached to such cases in Normandy, and, following an initial dose of 90,000 to 100,000 units, the administration of a maintenance dose of 45,000 to 50,000 units is continued at intervals of 4 to 5 hours during transit. When the man is disembarked in England the continuation of this treatment becomes the responsibility of the E.M.S., and the instructions issued provide for its administration in hospital trains and transit hospitals. On arrival at a base hospital, where definitive surgery can be undertaken, the continuation of penicillin treatment may or may not be necessary. It will be extremely interesting to hear what are the results of this boldly conceived experiment in chemoprophylaxis. We may assume that penicillin will also be used for the treatment of wound infections on the lines, based on experience in Italy, which was described by Lieut.-Col. J. S. Jeffrey and Major Scott Thomson in our issue of July 1.

Penicillin is also being supplied to E.M.S. hospitals for the treatment of air-raid casualties. Although every effort has been made to train the persons who will now be concerned in the use of penicillin by means of short courses of instruction at the research centre established last year by the Penicillin Clinical Trials Committee of the M.R.C., there must now be many hospitals where penicillin is available whose staffs have only a very limited experience of its use. This is therefore an appropriate time to repeat the warning often given by those most intimate with this remarkable substance—that it requires intelligent and most careful handling if it is to achieve its purpose. In the first place, unlike most ordinary antiseptics, it is not self-sterilizing. There are many bacteria, including non-pathogenic species commonly found in air and dust, which not only are unaffected by it but will actually cause its decomposition. If accidentally contaminated with such an organism as *Ps. pyocyanea*—an occurrence by no means unknown—a solution of penicillin may become a vehicle of infection and thus perhaps do far more harm than good. It is therefore a first essential that solutions and other preparations of penicillin shall be made up for clinical use by someone fully experienced in the precautions necessary for preventing accidental contamination. A full knowledge of the factors governing its stability and of substances with which it is incompatible is also necessary. From the purely surgical standpoint the main pitfall is overestimating the powers of penicillin and expecting it to do what can be done only by surgery. Penicillin is only an adjunct, however valuable, to good surgical treatment, and does not replace it in any way. Apart from this, success depends mainly on the choice of suitable cases for treatment. Although these can be defined in clinical terms, particularly when the aim is prophylaxis, it should never be forgotten, at least in the treatment of established infection, that what matters is not so much the nature of the lesion as the identity of the micro-organism causing it. Penicillin acts to a useful degree only on certain bacterial species, and among some of them even to a varying extent

on different strains. A bacteriological diagnosis is therefore highly desirable, accompanied if possible by a determination of the degree of sensitivity of the patient's own organism to penicillin. It is for this reason that the bacteriologist has played a leading part in the conduct of penicillin treatment, and has usually had a considerable say in its control. His services are indispensable in deciding whether a case is suitable for treatment—unless this is given at an early stage—and purely as a measure of prophylaxis—and for reasons already stated he may actually have charge of the material and be responsible for its preparation for clinical use. It is highly desirable that one thoroughly responsible person of high professional standing shall take charge of stocks, and if at the same time he is in a position to make a special study of the treatment and its effects his advice can be of value to a number of clinical colleagues whose individual experience may for the time being be less. There is perhaps no form of treatment in which close collaboration between laboratory and wards is more necessary.

A word should be added in defence of the general policy of restriction which has so far governed the use of penicillin—a policy which in some quarters has been criticized. Again for the reasons already given, it was possible to ensure that the limited supplies should be used to the best advantage only by confining their release to hospitals where a special study of the treatment could be made. These were at first few in number, but as experience was gained and knowledge diffused, both by the publication of methods and results and by instruction given to the staffs of other hospitals, their numbers have increased lately with such rapidity that they include a majority of those dealing with casualties. If penicillin had been more freely available at an early stage, and used by those unfamiliar with its limitations as well as its powers, there is no doubt that a great deal would have been wasted in treating unsuitable cases, thus depriving other patients of it who in fact have benefited. Some such restriction must clearly continue until penicillin becomes available through ordinary commercial sources of supply. We are informed that a limited allocation of British-made penicillin will shortly be available for civilian use. This will be provided for the time being at Government expense, and there should therefore be no complaint if the control of its distribution is such as to ensure so far as possible that it be used to the best advantage.

#### PREGNANCY AND RHEUMATIC HEART DISEASE

There is general agreement that pregnancy may seriously aggravate the condition of a heart already diseased, especially by rheumatic carditis. The subject has been admirably surveyed by Hamilton and Thomson.<sup>1</sup> The ultimate effect of pregnancy and motherhood on women with heart disease has hitherto not been so widely studied, but Boyer and Nadas<sup>2</sup> have now filled this gap in our knowledge with a careful clinical and post-mortem study of 152 women who died from congestive heart failure.

<sup>1</sup> Hamilton, B. E., and Thomson, K. J. *The Heart in Pregnancy and the Childbearing Age*. Little Brown and Co., Boston, 1941.

<sup>2</sup> *Ann. intern. Med.*, 1944, 1, 99.

The authors considered that if pregnancy had any delayed effect on the course of rheumatic heart disease it would be reflected in the age at death from congestive failure alone. They therefore excluded cases with complications lethal in themselves, patients dying of congestive failure precipitated by or during the course of pregnancy, and those dying before the age of 18. They found the average age of death from congestive heart failure to be significantly greater in women who had borne children (103 cases) than in nulliparae (49 cases). But this seems to be due to the inclusion in the latter group of those quickly fatal cases of heart disease in which the opportunity for conception was consequently absent. When those patients living to the end of reproductive life—40 years of age—are alone considered, the average age of death in the parous and nulliparous groups is "practically and statistically identical." Objection may be raised to using nulliparous patients as controls because of the possibility that only women in good health marry and have children. Without admitting the validity of such criticism the authors made the further comparison using only male patients. It then became apparent that there was no sex difference in the average age of death from congestive heart failure. In patients who survived to the age of 40 the average age of death was practically identical in parous females (49.8 years), nulliparous females (49.7 years), and males (50.1 years).

Boyer and Nadas found no post-mortem evidence to suggest that the increased "load" of pregnancies and motherhood caused any appreciable increase in cardiac hypertrophy. So they conclude that pregnancy has no delayed deleterious effect on the course of rheumatic heart disease.

Attention must therefore be focused on the assessment of the immediate risk of pregnancy, labour, and the immediate post-partum period. The following points may be taken as indicating an unfavourable prognosis: (1) a history of previous congestive heart failure; (2) Class 2 B or 3 (New York Heart Association Classification) cases, and in particular patients with auricular fibrillation; (3) age over 35 (Gorenberg and McGleary<sup>3</sup> say age over 30); (4) heart disease complicated by some other pathological condition. During the first nine lunar months of pregnancy the steadily increasing blood volume is a growing burden on the damaged heart<sup>4</sup>; in the last month this burden is lessened. Most cases of congestive heart failure are seen during the antenatal period, and it is during this time and in the immediate post-partum period that the greatest care and attention should be directed towards the prevention of those factors which might lead to cardiac decompensation. Rest at the onset of any untoward symptoms should be the invariable rule. No women need be debarred from pregnancy because of supposed delayed ill effects: it is the immediate risk that is important.

### PROTECTION OF RADIUM DIAL PAINTERS

The gross hazards which led to the tragic results of the industrial use of radium in New Jersey during the last war no longer exist. With proper precautions, enforceable in this country under the Factories (Luminizing) Health and Safety Provisions) Order of 1942, and minutely carried out, no such serious injury could or should occur. But the human factor is sometimes potent in defeating the most stringent regulations, and for this reason emphasis on further preventive measures of highly technical procedure<sup>5</sup> and on "good housekeeping,"<sup>6</sup> as distinct from

provision of preventive equipment, is both timely and necessary. Radium paint used for self-luminous dials and other instruments consists of a mixture of zinc sulphide crystals with a small amount of a radium salt. Radium, in however small amount, is constantly disintegrating, and during the process emits alpha radiation and the gas radon, while its decay products in their turn emit alpha, beta, and gamma radiation. The danger to radium dial painters from gamma radiation is not great, since the tolerance dose for whole-body exposure (0.1 roentgen per day) delivered by 1.45 mg. of radium at a distance of 1 foot would be exceeded only by much larger quantities of radium paint than are at present permitted to be handled at one time. The risk of accumulation of radium in the body from ingestion of small amounts of paint from contaminated hands, and even more from inhalation of radio-active dust, cannot, however, be regarded as negligible. In America it has already been found that in spite of adequate precautions 15% of all personnel do accumulate more than the tolerance dose, which is tentatively regarded as 0.1 microgramme of radium fixed in the body.<sup>1</sup> It follows that one of the most potent measures for preventing such accumulation is a routine test which will detect very minute quantities, so that any worker showing an amount exceeding the tolerance dose can be removed from exposure and given a chance to eliminate enough to bring the radium content to a safe level. One such test—the radon content of exhaled air—has been widely instituted in America and begun in this country. Breath samples are taken by causing the luminizer to exhale through a litre flask, care being taken that this is done in a place distant from the radium department and after the worker has been out of contact with radio-active material for at least several hours. Calculating from the tidal respiratory volume, the known rate of production of radon by radium, and the fraction of radon exhaled in average cases of chronic radium poisoning, it can be shown that about 1.1 micro-micro-curies of radon per litre of exhaled air represents 0.1 microgramme of radium in the body. Such an amount is said to represent 100% of the tolerance value of radium. Samples of room air can be analysed in the same way and thus a check kept on the effectiveness of the mechanical exhaust ventilation in keeping the radon content below the tolerance level. Another very sensitive technique for measuring the radium in the body by detecting gamma-radiation outside it is also now possible, the sum of this and of the amount estimated from the exhaled air representing the total amount fixed. Thus, workers who through individual carelessness or faulty technique do show the early danger sign of radium accumulation can be prevented from acquiring an amount likely to give rise to trouble in later years.

Carelessness and faulty technique are almost invariably a matter of "bad housekeeping," and can be avoided only by strict supervision, instruction, and constant attention to detail. Contamination of the hands from unsuitable paint containers or from insufficient cleansing of the hands and nails after work is a fruitful source of unsuspected ingestion. Inhalation of dust, even when no actual powder is brought into the room, is specially apt to occur when small splashes of paint on floor and benches are allowed to dry and be rubbed into powder. A striking demonstration of this possibility can be given by examining the work-room under an ultra-violet lamp. Once seen, the need for strict cleansing by a wet method usually requires no further emphasis. These and other details of working habit and equipment are the essence of protection of dial painters against injury, and if satisfactorily attended to should in time eliminate even the 15% of cases showing accumulation of radium as revealed by the exhaled air test.

<sup>3</sup> Amer. J. Obstet. Gynec., 1941, 41, 44.

<sup>4</sup> J. Amer. med. Ass., 1939, 112, 1556.

<sup>5</sup> Evans, R. D., J. Indust. Hyg., 1943, 25, 253.

<sup>6</sup> Morris, G. E., et al., *ibid.*, p. 270.

## THE TRAINING OF DOCTORS

### REPORT BY THE GOODENOUGH COMMITTEE

The report of the Interdepartmental Committee on Medical Schools, under the chairmanship of Sir William Goodenough, has been published this week by the Ministry of Health and the Department of Health for Scotland.<sup>1</sup> The report is unanimous. It is signed by the chairman, by Sir John Stopford (vice-chairman), Prof. T. R. Elliott, Dr. A. M. H. Gray, Prof. James Hendry, Prof. A. V. Hill, Sir Wilson Jameson, Prof. J. R. Larmouth, Sir Ernest Pooley, and Dr. Janet Vaughan. Fundamental changes in the training of doctors to meet the requirements of a comprehensive National Health Service underlie the committee's recommendations, which are the outcome of a review, occupying two years, of the organization of medical education. The main proposals are briefly summarized below.

#### Radical Changes Proposed

The committee recommends: (1) Drastic overhaul of undergraduate training; more attention to be paid to social medicine, the promotion of health, and the prevention, as well as cure, of disease, to children's health, and to mental health. (2) Co-education in all medical schools, and sex equality in hospital appointments. (3) Greatly increased Exchequer grants for medical education and research, and more financial help for students. (4) Reform of the examination system. (5) Compulsory hospital appointments after qualification and before entry into independent practice. (6) Changes in the policies and organization of medical schools and teaching hospitals; more whole-time teachers, and salaries for part-time teachers. (7) A comprehensive system for the training of specialists. (8) Development in London of a world centre for postgraduate medical education and research. (9) Linking of all major hospitals with the teaching centres.

#### The committee says:

"Properly planned and carefully conducted medical education is the essential foundation of a comprehensive health service. . . . The spirit of education must permeate the whole of the health service. One of the principal aims of national policy should be to secure for everyone the highest possible standard of physical and mental health. . . . The achievement of this aim would establish a nation whose citizens were of good heart to enjoy the present and to confront their problems and difficulties with determined zest. By becoming advisers on health both to individuals and to the community, medical practitioners will have to bear much of the responsibility for ensuring this result and, by means of undergraduate and postgraduate training, must be provided with the knowledge and guidance necessary to enable them to carry out this important work. The present system of medical education is seriously deficient in this respect. To the neglect of the promotion of health, medical practice—and consequently medical education—has been concerned primarily with disease, chiefly as it affects individuals. A radical reorientation of medical education and practice is essential, and we believe that both medical practitioners and medical students are ready for it."

The changes in medical education necessary to meet the requirements of a comprehensive National Health Service must take some time to become fully effective. Many of the reforms proposed depend upon the building up of an adequate supply of teachers, a change of outlook on the part of teachers and examiners; and the remedying of serious deficiencies in accommodation and equipment.

Increased expenditure is necessary to remedy the defects in the present arrangements, to secure provision for more medical students, and to develop postgraduate education and research. The committee estimates that, including the outlay of teaching hospitals on facilities for teaching and research, the capital expenditure that should be incurred may within ten years amount to £10,000,000 at pre-war costs. In addition, the amount of recurrent grants will have to be increased yearly from £700,000 a year, the approximate amount before the war, until within ten years it reaches between £3,000,000 and £4,000,000 a year at pre-war values. At this level recurrent grants would represent about 2% of the estimated cost in the

first year of the National Health Service. The committee is confident that these sums will be regarded as a reasonable price for the community to pay for a service vital to the promotion of national health.

#### Needs of the Future General Practitioner

The committee considers that the training of medical students on modern lines can be conducted only under the aegis of a university and in institutions that conform to university standards. It should provide the student with a university education on broad and liberal lines. The type of instruction should have a definite bias towards the needs of the future general practitioner. Improvements in the organization of medical schools and teaching hospitals must be accompanied by a ruthless pruning of the medical curriculum and an overhaul of the system of examinations. Examinations must be the servant and not the master of the course of training, and reforms in medical education will be largely sterile unless the system of examinations conforms with them. In order that the burden of final examinations may be relieved and students encouraged to pay proper attention to all parts of the training, it is suggested that a system of "internal" departmental examinations in suitable subjects should be instituted as a complement to the final examination. One of the most important recommendations is that each student, after passing his qualifying examination and before being admitted to the *Medical Register* and allowed to enter independent practice, should complete a 12-months period of appointments in hospital.

"A fundamental and urgent reform is to secure that the main emphasis during the training is on basic principles and methods, and that due regard is given to the scientific foundation and framework of medicine. If students are to be trained effectively and are to be properly equipped for practice as family doctors, general medicine must form the most important part of their clinical training. More attention must be given to minor ailments, the more common diseases and the early stages of disease, to chronic diseases, to infectious diseases, to rehabilitation."

#### Social Medicine, Child Health, Mental Health

In regard to the three interrelated subjects of social medicine, child health, and mental hygiene the committee says:

"In most schools the attention paid to social medicine, the promotion of health, and the prevention of disease is often perfunctory and largely divorced from the rest of the student's training. If medical students are to be fitted to become health advisers and members of a National Health Service, the ideas of social medicine must permeate the whole of medical education. A new orientation of medical education, a big expansion of the social work of teaching hospitals, and radical changes in the outlook and methods of most of the teachers are involved."

"To safeguard its own future, the nation will have to improve its provision for the welfare of children. These improvements will extend beyond the immediate sphere of medicine, but medical practitioners will have to play a leading part in raising the health of the children to the highest possible level. Generally in the medical schools the teaching about children has been inadequate and only faint interest has been taken in the subject. The deficiencies have been most serious in respect of child health and normal development. In many schools the experience which students gain of maternity work falls far short of what is necessary."

"Whether he is dealing with problems of health or sickness, the medical practitioner cannot fully understand his patients or advise and treat them adequately unless he pays due attention to their psychological background. The training in psychiatry has failed to keep pace with the growing realization of the important place which the subject should occupy in medical thought and practice. In future every medical teaching centre must have an adequate department of psychiatry, the work and teaching of which are related to the work and teaching of the other departments. These departments cannot be established until there is an adequate supply of competent teachers of psychiatry. The training of such teachers is a major and urgent need."

#### Women Medical Students

The committee holds that unsuitability for a medical career should be the sole barrier to admission to a medical school. In the interests of the public and of the medical profession, co-education, which has been the normal and successful practice for many years in all medical schools in Great Britain outside London, should become the practice in every school. It is recommended for Government decision that the payment to

<sup>1</sup> H.M. Stationery Office, York House, Kingsway, London, W.C.; price 4s. 6d., post free 4s. 10d.

any school of Exchequer grants in aid of medical education should be conditional upon the school being co-educational and admitting a reasonable proportion of women students. Every possible step should be taken to see that all hospital appointments of qualified practitioners are filled by open competition and that the sex of the applicant is not a bar to appointment.

#### Financial Help for Students

In England and Wales, but not in Scotland, there is a marked difference between the proportion of medical students and the proportion of students in the faculties of arts and science who receive financial assistance. While the faculties of medicine of Scottish universities draw students from all classes of the community, medical students in England and Wales are not recruited from so wide a field as are students in other branches of the universities. The main causes seem to be: (1) misconceptions on the part of parents regarding the amount of assistance that can be obtained towards the cost of medical education; (2) a lack of encouragement to secondary-school pupils to take up medicine as a career.

The committee recommends that grants to medical students should be adequate in amount and should extend over the whole of the period of training. The arrangements for scholarships and grants should be simplified, and medical schools should have larger funds at their disposal to help students and to encourage graduates in other faculties to study medicine.

"It must be brought home to boys and girls, to their parents and school teachers, that there is no profession offering a wider range of interests than medicine; and that children with ability need not be debarred from entering the profession through lack of money."

Selection of students should not be based on examination results alone. There should be an interview before acceptance; and the medical schools should also consider the extent to which aptitude tests can usefully be applied. The selection machinery should be supplemented by arrangements to weed out as early in the course as possible (particularly in the first year) those students who prove unsuitable.

#### Supply of Doctors

The number of doctors in civilian practice in Great Britain increased steadily before the war. It is expected that the number will continue to grow for some years to come. In a report on medical man-power the Government actuary calculates that if the total entry of students is enlarged to 2,500 or more, the supply of doctors in civilian practice in Great Britain will grow to at least 50,000 by 1953 and 55,000 by 1958 (increases of approximately 5,000 and 10,000 respectively). This increase in the entry of students is within the capacity of existing schools, and the committee suggests that the first objective should be an expansion of those existing university schools which are below an economic size (normally 100 students a year) rather than the creation of new schools.

#### Medical Teaching Centres

The full recommendations of the Goodenough Committee are set out in the general summary of its report occupying over 27 pages. They include the following. The unit of organization for the national system of undergraduate medical education should be a medical teaching centre, consisting of a university medical school, a group of teaching hospitals (parent and associated) in as close proximity as possible to the medical school, and such clinics of the health service of the district as should be used for teaching purposes. Ideally—and the committee thinks this is an attainable objective—they should form a compact geographical unit. While the governing body of each constituent institution of a teaching centre retains full authority in its own field of responsibility, the policy, administration, and activities of the constituent parts should be so interrelated that the institutions function as one in the field of medical education and research.

Every medical school should be a university medical school in the sense that it is an integral part—i.e., faculty, college, or school—of a university. This principle should apply to existing schools and to any new schools which it may be found expedient to establish. There should be a common advisory

machinery used by all parts of a medical teaching centre for the selection of medical staff other than junior grades. Grants from public funds for the educational work of the centre should be received through university channels.

The three extramural schools in Scotland cannot meet the modern requirements of medical education efficiently, and it is recommended that they should cease to train medical students. The West London Hospital Medical School, the only non-university medical school in England, should not continue, beyond possibly the next four or five years, to train undergraduate medical students.

A new pattern of staffing is necessary. More whole-time appointments and the payment of salaries to clinical teachers in respect of defined duties are among the changes proposed. The adoption of new machinery in selecting teachers and staff of teaching hospitals is also recommended, together with a reorganization of the educational work of the clinical departments based on the idea of each clinical division having an academic head.

#### Medical Schools: Size and Distribution

The present unequal distribution of medical schools and students is recognized, and long-term proposals are made with a view to a decrease in the large number of students trained in Scotland, particularly in Edinburgh and Glasgow, and in Central London. To minimize the concentration of schools in the centre of London, Charing Cross Hospital should move as soon as is practicable to a site in Middlesex, and St. George's to a site in, say, South London, where there is an urgent need for hospital accommodation. It is suggested that the London School of Medicine for Women and the Royal Free Hospital should also consider moving further from the centre of London. Provided that the necessary additions are made to the teaching staffs, accommodation, and equipment, all the existing medical schools in the English Provinces and Wales could be expanded without detriment to the standard of training provided. These schools should enlarge their entries of students as quickly as possible.

"The medical schools should regard themselves as under a definite obligation to do all in their power to meet the need for more doctors, but they should avoid any premature increase in the number of medical students inconsistent with the maintenance of a proper standard of training. To sacrifice the standard of training in any way would be gravely detrimental to the future vitality and success of the health service."

The general conclusions of the committee regarding the establishment of new medical schools are:

(1) The financial resources and the suitably qualified teachers likely to be available will be wholly needed for a long time for the development of existing schools to their full capacity.

(2) To provide a stimulus to the hospital services of an area is not a sufficient reason in itself for the establishment of a medical school. There must first be proof of a national need for another school, and it must be clear that a school at least of the standard of existing schools can be provided.

(3) Any proposal to develop a medical school at one of the independent university colleges should be deferred until such time as the university college concerned has become fully established as a university.

(4) The undergraduate medical schools in London are already too numerous to warrant an addition to their number. The aim should be to secure better facilities for the existing schools and to improve and develop the exceptional facilities of London for postgraduate medical education.

#### Postgraduate Education and Research

The kind of postgraduate training and experience required by intending specialists and the means whereby it can be obtained have been examined by the committee as questions of great importance both in the operation of the health service and in the sphere of medical education. On the assumption that the qualification and standards of specialists are determined by some central machinery and that the primary requisite will be approved postgraduate training and experience extending over not less than 4 to 5 years after registration, the committee makes various suggestions, which include the following:

(1) While holding hospital appointments the intending specialist should be regarded as a trainee and be given adequate time for



reading, reflection, and research. He must not be overburdened with routine work and he must be adequately remunerated.

(2) As a rule, before he begins to specialize, he should have at least six months' resident clinical experience of general medicine or surgery.

(3) Every trainee should have the opportunity to devote himself for a period to the extension of his scientific knowledge by laboratory work and study, and provision should be made, by such means as travelling fellowships, for trainees to obtain the benefit of working for a time in suitable hospitals and medical schools abroad.

The committee declares that postgraduate study should be a regular and recognized feature of general practice. Periodic intensive refresher courses should be regarded largely as a short-term expedient; the long-term policy should be to bring general practitioners by various means, such as clinical assistantships, into regular association with the work of hospitals and of specialists.

**Postgraduate Institutes.**—A scheme is outlined for the development of the exceptional resources of London for the postgraduate education of medical practitioners from all parts of the world. This scheme involves the reconstitution of the British Postgraduate Medical School on a federal basis embracing a comprehensive range of postgraduate institutes in all branches of medicine. The committee points out that there is at present a singular lack in Great Britain of facilities for postgraduate training in special subjects, and recommends the development of a number of institutes in the special subjects to serve as the spearhead of postgraduate education and research in those subjects. The universities, in consultation with the professional and scientific bodies concerned, should agree on a national plan.

**Medical Research.**—On this subject the committee says that a community wishing to promote research must first find and train the men who have the ability and impulse for scientific inquiry. It must then create the most favourable conditions for their work and give them the tools they need. Young research workers should mainly recruit themselves, their careers being closely watched and guided. When a worker has proved his research ability and has chosen research as a career, he should be given reasonable security in this career. Medical schools, teaching hospitals, and postgraduate institutes have three important functions in relation to medical research: (i) to discover and train future research workers; (ii) to encourage and facilitate original investigations by members of their teaching staffs; and (iii) to house special research units and workers. Public grants to medical schools and teaching hospitals must include basic research grants, and extra grants will also be needed from public and private sources for the support of special investigations.

#### Medical Teaching Centres and the Health Service

Medical schools as partners in the National Health Service should, the committee says, have an appropriate place in the administration of the service. If Central Health Service Councils are established for England and Wales and for Scotland, the universities in the respective countries should be given adequate representation.

Though they will be available for consultation and advice, specialists on the staff of teaching hospitals, if they are to give as much time as they should to the clinical and educational work of the teaching centres, will not be able to undertake regular duties in other hospitals. As a general rule their hospital work, including consultations with members of the staffs of other hospitals or with general practitioners, should be conducted in the hospitals of the teaching centre. The linkage of non-teaching hospitals with the teaching centre must be brought about by means of educational associations developed between a medical teaching centre and all the major hospitals in a wide area around. These associations will evolve in part out of the arrangements made in respect of pre-registration house appointments and in part out of provision for refresher courses for general practitioners, hospital appointments for intending specialists, and other forms of postgraduate education. To help the hospital service generally, and to facilitate a better distribution of specialists, medical teaching centres should make it an established principle that tenure of a post in a non-teaching hospital is regarded as a qualification in favour of an applicant for appointment to a teaching hospital.

## Nova et Vetera

### Dr. WILLIAM GILBERT (1544-1603)

A recent meeting of the History Section of the Royal Society of Medicine was devoted to a discussion of the place of William Gilbert in medicine and in science, and the occasion was the celebration of the quatercentenary of his birth.

Sir Walter Langdon-Brown dealt with Gilbert's life and his place in the medical world of his time. He said that recently the Dean of one of our cathedrals called on an undergraduate of St. John's College, Cambridge, and, observing the arms of William Gilbert on the walls, he asked the undergraduate who Gilbert was. Neither of them had heard of him. Half an hour later Sir Walter had the satisfaction of showing the Dean a copy of the first edition of *De Magnete*. Gilbert was born in Colchester, and all his life he remained proud of this association. The date of his birth is given at varying dates from 1540 to 1544, but there is new evidence that he was really born in the latter year. He matriculated at St. John's, and later became a "physic fellow." In 1570 he began a three-years tour of Italy, and returned as a champion of the experimental method. He settled in practice close to the first College of Physicians and soon became prominent in his profession. He was a Censor of the College for nine years, Treasurer for eight, and became President in 1600. He was physician to Queen Elizabeth and attended her in her last illness. Gilbert died in 1603, probably of the plague. In his will he bequeathed his library, his globes, his instruments and cabinet of minerals to the College. As a physician Gilbert was very sceptical about the ridiculous claims made for remedies: as he says, "Thus do the smatterers cross swords together and puzzle inquiring minds by their vain conjectures." During his time there was a change in the outlook and function of the universities. His insistence on observation and experiment, his scorn for reliance on mere authority, his hatred of shams and quackery, were not without their effect in combating the pestilential influence of astrology on medicine. He was the first of English modern scientists.

Prof. Sydney Chapman dealt with Gilbert and the science of his time. Apart altogether from his medical work, he was always an ardent student of science. In his early days he studied chemistry, reputedly with success, and throughout his life he paid great attention to astronomy. He was the first Englishman to accept and propagate the revolutionary view of Copernicus and of Giordano Bruno. Despite the time which he devoted to his medical and scientific work, he was no recluse, and his friends included physicians, astronomers, mathematicians, and sailors. He was a friend of Drake.

It is in the field of magnetism and electricity that he has earned enduring fame as the great founder. Gilbert's researches on these subjects extended over eighteen years, and the results were published in *De Magnete, magneticisque corporibus, et de magno magnete tellure* . . . (on the magnet and magnetized bodies, and on the great magnet, the earth), London, 1600. Gilbert paid his own expenses for his work, according to some about £5,000. A great predecessor was Petrus Peregrinus, who three centuries earlier had recognized the poles of a loadstone, and Robert Norman of Limehouse a few years earlier had discovered the magnetic dip. Gilbert showed that the earth is simply a great spherical magnet, and by his experiments he founded the science of geomagnetism. He greatly extended the range of substances known to be magnetic, and he distinguished clearly between magnetic and electric reactions. He recognized the "orb of virtue" (magnetic field), investigated the influence of physical agents on magnets, and collected data as to the direction of the compass in different regions. By his pioneer work on electricity he recognized definite classes of electric and non-electrics; he showed that damp weather hinders electrification, and that the electric attracts bodies themselves and not the intervening air; and he invented the non-magnetic electroscope. He asserted that the magnetic axis remains invariably in the earth, but he was wrong—as Newton later showed—when he asserted that the earth's rotation is due to its magnetism.

Gilbert dissipated much of the superstition that had hitherto been associated with the loadstone. His book made three great contributions to science: the ordering and extension of magnetic knowledge; the foundation of knowledge of electricity; and his conception of the earth as a great magnet. It was praised by men like Galileo and Kepler, and he has long been recognized as "the father of the sciences of geomagnetism and electricity."

E. A. U.

The British Hospitals Association has issued from 12, Grosvenor Crescent, S.W.1, two printed documents, one being a suggested form of constitution for Nurses' Representative Councils prepared jointly by the Association and the Royal College of Nursing on the advice of their liaison committee, and the other giving model forms of conditions of service and agreement for the engagement of student nurses by hospitals.



## Correspondence

### Chartered Physiotherapists

SIR,—The Chartered Society of Physiotherapy, having recently received permission from the Privy Council to change its name from the Chartered Society of Massage and Medical Gymnastics, has decided that the time is fast approaching when it must make some drastic changes in the training of its future members, and it is therefore proposed to increase the length of training to three years.

The time would appear propitious to make clear the difference between chartered physiotherapists and those who advertise themselves as qualified by correspondence, short courses, etc., to practise this form of physical treatment. In order to become chartered physiotherapists candidates are required to undergo a full-time training of two and a half years' duration at one of the recognized schools of physiotherapy attached to hospitals (usually those with medical schools). They must have gained the school certificate or its equivalent, and have some knowledge of chemistry, physics, and general science. During the training the average working day is 6 to 7 hours. After about three months' concentrated preliminary training 2 to 3 hours daily are spent in the wards and out-patient departments of some large hospital. This work is carried on under trained supervision and often under the direction of a specialist in physical medicine. Experience is gained by attendance at clinics examining orthopaedic cases, recent injuries, and other surgical and medical conditions. The remainder of the day is devoted to theoretical and practical lectures and demonstrations. All private study has to be done in the evenings and at week-ends, and the average student finds a minimum of 14 hours a week necessary to keep up with the work.

The examinations for the certificates of the Chartered Society include four 3-hour papers in anatomy, physiology, kinesiology, electrotherapy, theory of massage, and the application of these subjects to medical, surgical, orthopaedic, and other cases, and about two hours' practical and oral examination in the same subjects. The examiners include professors of anatomy, members of the medical profession interested in physical medicine, and Chartered Society of Physiotherapy teachers of not less than five years' standing. In order to maintain the high professional and ethical standards of the Chartered Society, chartered physiotherapists are required to give a written undertaking to work only under the direction of registered medical practitioners and to conform to certain other rules.—I am, etc.,

HERBERT L. EASON.

Chairman of Council, Chartered Society of Physiotherapy.  
Tavistock House (North), W.C.1.

### Sedatives for the "Bombed"

SIR,—Being in frequent contact with children at rest centres or at evacuation sessions who have been bombed, I feel that more sedation therapy might be of great value. One child of 18 months, who had been blown out into the garden, was unmanageable when the siren went and had not slept adequately several days and nights. On sod. brom. 3 gr. t.d.s. and at night, and chloral hyd. 1 gr. 5 in die, he slept almost continuously for two days and nights, then, renewed, able to smile and to ignore the sirens, he remained fit so long as he continued on sedation. If the mother took him out and he missed his dosage the old symptoms of screaming returned. He was finally evacuated, laughing and cheerful after a dose of sod. brom. 5 gr., chloral hyd. 1½ gr. Several other children, some of whom had been in hospital with injuries, on rejoining their families at the rest centre were in a highly nervous, tense state. The mothers have been very grateful for sedative treatment. The children are as lively as crickets on it, and their nervous tension is released.

In private practice among adults I have used luminal 1½ gr. at night as preventive of the fatigue that accompanies nervous tension. Some of these women had tiny children in their care. They have all been very grateful, and have said how much better they felt on it. One week's treatment and they got their "second wind" and were able to continue without. On

admission to rest centres after bombing the adults get sod. brom. 12 gr., sod. barbit. 2 gr., repeated as required.

I have to thank Dr. Yellowlees and Dr. McFarlane for their encouragement.—I am, etc.,

London, S.W.

M. STEWART.

### Site for Intramuscular Injection

SIR,—I was very much pleased to see that Prof. Grey Turner has made use of his great influence again to advocate abandonment of the gluteal site for intramuscular injections and recommends the outer side of the thigh as the proper site for such procedure. No doubt many surgeons do give instructions to their juniors and their nurses in accordance with Prof. Grey Turner's recommendations, but in our teaching hospitals, apparently, students are still taught to inject into the gluteal muscles. Only the other day a student at one of our great London hospitals told me that he had been taught to do this.

It is difficult to see why the gluteal region was ever chosen for this purpose. Apart from the major dangers to which Prof. Grey Turner calls attention, the gluteal muscles are often covered with a thick layer of fat, and it is not infrequent for the injection to be given into this layer and not into the muscles. The result is often a deep slough, which takes weeks to separate, and if the patient is confined to bed the resulting discomfort can be readily imagined. By mapping out on the outer side of both thighs three zones—upper, middle, and lower—six areas free from any dangerous structures are available for injection, and a nurse can ring the changes many times without using the same site more than once. Recently, for particular reasons, I had to order a course of sulphonamide intramuscular injections in a medical colleague. No fewer than fifty injections were given in this way without causing more than trifling discomfort.

I trust that the practice so forcibly advocated by Prof. Grey Turner will soon become the recognized teaching.—I am, etc.,

SIDNEY BOYD.

London, W.

SIR,—As one who has administered perhaps more intramuscular injections than any other man living, I applaud Prof. Grey Turner's letter (July 8, p. 56) emphasizing the undesirability of choosing the central buttock as the site for any deep injection. Personally, I should have thought that the piercing of the sciatic nerve would sufficiently warn the operator to proceed no further; but such an irritating substance as quinine might surely cause neuritis, even if the nerve were not actually penetrated by the needle.

There is another danger when substances dissolved or suspended in oil are injected deeply in or around the sciatic notch—that of oil embolus. Here the needle will be travelling in the direction of larger veins and may deliver the oil right into the lumen of one of them. The effect, if not dangerous to life, is extremely disconcerting. The patient, even when anaesthetized, gives a characteristic cough at the instant the plunger is pressed down, shows marked symptoms of shock, and may retch uncontrollably for hours or even days. Five such accidents have occurred in my experience, all of them during injection into the "forbidden area," and I am convinced that when this part of the body (so often the seat of rheumatic fibrositis) requires to be locally injected only such medicaments must be used whose inadvertent introduction into a vein would be a matter of no particular anxiety.—I am, etc.,

G. LAUGHTON SCOTT.

London, W.1.

\* \* In an answer to a query on this subject published under "Any Questions?" (June 12, 1943, p. 716) it was observed: "The tendency nowadays, however, particularly in the case of the sodium salts of the sulphonamide drugs, is to choose the antero-lateral aspect of the thigh (*vastus externus*) as the least dangerous site for intramuscular injection."—ED., *B.M.J.*

### Problem of the Small Bladder

SIR,—May I have the privilege of a little space in your columns to draw attention to the problem of the small muscular bladder in young males, and invite comment and correspondence on this condition from more experienced and competent urologists. It is apparently little known, and I cannot find much about it in the textbooks or literature. The

typical picture is that of a young male who gives a history of frequency and urgency all his life. The stream is good and there is no pain, but he finds he must rise several times at night and even occasionally wets his bed. Conditions in the Army usually force him to seek advice and many of these patients are sent in for urinary investigation as cystitis or enuresis. Recently I have also investigated a boy of 14 and a girl of 10.

One is inclined to regard these people as neurotics after taking their history, and to conclude that they have a bladder neurosis bad enough to disturb them even during sleep. The urine is usually clear and sterile and the stream large and forceful, but the amount passed is rarely more than 10 oz. The most important feature is that there is no residual urine, and this is the first factor to be excluded.

Cystoscopy shows a bladder of small capacity, often no more than 6 to 10 oz., though on occasions I have found it as much as 15 oz. There is very marked trabeculation with prominence of the trigone, and from time to time the whole musculature goes into spasm, forcing urine past the cystoscope, which must be firmly held, or it may be pushed out of the bladder. Renal function is usually excellent. So far as can be determined with the cystoscope or cystourethroscope there is no stenosis or hypertrophy of the internal sphincter urethrae. Intravenous pyelography shows a normal upper urinary tract, but the bladder is usually shown by a small round dense shadow of the excreted substance. We know, of course, that prostatic obstruction due to hypertrophy of a tight internal sphincter may cause symptoms quite early in life.

I have always assumed that in these men there should be some dysuria, a slow stream, and evidence of residual urine, and in the later stages even a dilated bladder, but I suppose it is possible that as a reaction to such partial obstruction the bladder muscle may hypertrophy and contract down rather than dilate, thus preventing the accumulation of any residual urine and maintaining a good forceful stream.

One of the problems in urology is to decide whether there is constriction of the internal meatus. The MacCarthy resectoscope will perhaps show it in the majority of cases, but one is hardly justified in passing it as a routine for the purposes of diagnosis. The problem as I see it is as follows: Are these small muscular bladders a handicap which the patient is born with and doomed to tolerate all his life, or is this a hypertrophy secondary to an internal meatus obstruction, and if this is the case can we help these people in the early stages by a perurethral resection of the faulty sphincter? This problem needs public view and consideration and discussion for I presume that other E.M.S. hospitals are no doubt consulted by many similar cases drawn from our fighting Forces. After the war these men may find themselves able to cope with their frequency in civil life and will not so readily seek advice, and never again shall we have such an opportunity of helping these unfortunate people—I am, etc.,

Chelmsford

M D SHEPPARD

### Bone-marrow Transfusion in Children

SIR—Replying to the letter from the Alder Hey Hospital (June 17, p. 826), we fully agree that the intravenous technique can be easily acquired by residents on a children's unit. It is a fact, however, that many doctors never have this opportunity.

With increasing experience we have found it desirable to develop alternative methods of parenteral fluid administration such as the scalp vein injection of small quantities of fluid, and the marrow route. The marrow route would seem to be the simplest method at present available, and is therefore reasonably well suited to institutions which do not cater routinely for intravenous therapy in children. We would suggest that the bone marrow drip may be usefully employed for children in the following circumstances:

1. Babies in whom the veins in the usual sites (ankles, wrists, and cubital fossae) have been used. On several occasions we have seen infants sent to this hospital whose veins have been seriously mutilated—even the femoral vein in one case. With these babies it is essential to find an alternative route.

2. Shocked and premature babies in whom the minimum of disturbance is desirable.

3. Patients in whom repeated blood transfusions have been given, or will be required, such as haemophiliacs and aplastic anaemias.

The needle described by Gimson (*Journal* June 3, p. 748) has also proved eminently satisfactory for taking marrow smears from children of all ages. The danger of osteomyelitis should not be forgotten, but the immediate emergency under the above listed circumstances justifies the problematical risk of infection—We are, etc.,

JANET D GIMSON  
PATIENCE BARCLAY  
F. L. KING LEWIS

Hospital for Sick Children, Great Ormond Street

### Why Tie the Cord?

SIR—Dr. Price's pertinent question (June 3, p. 772) and subsequent correspondence lead me to record the custom of another tribe (Lokele) of primitive forest folk in the Belgian Congo. The cord is never severed until the placenta is delivered. The mother is then handed a native razor, which she strops on her bare thigh. She then cuts the cord herself, about 8 to 10 in. long, milks out the contained blood, and spits on the end, no ligature is applied.

The strength of conviction against severing the cord while the child, alive or dead, is still joined to its mother is such that I have known a woman brought to hospital after a two-days journey in canoe for removal of retained placenta, to which the dead child was still attached.

The length of cord left probably safeguards against sepsis, for it shrivels in the dry atmosphere of the overheated hut before infection can ascend to the umbilicus. Horror was previously expressed at seeing it cut the regulation 3 to 4 in., and indeed the only case of fatal sepsis I saw in 16 years was in a child born in hospital. It is always difficult to disentangle sense and nonsense in savage custom and superstition, but may it not be that the refusal to separate mother and offspring means that the child gets an extra ounce or two of blood when the placenta is expelled, and that ligation is quite unnecessary at that stage, if ever?—I am, etc.,

Chalfont St. Giles

CLEMENT C CHESTERMAN

SIR—The following experience may be both interesting and amusing.

In the autumn of 1914 I was helping in a large French military hospital in Normandy (in a town now in the central picture). One afternoon the *chef de cuisine* rushed excitedly into a ward where the surgeon and I were dressing a wound and said his wife had given birth to a baby in the kitchen. I seized a tray with a jar of ligatures, a bowl of sea-water—strained, boiled, and diluted with ordinary sterile water—this was all the French surgeons used to cleanse the wounds—and we went to the kitchen which was in the dark and gloomy basement. There we found the woman on her back on the scullery floor, also the baby—alive. I put a few ligatures together and knotted them, and on handing them to the surgeon, who was a middle-aged Russian lately practising in Paris, he shook his head and said, '*Non non madame pas nécessaire, la'*' and having cut the cord some 6 or 8 in. from the umbilicus deftly with a twist knotted it. Then dipping his fingers in the sea-water he pressed on the knot for a minute or so. At this stage the *chef* returned with a bottle of champagne and we four, including the mother, drank to the happy event. The baby thrived so did the mother who was back in the kitchen in a week.—I am, etc.,

Roche Cornwall

G A JACKSON

### War Surgery

SIR—With great interest I read General Mitchiner's article (July 8, p. 37) but as an officer *à/c* Surgical Division of a large and busy general hospital in North Africa during that campaign and as a surgical specialist in France 1914-18 I am also in a position to compare some of the results, and am not in agreement with General Mitchiner on all points.

His remarks on sepsis do not agree with the facts in North Africa, where the wounded arrived at the base with little sepsis after travelling several days, as was the case in the earlier weeks. These men had all had the routine excisions, application of sulphoamides with vaseline-gauze drains, and the parts covered with plaster-of-Paris and it was rare to find a grossly infected wound—such a contrast to what we were used to in 1914-18. Another point of interest was the very

small number of cases of massive gas gangrene, even in the large wounds of the buttock and thigh, although anaerobes were present in some of the cases.

On the matter of amputations, the only criticism we could make was that the forward surgeons had worked hard cleaning up severely damaged tarsal and metatarsal injuries, which reached us in good condition and were eventually sent on to U.K. healing, but with feet which it was difficult to imagine would be weight-bearing and which could with advantage have been amputated at a forward C.C.S.

With regard to burns, of which there were a great number, many accidental, but large numbers coming from among the survivors from the sea, the results of cleaning under anaesthesia, removing dead skin, then applying sulphonamides and covering with vaseline gauze, and with infrequent dressings done only at several days' interval, were very good. Our largest batch was sixty-three survivors from a ship which burned after being torpedoed, nearly all severe, of whom only two died.

In conclusion one can only say that having seen the surgery in two wars, there is no doubt that the wounded man is being exceedingly well treated at the forward centres, and reaches the base in a better condition in this war than in the last.—I am, etc.,

London, W.1.

D. DENHAM PINNOCK.

### Clinical View of Shock

SIR,—The symptoms of shock described by Mr. Zachary Cope (July 8, p. 35) and the changes in the body, and particularly in the circulation, are identical with those shown after an injection of histamine, used so often in the treatment of mental disease, even to the flush on the face. Histamine is produced in every form of shock, and it is most significant that a shock-producing body is found in fresh voluntary muscle in shock, where histamine is formed in large quantities but soon disappears. Histamine might therefore be the cause of shock.—I am, etc.,

HORACE HILL, M.R.C.P.,

Laverstock House Mental Hospital, Salisbury, Medical Superintendent.

### Repairing the Perineum

SIR,—Miss Josephine Barnes expresses herself as glad of an opportunity of "protesting against the prevalent and pernicious practice of giving a general anaesthetic for repairing the perineum." I trust she will not mind if I use her opening as an opportunity for protesting against the even more prevalent and equally pernicious practice of giving no anaesthetic for this procedure.

As a student at University College Hospital I imagined that I was learning from Prof. Browne the standard way of repairing a perineum. I was amazed, on coming out into the cold world eleven years ago, to find that I was mistaken. The method I had been taught has been a surprise to every midwife that I have encountered! It would appear that the usual approach to the problem is to see it as a most unimportant adjunct to the delivery. "It is all over now, Mrs. Blank, except for a couple of stitches, and we'll soon get those in." Mrs. Blank is then invited by nurse to "bite on this towel," to "hold my hands and scream if you want to," or some such, and a couple of sutures are hopefully whipped in to a struggling patient.

The essential advantage of what I will venture to call the U.C.H. method lies, as I see it, in the possibility it offers of a proper approach to the problem. The repair of a torn perineum is a most important procedure, not lightly to be undertaken. Miss Barnes touches upon the dangers of a deficient perineum. I would add that a sound perineum is more important in maintaining a happy marriage than is a pretty face: he who carelessly spoiled a pretty face would probably have to pay damages to his patient, yet the perineum can be spoiled and no penalty paid!

For a perineum to be properly repaired it is necessary: (1) for the operator to appreciate the importance of his task; (2) for the operation to be painless, so that no matter how long the work takes the patient remains comfortable and the co-operative (the U.C.H. technique ensures this); (3) the operator must take his time (the U.C.H. technique allows this);

(4) the operative field must be thoroughly exposed (more like with a leisurely approach to the leisurely operation than possible by the U.C.H. technique); (5) the operator must be comfortable; and (6) the light must be good (how many G. carry a good head-lamp in their midwifery bags?). Miss Barnes says that local infiltration anaesthesia is painless and so May a very average G.P. add, for the benefit of those G. who have not yet ventured to try it, that it is also extremely simple? The satisfaction of having done a thorough (without hurting the patient) more than compensates for the extra time taken.

In one other detail the technique as taught to me Prof. Browne differs from that generally used. I was taught to use for each of the interrupted sutures in the skin a twelve inch length of silkworm gut, to leave the ends uncut after tying, and finally to gather the ends together, to knot the bunc and to wrap the knot in sterile gauze. The extra *combi* to the patient, as compared with the more generally used method of cutting the silkworm gut short after tying, is immense.—I am, etc.,

West Bromwich.

D. SAKLATVALA.

### Results of Colles's Fracture

SIR,—As an old practitioner I write confirming Dr. Abercrombie's remarks about the scandalous abuse of plaster-of-Paris by the bulk of the profession (July 8, p. 55). For years we were taught to start movement of a "Colles's" hand within 48 hours of the fracture, and to continue to do so every second day for 2 to 3 weeks. Of course we used the old wooden splint with a straight dorsal splint. The result was that within 4 to 5 weeks the patients were about their job as usual. The slight deformity left was of little consequence.

Some years ago you published a letter of mine, instigated by Prof. Hey Groves's letter protesting against the blind use of plaster-of-Paris splinting, and maintaining that if plaster-of-Paris must be used it should be applied in the Croft method—i.e., with a starch bandage that can be slit up for inspection.

An old lady has broken her forearm; at a hospital it has been so mismanaged that it has been replastered four times. A lady slipped in her kitchen and fractured both tibia and fibula three inches above the ankle. It was put into plaster, not touched for three weeks, and on release the whole foot was so badly retracted that operation was undertaken to restore it. Result, gangrene of the foot, which had to be amputated!

The results that I have heard of from this mad dependence on plaster-of-Paris make the old G.P. grieve for the unfortunate public and for the honour of his profession, which in other matters has attained such distinction.—I am, etc.,

VAUGHAN PENDRED.

### Wrapping for Biopsy Material

SIR,—The recent shortage of gutta-percha tissue has led to the pathologists' receiving biopsy material wrapped in a variety of very unsatisfactory substitutes. In suggesting a satisfactory wrapping material we feel impelled to recall the great importance of reducing to a minimum the time between the surgical removal of the tissue and its visual examination by the pathologist. When tissues are of such a nature that naked-eye examination gives no indication of the changes likely to be found microscopically, then by all means let them be immediately immersed in fixative solution (such as the one advocated by one of us (A. C. L.) in the *Journal* of Nov. 20, 1943, p. 644). But if they be large in size or otherwise demand the pathologist's scrutiny before fixation (he should be the judge of the type of fixative most suitable for the particular tissue), then it is essential that the tissue be enclosed in a wrapping that is highly water-resistant. It has been found that the variety of transparent wrapping material marketed as "Cellophane M.S.S.T." is a satisfactory and also a cheap substitute for gutta-percha tissue; the thinnest grade—M.S.S.T. 300—is adequately strong and the cheapest, since the material is sold by weight.—We are, etc.,

M. K. GILMOUR,  
A. C. LENDRUM.

Glasgow University.

### Rheumatic Fever and the Sulphonamides

SIR.—The following case history is of interest in view of the opinion recently stated by a prominent physician that rheumatic fever would in the near future cease to be of importance owing to the prophylactic value of the sulphonamides.

T. W. was admitted to hospital in January, 1944, with an acute suppurative otitis media. He had no history of previous illness of any sort. He was put on to sulphadiazine in the usual dosage, and started to improve immediately, the condition having cleared up by the 10th day, although he was still on the drug. On the next day he developed a painful swollen and tender right sternoclavicular joint which lasted for about 48 hours. During the following week he developed pain, swelling, and tenderness successively in the left shoulder and knee and the right shoulder, with a temperature of 102° and malaise and sweating. The blood sedimentation rate was 46 mm. in 1 hour, and there was a trace of albumin in the urine.

A diagnosis of rheumatic fever was made and the patient was put on to a course of sodium salicylate. He made an uninterrupted recovery from this time, and was discharged on the 47th day of this illness. When seen a week later he was found still to have a mitral systolic murmur which had developed during his stay in hospital, and electrocardiographic evidence of residual myocardial damage.

It will be seen, therefore, that this man was actually at the end of a course of sulphadiazine when he developed an acute first attack of rheumatic fever, which incapacitated him for six weeks and left residual myocardial damage—I am, etc.,

W. S. C. COPEMAN.

### Chemotherapy in Otitis Media

SIR.—As a general practitioner I find myself in complete agreement with Mr. Steele's views that the early and adequate exhibition of the sulphonamides has revolutionized the treatment and prognosis of otitis media. If Mr. Dingley complains that the sulphonamides are used indiscriminately in these conditions, the answer is "Of course they are." If an empyema thoracis develops it is not evidence that the original pneumonia was wrongly treated with sulphapyridine, nor, I maintain, is it indicative of wrong treatment if an "empyema" of the middle ear develops after sulphonamide treatment of an acute catarrhal otitis media.

There are two dangers against which we must guard—the use of sulphonamide tablets as though they were a special form of aspirin, and the overlooking of the silent mastoiditis. With a realization of the many pitfalls, I agree with Mr. Steele that the general practitioner is the best judge of the value of chemotherapy in otitis media, and that it has replaced the myringotomy as the first line of defence.—I am, etc.,

Cambs.,

F. BROCKINGTON.

SIR.—Further to the interesting letters of Mr. G. H. Steele and Mr. A. R. Dingley, are we not tending to wrap the "acute ear" and its treatment in too much mystery, thereby confusing and frightening the average G.P.?

As a G.P. who has seen a goodly number of patients—adults and children—with "acute ear" infection during the last four years. I consider that the history—how sudden the onset, the severity of the pain, when the pain was first noticed—in conjunction with the general systemic disturbance, temperature, appearance of the patient, etc., is extremely important before proceeding to the actual inspection of both ears and the throat. A little time taken over this will often gain a child's confidence and make him more co-operative. We all know the difficulty there can be in giving an opinion on an ear in a wriggling, howling urchin, with a small meatus partially blocked by a little wax and epithelium. This should be gently syringed away rather than removed by a wax hook, so that an adequate view of the drum-head can be had. I have at various times postponed the examination till such time as a whiff of ethyl chloride could be given to the child, and the ear condition evaluated. Previous preparation should always be made for a myringotomy, which can be carried out there and then if required. It is my firm opinion that if there is the slightest suspicion of bulging of the drum-head a wide paracentesis should be performed as soon as is convenient and sulphonamides administered. If careful aural toilet be done by someone adequately trained and experienced 99% of these ears will clear up quickly and easily.

The subacute or catarrhal otitis media with an injected drum-head, which so frequently "clears up" under sulphonamide therapy, clears up just as well with aspirin and menthol inhalations. It is in those whose temperature has been crashed down by sulphonamides, whose pain has gone, but in whose middle ears there was pus, that one so frequently finds some time afterwards impaired hearing, some general vague malaise, and a drum-head which has not regained its normal lustre and appearance, due to purulent residue left behind without drainage. What a dramatic improvement takes place when the drum-heads of these are incised and free drainage given! One wonders whether there will not be many more adults in ten to twenty years' time with sclerosed ossicles and impaired hearing, definitely ascribable to sulphonamide therapy without drainage.

I would reiterate my experience and say, Do not temporize, but do an adequate paracentesis, and then start the sulphonamides in doses sufficiently large to be effective.—I am, etc.,

Pinner Green

S. H. CURRIE.

SIR.—Mr. A. R. Dingley, in his instructive article on some dangers of sulphonamides in ear infections (June 3, p. 747), quotes a case of pneumococcal meningitis complicating a middle-ear infection in which, he states, operation (mastoidectomy) was performed "too late to save the boy's life." It would have been interesting to have had the C.S.F. findings in this case.

I believe it is still the practice for aural surgeons to operate on these cases, but while I am not aware that much success can be claimed for mastoid drainage in well-established cases of pneumococcal meningitis, almost phenomenal cures have been obtained by sulphonamide therapy even where mastoid drainage was omitted. Mastoid drainage appears to be indicated in cases of localized subdural abscess, but I suggest that in very ill patients with a more generalized meningitis the preferable treatment is sulphonamide therapy with possibly mastoidectomy when the patient's condition permits.

Though one may doubt the wisdom of subjecting these cases while critically ill to a major operation, sulphonamides should never replace myringotomy where it is indicated in the treatment of any case of otitis media.—I am, etc.,

Stockport.

L. A. QUIRK.

### Ether and the Oxford-Vaporizer

SIR.—Prof. R. R. Macintosh, in his reply to my letter, has sought to minimize the incidence of vomiting after the administration of ether through the Oxford vaporizer, disclosed by the report of Drs. Mushin and Wood, by claiming that the post-operative observation of the cases recorded was more meticulous than is usual. Such careful recording of facts is what we have come to expect in reports emanating from his department at Oxford; I had already made due allowance for this. Nevertheless, of the 66 patients, in the series of 89, who vomited, 41 had one to three bouts of vomiting and 25 had over four bouts of vomiting; I cannot think that any great clinical acumen was required to record these facts, nor do I suppose that any of the patients were in any doubt as to their unhappy condition!

Such an incidence of post-operative vomiting is neither more nor less than one expects after ether, and, I claim, fully supports the main contention of my letter that, contrary to the over-enthusiastic reports of users of the Oxford vaporizer, the ill effects of ether upon the patient, of which vomiting is but one example, are not materially lessened by the use of the vaporizer.

Dr. A. D. H. Simpson's letter reads as strangely to me as, he states, did mine to him. He imputes to me words I did not write and meanings I did not imply. I did not reveal the truth that the vaporizer delivers ether; I deplored the fact that it does so. I did not question that ether was the agent employed in the experiment, neither did I mention the concentration of ether vapour in the inspired mixture or its relation to the position of the tap. May I point out to Dr. Simpson that while ether remains the yardstick against which other agents are measured for safety it also remains the example of most that is undesirable in an anaesthetic agent in assessing

the merits or demerits of newer agents. I venture to predict that if any new anaesthetic agent, possessing a fraction of the disadvantages recognized and accepted in ether, were introduced to-day it would, if I may use such an expression, be "thrown out on its ear" after the shortest of trials. The safety of an anaesthetic agent, always excepting chloroform, is, and always will be, directly proportional to the skill and experience of the administrator. In proper hands cyclopropane, divinyl ether, trichlorethylene, and pentothal are as safe as ether, and allow any operation to be performed with a minimum of discomfort and ill effect to the patient.—I am, etc.,

Bournemouth.

S. F. DURRANS.

### Prevention of Industrial Dermatitis

SIR,—No one with experience of skin cleansing after contact with cutting oils, grease, and paraffin by means both of my neutral sulphonated castor-oil mixture and of barrier creams can possibly agree with Dr. L. B. Bourne (July 8, p. 57) that just as much co-operation is demanded from the worker in the former as in the latter method. All workers desire to wash on ceasing work, and the method I advocate provides the means of so doing rapidly without the use of soap, which too often in these days is not available. Dr. Bourne's supposition that the factories in my medical charge have unusually good washing facilities is erroneous. In some sections, of necessity, only a bucket of cold water is available without soap or towel, but the results of using the skin-cleansing mixture in such case are equally as good as where proper washing places exist. Dr. Bourne rightly stresses the necessity for the selection of workers, protection by machine shields and protective clothing, inspection of the skin, and cleanliness. These are the A B C of preventive methods, but the first cannot be adequately enforced under war conditions of labour, while the last is impossible with soap and water in machine shops, but is perfectly achieved in a minute or two by the method I use, and I suggest that Dr. Bourne retain an open mind until he himself has seen its results. He can obtain my mixture from Messrs. Reynolds and Branson, 13, Briggate, Leeds, 1, together with instructions for its use.—I am, etc.,

N. HOWARD MUMMERY,  
Medical Officer, Aircraft Factory.

### Timing of Schäfer's Method

SIR,—I must disagree with Dr. Chapman's reasoning (July 8, p. 57) in his preference for the timing of Schäfer's method given in the *R.A.M.C. Training*, 1935. Most surgeons in the St. John Ambulance Brigade have taught their classes—quite rightly in my opinion—that the mechanics of artificial respiration by Schäfer's method are exactly the reverse of normal respiration, in that normal inspiration is an active muscular process, while artificial inspiration is passive, depending entirely on the natural elasticity of the diaphragm and abdominal contents after the pressure of the hands is released for the entry of air into the thorax. Similarly, normal expiration is a passive act while artificial expiration is the active part of the process.

The mechanics of the act being thus reversed, it seems only reasonable that the timing equally should be reversed, so that the passive part of the cycle in each instance should be the longer. This, as Dr. Chapman points out, is the method adopted by both the St. John textbook and the Royal Life Saving Society.

Eve's rocking method in my opinion is not comparable, as the up-and-down movement of the diaphragm and abdominal viscera by gravity makes both inspiration and expiration into active processes.—I am, etc.,

Rochdale.

A. M. McMASTER.

### Vitamin B Deficiency in Allergic Patients

SIR,—I have read with particular interest the excellent article by J. G. McSorley and L. S. P. Davidson in your May 27 issue (p. 714), which has just arrived. In my recently reported studies of food allergy I have had numerous occasions to combat a deficiency of the "unknown liver factors" of the vitamin B complex. The early symptoms of such deficiency have been

nervousness, anorexia, tiredness, with weakness and tachycardia in some. The quantity of liver extract (Lederle) needed to maintain these patients is frequently much larger than doses suggested in the package circulars—as much as 12 caps daily of the powdered preparation or 6.5 c.cm. of "parenteral" fluid.

A number of patients with allergic sensitivity to one or other ingredient in these mixtures (proteins of beef and pork, orange cocoa, vanillin) have been encountered. Attempts at desensitization in such cases are unrewarding and expensive, but I have found that the B deficiency in these patients can be perfectly met with baker's yeast, provided a sufficient dosage is prescribed. A few patients do well with only one and a half cakes Fleischmann's standard product daily; the others must have from four to seven cakes daily for complete relief of the symptoms of B deficiency.

I have not yet seen a patient who is sensitive to both liver extract and yeast; but one patient highly sensitive to yeast fortunately not sensitive to beef or pork, taking daily 6.5 c.cm. of the parenteral preparation (Lederle) by mouth. It is important in some persons to begin treatment with yeast with small quantities, say one-half cake, crushed in some beverage, and increase this gradually. Large doses taken at first often cause unpleasant gas formation and belching.—I am, etc.,

ARTHUR F. COCA, M.D.,  
New York. Medical Director, Lederle Laboratories.

### Gastric Ulcer with Hyperpiesia

SIR,—I wish to report a rather unusual case of gastric ulcer. I was called in to see the patient for the first time on Dec. 28, 1940, during heavy blitzes in Liverpool. He had had a very severe haematemesis followed in due course by melaena. He was kept in bed on sips of cold water and hypodermic injections of morphine for two days. This was replaced by milk diet until melaena cleared up, and he was then put on a normal gastric ulcer regime—an iron preparation in tablet form and injections of a liver extract.

He gave a history of gastro-enterostomy in 1933 at the age of 48 for pyloric obstruction, operation revealing a large pyloric ulcer. An interesting point is that his brother had partial gastrectomy for a similar condition at the age of 48. My patient, a well-nourished man aged 55, had had no gastric symptoms since his operation 7 years previously. He was x-rayed after his attack, and the radiologist reported a healing gastric ulcer at junction of middle and upper thirds of lesser curvature of the stomach, with hypotonic stomach. The surgeon wished to perform partial gastrectomy, but the patient wished to continue with medical treatment. He remained on gastric ulcer diet and the tablets and injections, with complete clinical recovery.

He returned to his normal habits—moderate smoker, occasional glass of beer and no restrictions of diet, and I did not see him again until Jan. 17, 1943, when he complained of dyspnoea on exertion, dizziness, and headaches. On examination his blood pressure was 210/110, and after treatment with phenobarbitone and theobromine tablets, one morning and night, his symptoms improved, but B.P. only dropped to 190/100 by Feb. 7, 1943. He remained free from symptoms until March 23, 1943, when he had another attack of melaena, and his B.P. dropped to 150/80. With general care he improved until Sept. 19, 1943, when his B.P. had again risen to 210/115, where it remained until June 8, 1944, when he had another attack of melaena, which continued until his B.P. fell to 150/85. He is at present on the iron tablets, the injections of liver extract, and plain diet.

It is rather remarkable that his gastric ulcer, the cause of his haemorrhages, has given rise to no gastric symptoms. His haemorrhages have all been related to periods of overstrain and mental stress, factors in a hyperpiesic likely to cause cerebral haemorrhages. I feel that his ulcer is acting as a "safety valve," and suggest that this gastric ulcer was produced by local devitalization of stomach mucosa due to thrombosis of a small gastric artery which was probably arterio-sclerotic. This would account for the ulcer being symptomless. The artery lying at the base of the ulcer crater bursts at periods of mental strain, and bleeding continues until his blood pressure has dropped to 150/110—about right for his age. Under these circumstances I consider that alkalis are not indicated in this type of case, and all efforts should be concentrated on lowering the blood pressure by drugs and diet.—I am, etc.,

Liverpool.

RICHARD H. BRACEY.



### Progesterone

SIR—I have followed with amused interest the correspondence between Dr Walter Calvert and Mr Wilson Clyne on the action of progesterone during pregnancy. May I point out that this theory was so far as I am aware, first published by Mr R. Christie Brown in the *Journal of Obstetrics and Gynaecology of the British Empire* autumn 1932 page 596—am, etc.

London W 1

RICHARD SANDS M.R.C.O.G.

### Chemoprophylaxis of Gonorrhoea

SIR—Your reviewer, in his comments on Dr Herrold's book, represented that American author as being opposed to the prophylactic use of sulphonamides. In my letter (June 24, p. 855) I pointed out that Herrold recommended that the exposed individual should receive sulphonamides prophylactically from his doctor. Your reviewer now discloses (July 8, p. 57) that it is he and not Herrold who objects to chemoprophylaxis, and he goes on to make the extraordinary suggestion that administration of 6 g. of a sulphonamide on the day following exposure is likely to lead to the sensitization of large numbers of individuals.

There is much yet to be learned about sulphonamide sensitization but it is generally assumed that it usually occurs towards the end of a course of treatment extending over a number of days. If there is evidence that one day of treatment (or of prophylaxis) has been ever or often the cause of sensitization, I hope your reviewer will tell us about it. It is the therapeutic and not the prophylactic use of sulphonamides that is likely to result in sensitization.

Theoretically, it is possible that chemoprophylaxis (like chemotherapy) may be responsible for latent gonorrhoea, but adequate dosage is believed by many to be the best safeguard against this danger. Surely no one will regard as inadequate a prophylactic dose of 6 g., having in mind that the total amount of drug required to cure an established infection is far greater than that needed to deal with the relatively small initial inoculum.

My final observation is one of regret that your reviewer has so patently not observed that impartiality which readers are entitled to expect in the columns of the *Journal*—I am, etc.,

ROBERT FORGAN, M.D., D.P.H.

May & Baker Ltd  
Dagenham, Essex.

### Service Medicine

SIR—Service medicine has been assessed both by junior medical officers and by others of higher rank, like Air Cdre Cade and Conybeare (April 22, p. 574). The junior officers have in most instances, preferred to remain anonymous, and this significant fact is, I suggest, quite explicable when the last paragraph of the letter from Air Cdre Cade and Conybeare is read: "It has been our experience that in the rare cases in which we have heard this complaint from medical officers the officer is either lazy or incompetent or else he is one of those disgruntled persons who is primarily interested in his own comfort and career rather than his contribution to the war effort."

Junior officers seldom criticize because they fear that this type of judgement will be made of them by those senior officers who are responsible for appointments and promotion. This fear may be unfounded, but that it is widespread is doubted only by those whose high rank prevents them hearing the day to day talk in mess or wardroom. The junior officer is convinced that criticism does not pay, and the letter from the Air Commodore will do nothing to destroy this—possibly unfounded—conviction—I am, etc.,

Wolverhampton

G CAMPBELL

SIR—A fact not so far noted is that a system which gives reasonable results in a closed disciplined community of picked lives may not be suited to dealing with a mixed populace. Even so nothing like the following would, I venture to think, be likely to occur under private practice conditions.

A slim married W.A.A.F., aged 22, paraded for routine medical examination on reposting. For reasons best known

to herself the young woman M.O. told her, despite her protests, that she was pregnant and deferred her one month. After five weeks the patient, having started a normal period, paraded again. A fresh woman M.O. looked at her card and, despite further protest, sent her to bed for two weeks in hospital as a 'threatened abortion'. In due course the patient was discharged from the Service (with all the extra coupons, etc.) as pregnant. After a further menstrual period she came to me at an alleged 34 months, utterly mystified, with no signs or symptoms of pregnancy and a negative Z/A—I am, etc.,

M.B. B.Ch.

### Spanish Medicine

SIR—Prof. Dillon in writing of misunderstandings of Spanish medicine (July 15, p. 96) has left some misunderstandings. He writes: "The clear truth is that medical advances are quite independent of political or ecclesiastical regimes." They depend largely on the wealth and education of the country concerned. Spain is poor and her people have had few opportunities of secondary and university education, because she has been ruled for 100 years by an oligarchy of more or less corrupt politicians. Perhaps therefore, he will tell us at which period in her history Spain showed any eminence in medicine or science and what were the reasons for that eminence. The names of Spaniards who made important contributions to medicine or science would also be helpful to the historian.

It should be remembered that for many centuries Spain was a very rich country and for long the richest in the world, and that her educational institutions were particularly numerous and well endowed. There are or were, no fewer than thirteen ancient universities in the peninsula without counting post-Renaissance foundations—I am, etc.,

The Athenaeum, London S.W. 1

CHARLES SINGER

## The Services

Acting Surg. Cmdr E. G. Brewis and Surg. Lieut. Cmdrs A. S. Pearson and D. M. Dean, R.N.V.R., have been awarded the R.N.V.R. Officers' Decoration.

Temp. Surg. Lieuts H. P. Lesselbaum and R. R. Wethered, R.N.V.R., have been mentioned in dispatches for good services in saving lives and valuable material in a heavy air raid on Bari.

### CASUALTIES IN THE MEDICAL SERVICES

Surg. Lieut. Myles Clayton Cross, R.N.V.R., who was posted missing, presumed killed, at the end of last year, was educated at Lancing at Trinity College, Cambridge, and at Guy's Hospital. He qualified M.R.C.S. L.R.C.P. in 1941 and completed his M.B. B.Ch. in 1942, he held house appointments at Guy's and later in the Emergency Medical Service. In September, 1942, he was accepted for the R.N.V.R. and saw service in the North Africa landings, and at Panellaria, Sicily, and Salerno.

Wounded—War Subs. Capt. B. E. Camus and J. P. Turner, R.A.M.C.

Missing now presumed killed in action at sea—Maj. R. Edwards, R.A.M.C.

Killed as the result of an accident—Col. W. J. S. Ingram, M.C., I.M.S.

Died of wounds—War Subs. Capt. C. W. Hamillon, R.A.M.C.

### DEATHS IN THE SERVICES

Lieut. Col. HERBERT HENRY GEORGE KNAPP, M.D., D.T.M.&H., I.M.S. (ret.) died on July 3 at Bournemouth in his 75th year. He was educated at Oxford and at St. Mary's Hospital, obtained honours in the Oxford B.A., took the B.M. Ch.B. in 1896 and the D.M. in 1899. He passed the D.T.M. and the D.T.M.&H. Camb. in 1913. He first served in South Africa from 1897 to 1901 as plague medical officer and as civil surgeon. R.A.M.C. In 1902 he entered the I.M.S. and rose steadily to reach the rank of lieutenant-col. in 1921. He was awarded the Queen's medal with four clasps for his active service in South Africa in 1900-1. He entered the civil department in the Bombay Presidency, served in the Jail Department, and was later promoted to be Inspector General of Prisons in Burma. Among other interests he became a Fellow of the Royal Anthropological Institute.



Lieut.-Col. GEORGE EDWARD STEWART, M.B., C.M., F.R.C.S.Ed., I.M.S. (ret.), died on Nov. 29, 1943, in Jersey, aged 70. He was born at Hamilton, Ontario, in 1873 and was educated at Victoria College, Jersey, and at Edinburgh University, where he qualified in 1898 with the M.B., C.M. He subsequently took the F.R.C.S.Ed. and the D.T.M. of Liverpool in 1908. He entered the I.M.S. in 1898 and rose to be lieut.-col. on the selected list by 1923, but had to retire under the age rules before attaining the administrative grade. He saw active service in 1900 in China, in 1901 in Mekran, in 1908-10 in Somaliland, and gained medals for each campaign. He served throughout the war of 1914-18 in Waziristan and Mesopotamia, and was mentioned in dispatches. After his retirement he went to live once more in Jersey, and enemy action was doubtless the cause of the delay in the news of his death reaching this country.

## Obituary

SIR WILLIAM LISTER, K.C.M.G., K.C.V.O.,  
M.D., F.R.C.S.

Sir William Lister, Consulting Surgeon Oculist to the King since 1926, who died at his home in High Wycombe, Buckinghamshire, on July 7, had been a leading figure among the ophthalmologists of London. He taught a long succession of students at Moorfields Eye Hospital and the London Hospital, and did notable work during the last war as consultant to the British Expeditionary Force.

William Tindall Lister was born on Nov. 4, 1868, the youngest son of Arthur Lister, F.R.S., botanist and authority on the mycetozoa, and was a nephew of the great Lord Lister. Like his brother, J. J. Lister, F.R.S., zoologist and Fellow of St. John's College, who died in 1927, William Lister went to Cambridge University, graduating B.A. from Trinity College in the Natural Sciences Tripos of 1889. After his clinical course in London at University College Hospital he obtained the M.B., B.Ch. degrees at Cambridge in 1892 and the F.R.C.S. diploma in 1895; he proceeded M.A. and M.D. in 1922. Diseases of the eye attracted him from the time when he held resident house appointments, and it was not long before his judgment and



(Press Portrait Bureau)

operative skill became recognized by election to the posts of assistant surgeon to the Central London Ophthalmic Hospital and ophthalmic surgeon to the Hospital for Sick Children. After a period as curator of the pathological museum at Moorfields he was elected to the visiting staff there. When war broke out in 1914 Lister had been ophthalmic surgeon to the London Hospital for some time; he was then invited to take charge of the ophthalmic arrangements for the Expeditionary Force in France, and worked and planned there until 1918 with the rank of colonel, A.M.S. In 1918 he gave a Hunterian Lecture before the Royal College of Surgeons, recording some of his large war experience of injuries of the eyes by gunshot fire and mustard gas. He continued his interest in the welfare of officers and men as ophthalmic consultant to Queen Alexandra's Military Hospital after the war. He was created C.M.G. in 1916 and K.C.M.G. in 1919 for his work during the last war, and K.C.V.O. in 1934 in recognition of his services to the King and the Royal Household.

Mr. CHARLES GOULDEN has written an appreciation from which he allows us to quote:

I first met Sir William Lister in July, 1904, when I became a junior clinical assistant to Mr. William Lang at Moorfields. Lister had the desk, in the out-patient department, next to Lang's. He was always very friendly and found time to explain anything I might ask him. This was the more generous as he had little assistance and he found a large clinic somewhat bewildering. He was not a rapid worker and he set himself such a high standard that by the

end of the morning's work he was exhausted. He had been of an assistant surgeon in 1904, but in 1905 he found the work too hard for him and, being by no means robust, he resigned. He had elected ophthalmic surgeon to the London Hospital in 1903, was not surprising that he found he could not run two large clinics. These and two teaching schools were more than he could manage. It was a great pity he had to retire from Moorfields at the time the school was undergoing development and rejuvenation, as he was a capital clinical teacher. Before his election to the staff he served for five years as the pathologist and curator of the museum and he had cultivated a beautiful technique in the cutting of sections and the mounting of specimens. He was a highly expert photographer and his photomicrography was of the highest order.

In 1914 he undertook the arduous task of organizing the ophthalmic service of the British Armies in France. By his persistence ultimately overcame all difficulties and set up a most successful organization whereby not only was there an ophthalmic consultant available for each Army but surgical aid was obtainable at certain casualty clearing stations. The ophthalmic work was centralized at each base so that cases were admitted to one hospital where a group of surgeons worked. At each of these hospitals there was an out-patient department for the treatment of minor complaints; there was also a complete spectacle service whereby a man might have his spectacles ordered and supplied in perhaps half an hour. This was a great triumph, and it was achieved in the face of much opposition. Lister in conjunction with the late J. F. Cunningham acted as a roving consultant, visiting all the bases and forwarding regularly as well as being on call when a second opinion or other aid was needed.

In 1918 Sir William resigned from the London Hospital so that he might give more time to postgraduate teaching, and in 1919 was re-elected to the staff at Moorfields and entered with his customary enthusiasm on the work for which he had great talent—training of postgraduates in ophthalmology by clinical teaching in the out-patient department. He also did his share in the giving of lectures. He was able to make use of his extensive collection of specimens, drawings, and photographs, many of which he had been too shy to publish. By his generosity a small clinical theatre was built at Moorfields, in which a case of special interest appearing in the clinic might be demonstrated. He made many other gifts at Moorfields.

Lister excelled in all branches of ophthalmology. He had had prolonged training in clinical work, and a long period as a pathologist. He was a good operator, although apt to be very conservative. His opinion was frequently sought by his colleagues, and mention must be made of his efforts to improve instruments in common use by the ophthalmic surgeon. Lister was a lovable man and full of fun. He had great charm of manner and was a delightful host. He had a great sense of duty, and, having considerable wealth, looked upon it as a trust whereby he might assist the less fortunate. Many have reason to remember his kindness and generosity.

JOHN PATRICK, F.R.C.S.Ed., F.R.F.P.S.GLAS.

The sudden passing of Mr. John Patrick, for many years consulting surgeon in Glasgow, came as a shock to many. His immediate friends had noticed evidences of failing health over the past year or more in one who was formerly virile and full of energy. This culminated a few months ago in a prolonged residence in a nursing home because of a condition of heart-block. He so far recovered as to be able to move about slowly and later to proceed for a short holiday to Arran where he had for so many years spent his various periods of relaxation from work. Though far from well on his return he elected to keep going about, and to resume some of his lighter duties. His sudden fatal seizure brought to an end a very useful and busy life, in which he never spared himself in helping others in their time of trouble. He leaves behind him a splendid record of work well done, and will be much missed by his many friends in this neighbourhood and elsewhere.

His father, Dr. William Patrick, was a well-known and highly respected practitioner with a busy practice in an industrial part of Glasgow. John was born in the Bridgeton area, and was educated at the Glasgow High School, from which he proceeded to Glasgow University. He graduated M.A. there in 1889, and M.B., C.M. in 1893. After a period of residence in the Royal Infirmary with the late Sir David C. McVail he spent a year as resident surgeon in the wards of the late Sir William Maccewen in the Western Infirmary. Here he gained the grounding in aseptic surgery and the wide clinical experience on which his after-life was based. Later he was outdoor house-physician at the Glasgow Maternity Hospital, from which he proceeded to Vienna for further surgical study before joining his father in his extensive

practice. He early was appointed to the visiting staff of the Royal Infirmary, passing in due course through the various stages to the post of assistant surgeon. By this time he had qualified for, and obtained, the Fellowship of the Royal College of Surgeons of Edinburgh (1908) and the Fellowship of the Royal Faculty of Physicians and Surgeons of Glasgow (1909). The war came and he was attached to the 4th Scottish General Hospital as a surgeon, proceeding over-seas in 1916 to Salonika as a surgical specialist with the 38th General Hospital. He remained there till the end of hostilities, latterly serving as consulting surgeon with the rank of lieutenant-colonel, and was awarded the Grecian Order of Military Merit for his services.

Shortly after his return to Glasgow he was promoted and became visiting surgeon to the Royal Infirmary, where his good work and his value as a teacher were soon recognized by the students. Patrick had the gifts of facile speech and lucid illustration, which soon gained for him large and enthusiastic classes. Here he gloried in his work till his period of service came to an end, and he was appointed to the honorary consulting staff. During his service as visiting surgeon he held the post of lecturer-examiner in clinical surgery in Glasgow University, and also an examinership in surgery for the licence of the Scottish triple qualification.

He was an enthusiastic member of the Association of Surgeons of Great Britain and Ireland, regularly attending meetings all over this country and abroad, and so enlarging and enhancing his experience by comparing notes with surgeons from all quarters. He had a ready pen as well as speech, and made good use of this gift in many contributions to the surgical literature of his time. For many years also he acted as surgical editor of the *Glasgow Medical Journal* with great acceptance, his literary knowledge and thoroughness specially fitting him for work of this kind. He was always an enthusiastic member of the British Medical Association, being at one time a member of the Scottish Committee and of its Central Council. His literary capacity was recognized by that body, who utilized his services as a local correspondent for this area for many years. The emergencies of the present war brought him into harness again, and he resumed his surgical editorship of the *Glasgow Medical Journal*, as well as resuming his work as a clinical teacher one or two days weekly till his health broke down. He thoroughly enjoyed being back among the students again.

Outside of his medical work Patrick was interested in the arts and especially in music, from which he derived great enjoyment and relaxation. Right up to the end he kept up his interest in games and sport generally. Throughout a busy life he kept himself fit by his habit, whenever possible, of having his regular round of golf with his friends on a Saturday, his favourite resort being the old course at Troon. He is survived by his widow, one daughter, and four sons—three of whom are on service over-seas, two of them being with the R.A.M.C.—to all of whom we extend our deep sympathy in their sudden great bereavement.

J. H.

## WILFRED J. HADLEY, M.D., F.R.C.P.

Dr. Wilfred Hadley, who died in retirement at his home in Reigate on July 6 aged 82, was a consulting physician of the old school, and for many years served on the visiting staffs of the London Hospital and the Victoria Park Chest Hospital. He had a high reputation as a teacher at the bedside, with a remarkable gift for perceiving and demonstrating in clear language the essential features of a case.

Wilfred James Hadley was born at Gloucester on March 28, 1862, and after schooldays at Taunton went to study medicine, first in London and then at Newcastle-upon-Tyne, graduating M.B. of the University of Durham with first place in the honours list in 1886, and M.D. (with gold medal) in 1893. His clinical apprenticeship was partly at the London Hospital, and after graduation he went to Göttingen University for a time. He held a succession of house appointments at the London Hospital after qualifying in 1883, and then became pathologist and lecturer on medical bacteriology and curator of the museum there; he began his long connexion with the Victoria Park Hospital as pathologist. Dr. Hadley obtained the F.R.C.S. in 1887, the M.R.C.P. in 1890, and was elected a Fellow of the Royal College of Physicians in 1899, representing the College as examiner in medicine for the English Conjoint Board in

1908-12. He was part author with Sir Andrew Clark and Dr. Arnold Chaplin of a book on *Fibroid Diseases of the Lung*, which ranked high in medical literature, and of a small book, *Nursing: General Medical and Surgical*, which was published in 1901 and reached a second edition in 1907; he also wrote on diseases of the respiratory system for the *Medical Annual*, and contributed a few papers to medical and scientific journals. During the last war he served with the rank of captain, R.A.M.C.(T.), and was physician to the Endsleigh Palace and Palace Green Hospitals for Officers. On retirement from the full staff of the London Hospital and the Victoria Park Hospital he was elected consulting physician to each. His daughter, Dr. Margaret Hadley Jackson, who held a number of house posts at "The London," is in practice at Crediton in partnership with Dr. H. F. L. Hugo and her husband, Dr. L. N. Jackson.

## T. W. WADSWORTH, M.D., F.R.C.P.

Tom Watson Wadsworth, who died on June 23, left behind, in his native city, a fine record of work faithfully performed. From his undergraduate days his ambition was to be a consultant physician, and four years' service during the first great war hardly interrupted his studies, for he became a member of the Royal College of Physicians while in the R.A.M.C. In 1919 he was elected to the honorary staff of the Liverpool Stanley Hospital and later to the Hospital for Diseases of the Chest and the Providence Hospital, St. Helens. In 1920 he was appointed visiting physician to Walton Hospital, and in this position he did pioneer work, as he was given charge of beds and was probably the first to work under these conditions in a Poor Law hospital. For many years he personally examined every medical case admitted. He was a most careful worker, seldom making a spot diagnosis, but preferring to reach his conclusions after a complete routine examination. Honesty was one of his characteristics; whatever he undertook to do was scrupulously carried out. He did not set an extravagant value on his services, and he always took particular care to give full value for fees paid to him. He could not bear to accept from a patient more than he could afford to pay.

He was an active member of the B.M.A. He had been chairman of the Liverpool Division and had represented it at the Annual Representative Meeting for many years. He regarded himself as a typical Englishman and he took great pride in making his conduct conform to this ideal. This was associated with a dislike of ostentation or display of any kind that amounted to a fault. The place he held in the esteem of the local profession was indicated by the number of doctors or members of their families who were among his patients. An interest in physiology aroused during his student days remained with him throughout life, and for many years he lectured on applied physiology in the University of Liverpool. Outside his profession his chief interests were in the history of science and in various forms of handicraft. He had hoped for a period of retirement when he would be able to indulge his tastes, but he felt it his duty to contribute to the war effort, and he continued to attend some of his hospitals after his retirement from private practice. Towards the end he came to realize that if his life was to be prolonged he would have to limit his activities very strictly. This would have been intolerable to one of his active temperament, and he refused to alter his way of living. His marriage was a particularly happy one, and much sympathy is felt for his widow. In Walton, the hospital to which he devoted so much of the work of his life, he is remembered with affection.

H. H. M.

The death is announced of Dr. EDWARD FERDINAND PAGE, who practised at Solihull, Warwickshire, for many years, and joined the British Medical Association in 1890 immediately after qualifying as L.S.A. He took the M.R.C.S., L.R.C.P., diplomas in 1899 and the M.B., B.Ch. degrees of Birmingham University in 1901, and he held many public appointments in succession to his father. G. C. B. writes: In the passing of Dr. Ferdinand Page we lose a beloved colleague, a man of the old school, who throughout his life carried on the arduous duties of a country practitioner. Only those who do this work know its hardship, but he never grumbled nor thought of the humdrum work that falls to the lot of a country doctor. The daily routine of his practice was, however, leavened by an occasional follow-up of the hounds (a sport he loved), and what little leisure he had was taken up by handicraftsmanship. He was a friend of the late Jordan Lloyd when tuberculous joints were fixed up in elaborate splints, and Page, being the artist in woodwork, perfected these splints for him. Page was a man of sound judgment and his knowledge of psychological

medicine was reliable. Death has robbed North Warwickshire of one who was devoted to our profession and keenly interested in modern developments.

Dr. THEODORE ESSEX ROBERTS, whose untimely death from coronary thrombosis took place on June 19, was born at Fowey in 1886. Educated at Elizabeth College, Guernsey, and at Monkton Combe, he studied medicine at Guy's Hospital, qualifying in 1913. Thereafter he held appointments at the Evelina Hospital for Children, at Croydon General Hospital, and at Winchester Hospital. He served as a captain in the R.A.M.C. throughout the first world war. After practising at Barrow, where he held an appointment at the local hospital for five years, he settled at Putney, where he remained until his death. He was an anaesthetist at Putney Hospital for many years. Apart from his professional attainments, Dr. Roberts was learned in the classics, and no mean authority on Roman history. He was generally acknowledged among a wide circle of colleagues, patients, and friends to be a sound and trustworthy doctor, a kind and sympathetic friend, and in all things a gentleman. His departure leaves a void in many hearts which will not easily be filled, for none who have felt his kindly influence will forget him or cease to be thankful for his life of unselfish service.—J. T. H.

## Universities and Colleges

### UNIVERSITY OF BIRMINGHAM

In succession to the late Sir Harold Beckwith Whitehouse, Mrs. Bertram Lloyd, M.B., Ch.B., F.R.C.S., has been appointed to the chair of midwifery and gynaecology. She was the first woman to be elected to a professorship in the Faculty of Medicine at Birmingham University. Mrs. Lloyd (née Hilda Shufflebotham) was educated at Birmingham University. She is a consulting surgeon at the Birmingham and Midland Hospital for Women (Sparkhill) and at the Birmingham Maternity Hospital (Loveday Street). For some years she has been a lecturer in obstetrics and gynaecology in the university.

### UNIVERSITY OF EDINBURGH

A graduation ceremony was held on July 12, when the following degrees and diplomas were conferred:

LL.D.—W. T. Ritchie, O.B.E., M.D., F.R.C.P.Ed.  
M.D.—Squad. Lt.-R. S. Alcock and J. A. Chalmers, R.A.F.V.R., R. D. Gray, and J. W. Morgensthal.  
M.B., Ch.B.—R. Allan, Joyce M. Allen, J. O. S. Anderson, P. E. Anderson, N. M. Antonio, C. B. Black, M. F. Buchanan, Jessie F. Burns, J. S. Calder, R. J. Cameron, J. C. Campbell, Joan M. Cannon, R. D. T. Cape, Jean Cockburn, D. G. Conacher, Anne M. Cooke, Lesley M. Copland, J. W. Cowie, J. U. Crichon, R. P. A. Cumming, V. W. DeLoey, R. M. d'Offay, W. H. Donald, C. P. Douglas, Mary A. J. T. Douglas, J. W. Duff, J. A. Eadie, Elisabeth A. Ede, Audrey L. Ferguson, E. J. Fleischer-Dioleto, G. A. Fraser, T. M. Fraser, W. Y. Galloway, J. M. Gardiner, J. W. Gibb, D. K. Gilchrist, Eleanor Ginsburg, A. J. H. Grant, Mary E. Guest, M. W. Macd. Hadley, C. E. L. Haffner, Lindsay D. C. Halliday, Margaret C. Halstead (née Wardill), G. N. Hamilton, C. A. Haxton, E. V. Henton, B. S. Hutchison, A. M. Kassim, D. T. Kay, Marjory A. Keith, D. R. Kerr, T. W. G. Kinnear, D. W. Lamb, I. S. Lechler, J. A. Leitch, J. R. Lester, W. J. H. Lord, A. D. McIntosh, 2Sheila M. McIntosh, R. B. Mackay, A. MacKellar, A. R. MacKinnon, I. H. MacLardy, G. H. D. McNaught, Margaret G. Martin, Margaret D. Miller, H. C. Milligan, Margaret J. F. Mills, Mona Mitchell, A. Morris, Rhoda M. Murray, G. W. Mutch, Alexina M. H. Myles, R. C. Nimmo-Smith, T. Noble, Ann-Mary O'Hanlon, R. E. O'Neal, R. N. Onyemlukwe, Mary N. Pegg, H. D. W. Powell, R. S. Powell, K. S. Preston, S. Rae, A. P. G. G. Ratipal-Singh, P. A. Riddles, R. T. Ritchie, Alice E. Robson (née Livingstone), C. F. Rolland, J. D. Sammon, A. Scott, J. H. S. Scott, I. M. G. R. Scroggie, Frances Sorrell, Felicity F. Souter, H. W. Stark, Agnes W. C. Storrar, H. T. Swan, R. W. Thomson, Dorothy M. Toop (née Walker), F. W. A. Turnbull, Brenda C. Vale, P. G. Walker, J. F. C. Waterston, George S. Watson, J. M. Whaites, John S. Wilson, I. W. Winchester, J. H. Wrigley, Florence H. Young.  
D.M.R.—J. A. Macleod.

1Commended for thesis. 2With honours.

The following prizes were presented:

Cameron Prize in Practical Therapeutics: Prof. O. Loewi. Ettles Scholarship and Leslie Medal: C. A. Barrett. Scottish Association for Medical Education of Women Prize, and Dorothy Gilliland Memorial Prize: Sheila M. McIntosh. Mount Scholarship in the Practice in Physic: T. G. Crombie. Buchanan Scholarship in Midwifery and Gynaecology: I. M. Richardson. James Scott Scholarship in Midwifery and Gynaecology: C. F. Rolland. Conan Doyle Prize: T. W. G. Kinnear. Keith Memorial Prize in Systematic Surgery, and Murdoch Brown Medal in Clinical Medicine: G. J. Romanes. Beane Prize in Anatomy and Surgery: R. J. M. McCormack and P. A. Leitch. Annandale Royal Victoria Hospital Tuberculosis Trust Medal: J. A. Leitch. Annandale Medal in Clinical Surgery: J. W. Gibb. Wightman Prize in Clinical Medicine, and Stark Scholarship in Clinical Medicine: Marjory A. Keith. Ellis Prize in Physiology: R. H. N. Smith. Gunning Victoria Jubilee Medal and Prize in Pathology: J. A. Loraine. MacLagan Prize in Forensic Medicine: R. F. Robertson. Cunningham Memorial Medal and Prize in Anatomy: P. N. Edmunds and Eileen V. McWilliam (equal). Whiteside Bruce Bursary: Rosemary H. M. Davie. Vans Dunlap Prize in Botany and Zoology: G. W. Hickish and C. W. M. Wilson (equal).

Degrees were also conferred by the Polish School of Medicine at Edinburgh.

### UNIVERSITY OF GLASGOW

At a graduation ceremony on July 12 the following medical degrees were conferred:

M.D.—J. A. W. Kay, 2A. Wilson, J. S. G. Burnett, N. C. Gella 1N. G. B. McLetchie, 3C. M. Kesson.  
M.B., Ch.B.—J. K. Watt, 3S. C. Frazer, 3J. A. McGregor, 3F. Finlays 3C. M. Ross, 3A. S. Douglas, 3J. A. Short, 3J. A. Simpson, 3A. R. Currie, Cameron, 3J. B. Stevenson, 3G. Robson, 3R. Love, 3F. S. Macfarlane, 3Jean Neville, Mary W. Alves, J. C. Anderson, D. Barclay, T. C. Barras, Aileen Barrett, Maura E. Barrett, J. R. H. Berrie, J. A. Blackwood, J. E. Bro Elizabeth C. Brownlie, Jean L. Buchanan, W. O. R. Caldwell, E. Cameron, H. McC. Carson, T. Cartmill, J. B. Cochran, B. C. Connel G. A. B. Cowan, T. N. Cowie, J. B. Crook, J. Croie, A. Cross, H. Crum, J. McL. Culver, W. R. Cunningham, G. Currie, R. Cuthbert, Dalziel, R. Deans, J. Dick, Mary B. Donald, D. Drew, Margot G. Dunlop, W. S. Dykes, C. E. Gabriel, Mary D. Gardner, D. C. R. Gemmell, A. Gordon, J. G. Goudie, Elizabeth M. Graham, Janet F. Graham, H. Gready, Lilian Green, Eleanor J. Haddow, Mary A. Harvie, Jean Henderson, F. R. Hood, A. Isaacs, D. C. Jackson, Ruby McL. Jackson, C. O. Kennedy, Martha G. Kennedy, Jean M. Leckie, G. M. Ligerwood, Maud J. Lindsay, G. B. Logan, H. J. Love, Jimima W. Love, G. M. Lynch, J. McCauley, R. A. McCluskie, P. McCusker, Katherine A. McDonald G. M. McEwan, J. MacGillivray, J. McHattie, H. MacC. MacIntyre, A. MacKenzie, A. D. MacNeill, I. W. MacPhee, D. MacRae, Margaret A. Martin, J. Millar, W. G. Millar, J. A. Milne, A. L. Morton, D. Mulle A. R. Murison, W. Nicol, H. Norwell, M. L. Paterson, James Pearson J. S. Pollock, H. C. Reid, J. R. Reid, W. McK. Reid, A. MacD. Reid G. B. S. Roberts, G. A. H. Sandelands, A. B. Sdare, J. M. Scott, W. J. Shand, James Simpson, D. M. Sinclair, Ann K. Smith, J. F. F. Smith John Maclean Smith, Margaret Y. Smith, Marion C. Smith, William A. J. Smith, A. E. T. Snedden, J. L. Steven, J. A. P. Stewart, R. A. Y. Stewart L. Strang, J. W. Sutherland, D. M. Thomson, W. R. Thomson, C. M. Turner, J. Vaughn, J. A. A. Verrio, Martha H. Watson, W. E. Watson D. S. Watt, T. M. Welsh, Elizabeth J. Whiteford, R. Whitelaw, Jessie Wilson, Thomas S. Wilson, H. Y. Wishart, D. C. Wright, K. C. Wyba H. K. L. Yobog.

1With honours. 2With high commendation. 3With commendation  
4In absentia.

### UNIVERSITY OF WALES

#### THE WELSH NATIONAL SCHOOL OF MEDICINE

The following candidates have satisfied the examiners at the examination indicated:

M.B., B.Ch.—Obstetrics and Gynaecology: D. Anthony, M. L. Edwards J. H. Edworthy, Hannah P. Evans, Joan Guy, J. C. Ham, Jane W. James D. R. Lewis, Barbara D. S. Marshall, Margaret Owen, D. B. Price, Owen V. Rees, D. V. Thomas, Glenys M. Thomas, D. Tooms, W. O. Williams.

### ROYAL COLLEGE OF PHYSICIANS OF IRELAND

At a meeting of the President and Fellows of the College, held on July 7, Lieut.-Col. J. K. McCollum, R.A.M.C., was admitted a Fellow, and P. J. Cowley was admitted a Member and Licentiate.

## Medical Notes in Parliament

### White Paper on Family Allowances

On July 11 Mr. CHURCHILL informed Mr. Tinker that the Government had completed the preparation of the White Paper embodying their proposals generally for a system of family allowances and for replacing the existing system of workmen's compensation by a new scheme. It was the Government's present intention to publish the White Paper in time for it to be discussed when Parliament reassembled after the recess. Mr. TINKER: Is there any reference in the White Paper to old age pensions, which was an important issue? Mr. CHURCHILL: Certainly. It is a gigantic scheme.

### Minister's Discussions with B.M.A.

On July 13 Dr. HOWITT asked the Minister of Health what progress he had made in his discussions with the medical profession on the proposals for a National Health Service.

Mr. WILLINK replied that preliminary discussions took place before the issue of the White Paper, on a non-committal and confidential basis. Since the White Paper he had received and answered a number of questions of detail from the profession's representatives. The answers to these had been published. He had hoped to begin more definite discussions with the profession after the Representative Meeting of the B.M.A., which was intended to be held this July, but, for reasons not due in any way to the profession, this meeting had been postponed. Mr. Willink appreciated that these discussions must be deferred. Mr. Willink added that he had studied with interest the draft statement of policy recently issued by the Council of the B.M.A. There were many detailed points in it on which he should welcome some elucidation. In particular he would be glad to have further explanation of the Council's views upon the proposed administrative and consultative machinery, both central and local. He was therefore inviting the Council to send representatives to discuss these and other points with him and his officers in order that the ground might be cleared for the general discussions which would be opened when the Representative Meeting had been held.

**Air Transport and Convection of Disease**—Mr WILLINK said on July 13 that he was unaware that air transport at present caused diffusion of disease. The risk that infectious disease could be thus conveyed from one country to another was recognized and was the subject of an international sanitary convention regarding aerial navigation, which provided for safeguards. Every precaution was being taken against the incursion of epidemic disease into this country by this means.

**Medical Examination of Irish Workers**—Mr PETRIE inquired on July 12 whether men and women coming from Ireland to England, Scotland, or Wales to work were medically examined at the ports on arrival. Miss HORSBURGH said they were not, except that such examinations had been temporarily carried out on one or two occasions when a special risk of the possible importation of major infectious disease had appeared.

## EPIDEMIOLOGICAL NOTIS

### Discussion of Table

In England and Wales during the week the incidence of infectious diseases fell, the only exception being a rise of 106 in the notifications of acute pneumonia. Dysentery had 66 fewer notifications than last week, diphtheria 55, whooping cough 42, and measles 35.

There was a slight fall in the notifications of diphtheria in most areas and no large fluctuations were recorded. Cheshire reported 57 fewer cases of whooping-cough than last week, Surrey 57, and London 55. The largest falls in measles were Northumberland with 75 fewer cases, and Southampton with 44 fewer, but in Lancashire the total went up by 79.

The notifications of dysentery dropped from 201 to 135, the lowest weekly total recorded this year. The largest returns were those of Surrey 22, Yorks West Riding 13, Lancashire 12, Glamorganshire 12, London 11, Sussex 11.

In Scotland 115 fewer cases of measles were reported. The notifications of this disease have fallen by two thirds during the past month.

In Eire there was a rise of almost 100% in the notifications of measles owing to the outbreak in Clure, Ennis UD, where 102 cases were reported during the week.

### Diphtheria

There was a small general fall in the incidence of diphtheria in England and Wales during the week. The disease has been at a relatively very low level for the past six weeks, and the 432 notifications are the lowest ever recorded. The incidence is higher in the north than elsewhere, during the week reviewed the two counties of Lancashire and Yorks West Riding had 67 and 70 of the total notifications. It appears that the campaign for immunization has now successfully lowered the incidence of this disease. Although there could still be a great improvement, a comparison of the notifications in the first two quarters of the year is

Weeks	1937	1938	1939	1940	1941	1942	1943	1944	1944 as % of Average of 1937-41
1-13	14 973	20 941	14 888	9 199	14 533	11 658	10 779	9 008	69
14-26	12 472	13 245	10 167	9 022	11 614	8 911	8 555	6 973	62

The fatality rate has also fallen. The deaths per 1,000 notifications in the great towns during the first twenty six weeks of 1944 were only 30, compared with 58, 45, and 42 for the first six months of 1941-3. The diagnostic error has increased during the past years, judged from some London hospitals' experience. This increase may account for a part of the reduced mortality, but it would also mean that the reduction in incidence is greater than indicated above.

### Notification of Measles and Whooping-cough in Scotland

It has been pointed out by a reader that measles and whooping-cough are not notifiable diseases in Scotland. The returns for these diseases issued by the Department of Health for Scotland, and printed each week in our epidemiological table, are based on (a) admissions to hospital, (b) reports of absenteeism from school teachers and attendance officers, (c) information from health visitors, medical officers of the child welfare department, (d) information from sanitary inspectors, and (e) intimations from children's homes etc. The figures are, therefore, an index of the general incidence but cannot be taken as statistically accurate, and are probably, in general, as underestimates.

### Week Ending July 8

The notifications of infectious diseases in England and Wales during the week included scarlet fever 1,390, whooping cough 2,325, diphtheria 425, measles 2,571, acute pneumonia 539, cerebrospinal fever 45, dysentery 132, paratyphoid 8, typhoid 3

## INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended July 1

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year, for (a) England and Wales (London included), (b) London (administrative county), (c) Scotland, (d) Eire, (e) Northern Ireland.

Figures of Births and Deaths and of the total population of each country, are for (a) The 126 great towns (b) London (administrative county) (c) The 13 principal towns in Eire (d) (e)

A dash — denotes no cases, a blank space denotes disease not notifiable or no return available.

Disease	1944					1943 (Corresponding Week)				
	(a)	(b)	(c)	(d)	(e)	(a)	(b)	(c)	(d)	(e)
Cerebrospinal fever Deaths	44	3	25	2	2	49	2	30	3	5
Diphtheria Deaths	432	21	136	54	20	605	36	163	65	21
Dysentery Deaths	135	11	95	1	—	120	20	64	—	—
Encephalitis lethargica, acute Deaths	1	—	—	1	—	5	—	—	—	—
Erysipelas Deaths	—	—	36	8	1	—	—	37	4	1
Infective enteritis or diarrhoea under 2 years Deaths	34	7	6	19	3	31	3	8	44	5
Measles Deaths	2,503	129	167	203	5	4,165	213	234	8	8
Ophthalmia neonatorum Deaths	69	4	20	—	—	109	2	24	1	—
Paratyphoid fever Deaths	2	—	3(B)	2(B)	—	10	3	1	—	—
Pneumonia influenza* Deaths (from influenza)	558	29	5	4	1	530	27	7	—	10
Pneumonia primary Deaths	13	—	1	—	—	7	—	1	—	—
Poliomyelitis, acute Deaths	—	—	183	13	5	—	19	194	12	10
Poliomyelitis, acute Deaths	6	—	7	—	—	5	1	—	5	—
Puerperal fever Deaths	—	1	8	—	—	—	1	20	—	—
Puerperal pyrexia† Deaths	154	8	19	—	—	149	6	16	3	2
Relapsing fever Deaths	—	—	—	—	—	—	—	—	—	—
Scarlet fever Deaths	1,437	66	187	27	4	1,984	171	201	39	54
Smallpox Deaths	—	—	—	—	—	—	—	—	—	—
Typhoid fever Deaths	10	—	4	4	—	8	—	1	6	2
Typhus fever Deaths	—	—	—	—	—	—	—	—	—	—
Whooping-cough Deaths (0-1 year)	2,382	178	110	60	11	2,249	100	133	42	38
Infant mortality rate (per 1,000 live births)	285	43	44	29	22	284	30	60	34	26
Deaths (excluding stillbirths)	4 660	1,105	497	186	124	3 742	508	580	175	120
Annual death rate (per 1,000 persons living)	—	—	11.4	12.1	—	—	—	13.1	11.5	—
Live births	7,248	821	939	418	300	6 863	793	934	478	323
Annual rate per 1,000 persons living	—	—	19.1	—	—	—	—	19.1	31.4	—
Stillbirths	212	22	31	—	—	190	16	32	—	—
Rate per 1,000 total births (including stillborn)	—	—	32	—	—	—	—	34	—	—

\* Includes primary form for England and Wales, London (administrative county), and Northern Ireland.

† Includes puerperal fever for England and Wales and Eire.

‡ Owing to evacuation homes and other movements of population birth and death rates for Northern Ireland are no longer available.

## Medical News

The attention of readers is drawn to the notice in our advertisement columns of vacancies for professors in the Departments of Pathology, Physiology, and Surgery in the Royal Faculty of Medicine, Baghdad, Iraq. Candidates should be available for appointment as from Oct. 1, 1944. The salary payable in Iraqi dinars is equivalent to £1,800 a year, in addition to which there would be a monthly cost-of-living allowance of £24. Candidates should have had at least eight years' teaching experience in a British university or other recognized medical school. Applications should be addressed to the British Council, 3, Hanover Street, London, W.1, and should include full particulars of past experience and appointments held, together with three copies each of three recent testimonials or the names of three referees.

A meeting of the Council of the Medical Superintendents' Society will be held at the Queen's Hotel, Birmingham, on Friday, July 28, at 2.30 p.m., and Saturday, July 29, at 10 a.m.

The Acting Editor of *Public Health*, the official organ of the Society of Medical Officers of Health, regrets that the July issue, and possibly subsequent ones, will be delayed, the printers having received severe damage from enemy action.

A reception was held at the Dorchester Hotel, London, on July 8 to mark the twentieth anniversary of the formation of the Society for Cultural Relations with the U.S.S.R. Since its inception this society has arranged for the interchange of information between the two countries and also for personal contact between many scientists, scholars, and artists. In 1934 it arranged for a number of doctors from Great Britain to attend the Conference of the International League against Rheumatism held in Moscow, and many doctors have toured the Soviet Union under its auspices.

The Ministry of Health's Memorandum V.21 on the subject of tests which it is considered should be applied to V.D. patients before they are regarded as discharged after completion of treatment and observation has now been revised, and copies have been sent to medical officers of Venereal Diseases Treatment Centres. It is thought that the memorandum will also give helpful guidance to medical practitioners who have been appointed by local authorities under the provisions of Circular 2226 to examine and treat patients at their own surgeries, and to those recognized or designated as special practitioners for the purpose of Regulation 33B. Copies are in the hands of medical officers of health for distribution.

The U.S. Office of War Information in a circular dated June 13 mentions a new product from agricultural research laboratories in America. It is a type of cotton bandage fabric that tends to fit and cling better than ordinary gauze and allows greater freedom of movement in bandaged joints. Valuable properties of the new fabric are a high degree of "stretchability" which makes the bandage partly self-fitting so that it conforms to irregular surfaces. It also has enough elasticity to make it flexible and somewhat self-tightening without restricting the circulation of the blood, and a roughened surface which causes layers of bandage to cling together in contrast to the slipperiness of ordinary gauze. The bandage is made by chemically treating ordinary open-weave gauze.

The annual report for 1943 of the Director of Medical Services, Sierra Leone, appears in the abbreviated form which is now usual in the Colonial Medical Service. It shows the difficulties which obtain under war conditions and the endeavours to combat them with a depleted staff, with practically no reliefs. The Director of Medical Services and his officers are to be congratulated on the way they have met the now prolonged emergency. Naturally, large measures have to be postponed until the end of hostilities, and even so urgent a problem as the prevalence of malaria at Freetown and its effects on maritime services must be held up until a satisfactory long-term scheme can be evolved and carried out.

UNRRA's expert commissions on quarantine and on the health problems of displaced persons in Europe have drafted two conventions modifying the International Sanitary Convention, 1942, and the International Sanitary Convention for Aerial Navigation, 1933, and have drawn up minimum international health measures for application to displaced persons. The conventions provide: (1) that UNRRA shall carry out the duties and functions previously performed by the International Office of Public Health, Paris, without prejudice to the future status of that body; (2) that while the system of notification and communication of information referred to in the 1926 and 1933 conventions is to remain in force, Governments signing the new conventions will undertake to transmit such notifications and information to UNRRA together with information on diseases other than those mentioned in the conventions. To deal with this work Dr. Andrew Topping, Director of Health of UNRRA for the European region, has set up an Epidemiological Intelligence Bureau.

## Letters, Notes, and Answers

All communications with regard to editorial business should be addressed to the EDITOR, BRITISH MEDICAL JOURNAL, B.M.A. HOUSE, TAVISTOCK SQUARE, LONDON, W.C.1. TELEPHONE: EUSTON 2111. TELEGRAMS: *Aliiottory Westcent, London*. ORIGINAL ARTICLES AND LETTERS forwarded for publication are understood to be offered to the *British Medical Journal* alone unless the contrary be stated.

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MEMBERS' SUBSCRIPTIONS should be sent to the SECRETARY of the Association, TELEPHONE: EUSTON 2111. TELEGRAMS: *Medisecra Westcent, London*.

B.M.A. SCOTTISH OFFICE: 7, Drumsheugh Gardens, Edinburgh.

### ANY QUESTIONS?

#### *Tuberculous Peritonitis in Adults*

**Q.**—What are the present accepted ways of dealing with tuberculous peritonitis in an adult, and what is the prognosis?

**A.**—No great advance in the treatment of tuberculous peritonitis has been made in the last few years. The patient should be kept in bed under favourable hygienic conditions. A diet with plenty of vitamins A, C, and D should be prescribed and the bowels kept open. Regular exposure to real or artificial sunlight should be given. X-ray exposures have been recommended, but the results are variable. In women the seat of the primary cause of the peritonitis is frequently found in the Fallopian tubes, and surgical removal of the focus is justified in some cases. In cases in which the abdomen has been opened in error for appendicitis it has been noted that improvement often takes place, and on the strength of this the use of therapeutic pneumoperitoneum has been advocated. Some good results have been reported, and in skilled hands the treatment is without danger.

#### *Bronchiectasis in a Child*

**Q.**—A boy aged 12 suffers from bronchiectasis with frequent haemoptysis. The fingers are much clubbed, and there is a history of bronchopneumonia at the age of 3, after measles. There is also a history of pleurisy. No tubercle bacilli have been found in the sputum. X-rays show dense shadows in the region of the middle lobe of the right lung. Lipiodol examination has not yet been made. Is lobectomy a feasible treatment for bronchiectasis at this age? If not, what other line of treatment should be adopted?

**A.**—In a suitable case lobectomy is undoubtedly the best treatment for bronchiectasis in a child, since the mortality from this operation under the age of 14 is negligible and the results are excellent. The operation can be undertaken only if the disease is localized, and this must be ascertained by careful bronchographic examination of both lungs. If the disease is found to be too extensive for operation, the best treatment will consist of postural drainage and breathing exercises. The investigation and treatment of such a patient may require considerable skill, and it is therefore best carried out at a chest hospital.

#### *Stilboestrol for Leukoplakia Vulvae*

**Q.**—Is there any danger of cancer following the administration of stilboestrol 5 mg. once daily in a woman of 68 who complains of pruritus vulvae with small patches of leukoplakia? After two months, menstruation (not only bleeding but mucous discharge, epithelial cells, etc.) began and fullness of the breasts was observed. The effect on the vulval condition was to cure it. On stopping the stilboestrol for three months the condition (soreness and irritation of the vulva) returned, more mildly than before. Is there any objection to her resuming the treatment?

**A.**—The answer to the first part of the question is that there is always a danger of cancer following leukoplakia of the vulva. It is also known that most oestrogenic substances, including stilboestrol, are mildly carcinogenic. Carcinoma due to the known carcinogenic substances occurs in man only after a long period of exposure—e.g., many years in tar epithelioma. Whether the combination of a precancerous condition, such as leukoplakia, with the administration of a carcinogenic substance, such as stilboestrol, might precipitate the onset of carcinoma is difficult to determine, and if a carcinoma arose in such circumstances it would be hard to know if it was actually caused by the administration of stilboestrol. Since in the case mentioned in the question the condition has been temporarily cured by stilboestrol, I can see no objection to giving another short course—say, three months—keeping the patient under careful observation and warning her that the subjective symptoms, such as menstruation, may be expected to recur. I should recommend that



use of smaller doses, at any rate at first; 2 mg. a day is often sufficient to control the symptoms. It is believed that this condition may be partly due to a deficiency of vitamin A, and it has also been found that many of these patients have achlorhydria. Dilute hydrochloric acid with meals and vitamin A in large doses may help. I assume that glycosuria and trichomonas vaginitis have both been excluded.

#### Stubborn Asthma

**Q.**—A woman patient with asthma does not react to either injections of adrenaline or ephedrine by mouth. None of the usual antispasmodic drugs have any effect. Morphine gr. 1/13 gives relief, but her condition after the injection is alarming. She becomes deeply cyanosed and foams at the mouth. If I do not give morphine she gets no relief.

**A.**—This is not an uncommon problem and it is sometimes due to the patient's postponing treatment till the attack is well established. The results with adrenaline may be improved by periods of continuous administration, subcutaneously, at the rate of 1 minim a minute for half an hour or so. Inhalation of a 1% solution of adrenaline is also sometimes effective. If adrenaline fails, aminophylline is the drug of choice; it may be given by mouth (up to 9 to 12 gr. daily, starting with a small dose and carefully working up); or intravenously (an ampoule of 0.24 g. in 10 c.c.m., injected very slowly). An intravenous injection of a mercurial diuretic—e.g., inj. mersalyl B.P. 0.5 to 2 c.c.m.—may also be tried. General measures should not be neglected—kapok pillow, sponge-rubber mattress, removal of carpets, hangings, and other dust-producing agencies. Massage and respiratory exercises may be effective, particularly if they are combined with psychological treatment by suggestion and persuasion that the patient can overcome the spasm.

#### Frigidity after Childbirth

**Q.**—I have twice recently been consulted by young couples troubled by what might perhaps be termed secondary frigidity. The story is identical in either case. Following the birth of the first child after little more than a year of marriage, there has been no resumption of sexual intercourse on account of the distaste felt by the wife. In both cases the wife, previously eager for and satisfied by intercourse, is now strongly averse to coitus or even to preliminary love play, and is worried by this aversion, which has now lasted for 6 and 9 months respectively. In neither case is there any obvious psychological basis. Both couples are very "happily married." Is this a recognized syndrome? Is there any endocrine or other treatment advisable?

**A.**—This is a recognized psychological syndrome, and is not endocrinological. The fact that the patient is worried by the aversion to coitus suggests that the real cause is subconscious, and that the patient's attitude to further coitus in the circumstances described is ambivalent. Each case has its psychological background. Not infrequently psycho-analysis reveals that the patient both desires and resents motherhood, and especially the passing from the phase of the idealized bride to the more prosaic mother figure, with the possible resulting danger of losing the man's love. This may be thought more probable with multiple pregnancies, and is, in fact, sometimes the case. At the same time the woman loves the man very much, and is therefore disturbed by the conflict. Contraception, even if 100% reliable, which it is not, is an inadequate answer. Many cases respond to a few talks given by a doctor with some psychological insight. Others require more extensive psychotherapy.

#### Warts

**Q.**—For more than a year I have, without much success, been treating my little girl aged 10 for a wart on her knee. The skin of the knee is rather horny and the position of the wart such that it is constantly rubbed by the edges of frocks, coats, etc. I would be glad of suggestions as to treatment.

**A.**—Allow the wart to grow and then treat with 3% watery solution of formalin, in the following way: The surrounding skin must be protected by vaseline and the solution brought into contact with the wart on cotton-wool, held in forceps or on a stick, for 15 minutes daily.

#### Peas and Intestinal Flatus

**Q.**—Why does a diet of peas cause intestinal flatus? How can they be cooked or treated so as to be free from this defect? What gas is evolved in the intestine? What treatment is effective for flatus so caused?

**A.**—Peas, like beans and lentils, are relatively rich in protein and carbohydrate, but they are not well digested because the food material is enclosed in cells with cellulose walls which resist digestion. Moreover, the cellulose and the associated bulkiness of peas when cooked stimulate peristalsis, so that the chyme is swept into the large intestine before complete digestion has taken place. These disadvantages can be overcome to some extent by prolonged soaking of dried peas or by the use of pea flour. Usually the flatulence is the result of

fermentation of the undigested carbohydrate of the peas in the large intestine and the release of CO<sub>2</sub>, methane, and small amounts of hydrogen. Fermentation of the protein will also give rise to CO<sub>2</sub>, together with H<sub>2</sub>S and mercaptans, which are evil-smelling compounds. In addition, intestinal gas always contains a fairly high proportion of nitrogen. The only effectual preventive of flatus so caused is to avoid eating peas.

#### Action of Digitalis

**Q.**—In discussing the action of digitalis in congestive heart failure, a modern American textbook (Goodman and Gillman—"The Pharmacological Basis of Therapeutics") places prime importance on the direct action of the drug on the heart muscle. Beneficial results are said to be due to increased force of contraction, which together with more complete emptying and filling of the ventricle leads to increased cardiac output. Primary vagal effects are not considered to be important, and the cardiac slowing which occurs is said to be mainly reflex through the vagus as a result of restoration of compensation. Is this teaching in keeping with modern British views?

**A.**—It is sufficient comment on the views of the book mentioned to point out that, in the whole discussion of the use of digitalis in the treatment of heart disease, the names of Mackenzie and Lewis receive only one passing mention in small type. Nevertheless it is true that modern British views are changing. Mackenzie and Lewis's work led to the conclusion that digitalis was useful only in auricular fibrillation, and then because of its depression of conduction in the bundle of His and of its stimulation of the vagal centre. It is now increasingly realized that digitalis has a beneficial action on heart muscle in congestive failure where there is no disorder of rhythm. Fraenkel's work on strophanthin (*Lancet*, 1935, 2, 1101) emphasized this. He showed the rapid loss of oedema in patients with normal rhythm which followed the administration of strophanthin intravenously.

#### Vaginal Discharge after Hysterectomy

**Q.**—A patient who had a hysterectomy for multiple fibroids about four months ago has had a most persistent and offensive vaginal discharge since; there was no evidence of malignancy. The patient's general condition is good. She is on stilboestrol daily. I have tried various remedies, and should be grateful for any suggestions to relieve this condition.

**A.**—Vaginal discharge after a total hysterectomy is fairly common. If silk has been used to ligature the uterine vessels infection may cause suppuration for a long time. If a large raw area has been left in the pelvis and becomes infected, persistent purulent discharge will result. Sometimes granulations form along the scar in the vaginal vault. These can be cured by cauterization with silver nitrate. If both ovaries were removed it is possible that a trichomonas infection has been lighted up. The case should be investigated along these lines and an accurate diagnosis made. As a general rule it can be said that the prognosis is good and there is no cause for anxiety.

#### Congenital Deaf-mutism

**Q.**—I have a woman patient whose parents suffer from congenital deaf-mutism. She herself is perfectly healthy and has no disturbance of speech or hearing. She is now pregnant. What will be the outlook for her child with regard to deaf-mutism?

**A.**—Congenital deaf-mutism is usually due to a recessive factor. This means that an affected person must carry two abnormal genes; and so it follows that the union of two affected persons would be expected to yield deaf children only (see answer in the *Journal* of April 1, 1944, p. 481, and the amendment on April 8, p. 512). This has not happened in the present instance. Perhaps the deafness in one parent is non-hereditary, or possibly the genes concerned may be different. In view of this uncertainty no calculation of odds can be made. Whatever the true explanation may be, however, the patient can be reassured that the chances are heavily in favour of the child having normal hearing and speech.

## INCOME TAX

### Income from New Zealand

G. M. has investments in New Zealand, income being taxed there at the source.

\* The income is liable to United Kingdom tax in spite of having already been taxed in New Zealand, but substantial relief is given from the full rate of United Kingdom tax. The inspector of taxes will require information and evidence as to precisely what tax has been paid in New Zealand. Liability attaches to income "arising" abroad, and does not depend on whether or not the income is remitted to this country. If, however, payment of tax before receipt of the income is a matter of hardship, it may be possible to arrange for the tax to stand over until the income is remitted.

## LETTERS, NOTES, ETC.

## Training in Electro-encephalography

Dr. F. GOLLA, F.R.C.P., Director of the Burden Neurological Institute (Stoke Lane, Stapleton, Bristol) writes: Owing to the recent development of electro-encephalography many institutions are requiring technicians trained to take charge of the apparatus. It is proposed to give to approved students at the Burden Neurological Institute a three-weeks course which will cover the field of work considered to be necessary by the Electro-encephalographic Society. Students who have made satisfactory progress will be given a certificate of proficiency.

## Sterilization of Syringes

Dr. H. S. GASKELL (Stowmarket, Suffolk) writes in the course of a letter: Forty years ago the syringe was seldom used by the G.P., and I found myself adequately equipped by possessing a 1-c.cm. instrument which I boiled for an occasional hypodermic of morphine. A few years ago, however, I found that I was continually having to add to my collection of varieties and sizes. I became bored with the daily job of boiling two or three syringes, and, besides grudging the time it took, I was convinced that constant boiling did them no good. My subsequent experiments were as follows: (1) Methylated spirit. I kept them in a bowl of this, but found that it quickly evaporated, and was not persuaded that even the modicum of spirit remaining in the syringe harmonized well with either the medication injected or my patient's tissues. (2) Hard tap-water boiled and filtered to remove chalk. Separating pistons from barrels, I boiled them up about twice a week and kept them in the enamelled bowl in which they were boiled. Needles and metal rusted and became discoloured. (3) Hard tap-water with glycerin was better, but itself turned brownish after a few boilings. (4) I have since adopted the solution mentioned in the *Journal* of Nov. 20, 1943 (p. 666)—i.e., borax 1.5 g., formalin 2.5 c.cm., phenol 0.4 c.cm., aq. dest. ad 100 c.cm. Enough of this is poured into a perpendicular-sided white-enamelled photographic dish 10 in. by 8 in. by 2 in. deep to cover the largest syringe used (in my case 20 c.cm.), and this is kept covered with a similar dish. Before using a syringe I squirt out all the solution, and then draw the syringe up and down, with needle, in a bowl of boiled glycerinated water kept standing next to it, also kept covered. So far this has given perfectly satisfactory results, and the syringe markings do not disappear as they do when subjected to boiling and other methods. There is no rusting. I have abandoned the use of a 1-c.cm. syringe as I found that it barely admits 1 c.cm., and in the case of some injections—e.g., coramine—will not contain the whole ampoule, which is 1.2 c.cm. Both of the above liquids have to be periodically filtered to remove blobs of oil floating in them from oily injections. Four or five years ago I pointed out to one manufacturer that no ordinary calibre needle would suck up oil, and suggested that a large non-pointed "needle" should be supplied with each syringe with which to fill it with the oily fluid, this being replaced with one almost down to hypodermic size for injection. A year later I noticed that these came on to the market, and I always use one for oil. At home the 2-c.cm. syringe is probably the one most often used. All syringes should be of the same calibre nozzles. In my bag I carry a 10-c.cm. syringe wrapped up with needle in a piece of boric lint for use on people in their homes. It is easy to train patients to have a covered basin of boiled water ready for you on the days they expect you, in which to wash out the instrument before and after use. Some may say that this is too rough and ready, and does not "sterilize" the syringe, but I have never had a hypodermic, an intravenous, or an intramuscular injection go septic in my life. The above remarks do not apply to intravenous syringes and needles, which I always boil.

## Vaccination against Smallpox

Capt. J. S. DALTON, I.M.S., writes: I hope I may be forgiven for finding the question of vaccination against smallpox still a little confusing, despite your admirable reply to Dr. Weatherhead (April 15, p. 538) on that subject. You write: "Collected data about smallpox in vaccinated persons indicate that the degree of protection is proportionate to the area of scarring." The following points do not seem to bear this out. It is difficult to believe that in primary vaccination the immunity resulting from 1/4 in. incision, with its attendant classical dermal lesion and constitutional symptoms, should be any less than that to be expected from a 1/2 sq. in. method; and, in fact, the dermal response to subsequent vaccinations in the two groups does not differ. It is now well established that in persons who have never contracted smallpox vaccination will always "take," even if in a modified form, despite any number of previously successful insertions. Furthermore, it can be shown quite easily that this phenomenon occurs irrespective of the number of incisions used in the process of inoculation. The immunity conferred by vaccination is clearly never complete, whichever method is used. I do not know of any published work on the blood immunity reactions after

vaccination for smallpox which would tend, by the results of direct experiment, to support the view you have expressed. From a clinical point of view it should be possible during an epidemic to come to a reasoned conclusion by noting the incidence and severity of the disease in groups of patients and contacts classified according to the degree of scarring. The reliability of this method, however, cannot be considered high, since it is difficult adequately to assess the relative importance of other contributory factors such as malnutrition, degree of exposure, and the degree of virulence of the organism in each case. While, therefore, it might be considered safer to use a "4-incision" vaccination method during an epidemic of variola major, I would be most interested to hear details of the scientific evidence in favour of that practice.

## Red Hair and Rheumatism

Dr. J. V. C. BRAITHWAITE (Leicester) writes: In the *Journal* of July 1 (p. 33) your commentator, writing of the belief that red-haired persons are more susceptible to rheumatism than others, suggests that further investigation would be worth while. The following figures may be of interest in this connexion. Of the 9 new patients attending the Leicester Education Committee's Rheumatism Clinic in 1943, 4 had definitely red hair and 5 had a rufous tinge. Of 121 children in the Children's Hospital of the Leicester Royal Infirmary in February and March, 1944, none of whom were rheumatic, 1 had red hair and 19 had a rufous tinge. These figures are too small to be significant, but at least they suggest that a rufous tinge to the hair does not indicate a predisposition to rheumatism. Perhaps if other physicians in charge of rheumatism clinics were to communicate similar figures it would be possible to settle the question of the susceptibility of red-haired persons to this group of diseases.

Dr. F. C. EVE (Hull) writes: On page 33 of your issue of July 1 the question is asked whether—as many believe—the red-haired are specially liable to acute rheumatism. The answer given is that evidence is scanty and contradictory and that investigation is needed. For about 30 years, whenever I saw a red-haired child in our hospital beds (medical or surgical), I have asked for the diagnosis. In a striking majority the reply has been rheumatism or tuberculosis. In my own red-haired cases I have (later) inquired about their other infections, such as tonsillitis, coryza, otorrhoea, sinusitis, etc. I have formed a strong clinical suspicion that red hair is a danger flag announcing that immunity against germ diseases in general is subnormal, even though the general health may be good. Hence I would suggest that investigators—instead of counting the red-heads in a large number of acute rheumatisms, as suggested—should compare the incidence of infections in a large number of red-haired children with controls of similar age groups. If the red-haired have actually a low general immunity the reason for their survival should also be illuminating, when discovered. Have they been more desirable and desirous, and thus enjoyed a compensating fertility? Ought insurance companies to ask if the hair is red?

## Hirsutism in Women

Dr. CLIFFORD ALLEN (London, W.1) writes: Regarding the question in the "Any Questions?" column (July 1, p. 34) regarding hirsutism in women, might I suggest that it would probably be helpful for your correspondent to read the monograph, *The Adrenal Cortex and Intersexuality*, by Broster *et al.*, published in 1939 by Chapman and Hall. In this book I pointed out that it is by no means unusual for women suffering from adrenogenital virilism to complain of reduced sexuality, and this is restored to normal after adrenalectomy.

## Why Tie the Cord?

"M.D." writes from Birmingham: Some years ago I was called by a nurse to see a baby whom I had delivered a few hours before. The nurse was a qualified midwife and had been sister-in-charge of a maternity home where many pupil midwives were trained. She had tied the cord but had delayed washing it for some time. When she came to do so she found the baby blanched and saturated with blood. I sent it into hospital with a view to transfusion, but it died. The father afterwards blamed me, and said he had been told that I ought to have "stitched the navel" and not tied the cord. I must have seen haemorrhage from the cord at some other time, for I had a habit of taking the ends of the ligature round the cord again and making another ligature, thus enclosing a part of the cord between two ligatures. Or perhaps I had noticed how many nurses seem to be incapable of making reef knots.

## An Old Midwives' Tale

Dr. LEO GRUNIS (Peckham, S.E.) writes: Dr. Norman Goormaghtigh (June 10, p. 802) is under a misapprehension. The Talmudists were not quite sure about the non-viability of an eight-months babe. This was a non-Jewish teaching. So taught Hippocrates and Galen. Aristotle was of different opinion. See for more information on this subject: *Biblical Talmudische Medizin*, by Dr. Preuss. Rashi was not a physician, but a commentator of the Bible and Talmud.

# BRITISH MEDICAL JOURNAL

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## LOCALIZATION IN THE CEREBRUM AND CEREBELLUM

BERTRAM LOUIS ABRAHAMS LECTURE\*

BY

E. D. ADRIAN, O.M., M.D., F.R.S., F.R.C.P.

*Professor of Physiology, University of Cambridge*

Bertram Louis Abrahams, in whose memory this lecture was given, was a medical student in the early 'nineties. He was Londoner born and bred, had a brilliant career with a University scholarship in physiology and later a registrarship at the Westminster Hospital, and ended as lecturer in physiology and assistant physician there. He was only 38 when he died.

He had an established reputation as a consultant and a therapist, and he had lived a life full of intense interests and activities—and not only in the field of medicine, for he was a cricketer and Freemason and the organizer of a boys' club. But one of his chief interests was physiology, and so it fitting that his name should be associated with a lecture on a physiological theme.

The way in which we might call him to mind would be to recall and so to re-create in ourselves some of the thoughts and ideals which seem to have guided his work. Since he was a scholar of physiology as well as a clinician, he must often have had to face the perennial question of how physiology should be taught as a basis for medical work. If we dealt with this we might think of ourselves as carrying on, as it were, a discussion in which Abrahams must often have taken part 40 years ago. But I am afraid it would be found that there was little new to add to the discussion in spite of all the good advice which has been given from all sides in the past 40 years. The details of the picture have changed, but in its essentials the problem will remain as long as physiology is taught. Another theme in which Abrahams was keenly interested was that of the general physiological principles which govern the functions of the cell or the organism to injury. But here the picture has changed too much. Nowadays the physiologist has few principles left; for the emphasis has passed from the general to the particular, from the katabolism of protoplasm to the details of carbohydrate cycles. Moreover, in these uncertain times I think most of us will prefer facts to theories, even narrow the field from which they have come: so I have chosen a very limited branch of physiology, of which the most important thing we can say is that it is going ahead.

### The Clinician and Cerebral Localization

The main facts of cerebral localization were established during Abrahams's lifetime and were as much the achievement of clinical medicine as of physiology. Neurology has always encouraged a very close interchange between the clinical and laboratory worker: in this country, for instance, we have clinicians like Hughlings Jackson, physiologists like Schäfer, Sherrington, and men who were both, like Ferrier and Bayliss. There are obvious reasons why both kinds of investigation are needed for the brain. It is the organ in which there is the greatest difference between man and other mammals, so the findings from animal experiments do not necessarily apply to man and must be checked and modified by observation. This lecture was delivered to the Royal College of Physicians on June 8, 1944.

Observations on patients; and men can give us far more information than animals in that we can communicate with them and find out what they feel and think. On the other hand, there are many problems involving the motor area in which results can be obtained with far greater certainty from animals than from human disease or accident.

The result of this was that until recently we knew more about the motor area in the monkey and more about the sensory and visual areas in man, though it had taken the head wounds of the last war to provide all the necessary clinical material. Since that war, however, there have been two important developments. One is the outstanding progress of neurosurgery, which has made it a much less formidable business to expose the human brain and has given us maps of the motor cortex in man to set beside those of the chimpanzee. The other development is in the use of electrical methods to investigate the brain in animals, and this has given maps of the receiving areas to compare with the clinical findings in man. I shall describe some of the information obtained by this method, for it is a relatively new physiological technique which is only at the beginning of its usefulness.

### A New Physiological Technique

The technique has been made possible by the use of better electrical recording instruments and more suitable anaesthetics. The former depend on valve amplification and need not be considered in detail; the anaesthetics are the barbiturates. These have an action on the brain quite unlike that of ether or chloroform, for they reduce the persistent activity of the cortex (shown by persistent electrical waves) without preventing the arrival of the messages from the sense organs. These messages produce their own electrical accompaniment, which can be recognized without difficulty provided that it occurs against a quiet background. Thus the barbiturates allow us to record what comes into the afferent areas of the brain with a precision quite impossible with other anaesthetics which have a less selective action. In fact, their main disadvantage is that we tend to rely too much on them and to forget what they may be doing to the brain by suppressing all but the simplest activities.

What can be done with this kind of technique may be illustrated by the mapping of the visual area of the monkey's brain by Talbot and Marshall (1941). A thin pencil of light is directed to a particular spot on the retina while the striate area of the cortex is explored with electrodes leading to an amplifier and oscillograph. It is found that turning the light on and off produces electrical activity in a very small part of the striate area and that any change in the position of the illuminated spot on the retina is reflected in a corresponding change in the region of electrical activity in the brain. There is, in fact, a precise correspondence between retinal and cortical points which allows us to make a definite map of the retina as it is projected



plying it, the pig's snout is represented on a scale even more accurate than that of the human hand. Thus the snout takes place as one of the special receptive surfaces like the retina and the basilar membrane.

In other hoofed animals there is the same preponderance of afferent signals from the snout region and neglect of those from the limbs; but no one can use this method of examining the brain without realizing the importance of the sense organs in this region in every animal but man. It is implied in Sherrington's conception of the leading segments, and is shown not only in the area devoted to it in the brain but by the size of the motor nerve and the special types of receptor organ supplied by it.

The tactile vibrissa of the snout is a good example of an organ which might really be classed as a distance receptor, for one has only to look at the head of a rat to see how the snout, with the aid of its long vibrissae, comes to be literally in touch with objects more than the width of the head away. In man the sensory mechanism of the fifth nerve has lost this function of exploring space, but there are still the large number of sensory receptors to the face and its acute sensitivity to touch to remind of what is gained and lost by the erect attitude.

### The Role of the Cerebellum

These are only a few of the points which have been established in regard to the cerebrum, but it is time to pass to a different field. Few neurologists of my generation can have forgotten the satisfaction induced by Gordon Holmes's analysis of the symptoms of cerebellar injury. It was almost the only map that that mysterious organ the cerebellum had any intelligible function at all. But until quite recently the clinical findings have remained more illuminating than anything from anatomical or experimental sources, and the cerebellum has kept its position as one of the most puzzling parts of the nervous system.

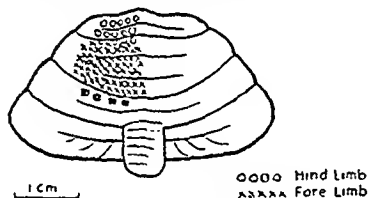


FIG. 4.—Receiving areas for spino-cerebellar impulses in the cerebellum of the monkey.

ous system. The newer methods have now brought distinct signs of improvement; for we have at last begun to get fairly good evidence of localization of function, or at any rate localization of nervous mechanism, in the cerebellar cortex.

A scheme of cerebellar localization was put forward some time ago by Bolk on morphological grounds. It made the anterior lobe responsible for the head, and the ansiform lobes for the arms; but since then anatomical evidence has shown that the afferent supply from the vestibular nucleus goes mainly to the posterior region and that from the spinal cord to the anterior. This in itself indicates some differentiation of function, and, by stimulating the various tracts electrically, Dow, who is largely responsible for the recent interest in the cerebellum, has verified the general distribution of the different sets of afferent fibres.

But a good deal more can be made out when we explore the cerebellar cortex with a fine needle electrode so as to pick up the impulses as they arrive in the white matter. To obtain a clear picture either the spino-cerebellar or the ponto-cerebellar acts must be put out of action, since their distribution overlaps to some extent; but when one or the other is suppressed an arrangement is revealed which is strikingly reminiscent of that in the sensory or motor area of the cerebrum.

The arrangement in the monkey is shown in Fig. 4. The marked regions show where messages arrive in the anterior lobe from the spino-cerebellar tracts when the limbs on the same side of the body are pressed or moved. The map is quite different from that of Bolk: for messages from the hind-limb go furthest forward, those from the fore-limb go to the middle. Messages from the face appear in the lobulus simplex, not always found, and when they are they come

not from neck muscles but from the vibrissae of the face—possibly because the vibrissae have a special function in guiding the head.

The messages to the anterior lobe from the limbs are partly tactile, but most of them come from the deeper endings in muscle and tendon and in the fascia of the hand and foot. The most effective stimulus is always a pressure on the pad

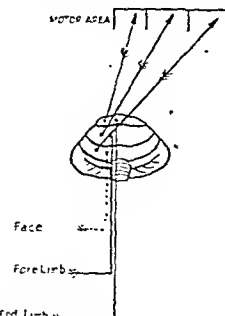


FIG. 5.—Spino-cerebellar and ponto-cerebellar pathways to receiving areas in the anterior lobe and lobulus simplex.

of the foot combined with dorsiflexion of the digits—as though the limb were to take the weight of the body—but all kinds of joint movement and stretching of muscles have been effective. The localization is like that in the cerebrum, with the arrival areas arranged in the order from behind forward for hand, wrist, elbow, shoulder, hip, knee, ankle, and foot.

It is not possible to map out the distribution of the ponto-cerebellar fibres in such fine detail, but by stimulating various points on the motor cortex and picking up the discharges which are relayed to the cerebellum through the pons we can find an arrangement which is substantially the same, the hind-limb area of the motor cortex sending impulses to the most forward part of the cerebellar area, etc.

The ponto-cerebellar areas extend further out laterally than the spino-cerebellar, and there is a large region further back which does not seem to correspond to any one part of the cerebral cortex, but has a diffuse connexion with scattered points in it. For the present the relation of this relatively large ponto-cerebellar receiving area to the cerebrum must remain uncertain, and all that can be said is that there are these localized receiving areas in the anterior lobe for the different segments of the body arranged as in the diagram (Fig. 5). Probably there are other arrival and departure areas as well; indeed, in the rat (Dow and Anderson, 1942) impulses from the limbs arrive in the pyramis further back, and some of the spino-cerebellar fibres end there in the cat and monkey. But although we may be dealing with only one side of the

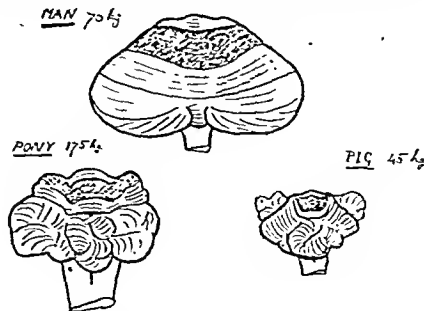


FIG. 6.—Comparison of the culmen (receiving area for the fore-limb) in man, the pig, and the Shetland pony.

picture it is worth illustrating it in another way—namely, by comparing the size of the culmen (i.e., the part of the anterior lobe concerned with fore-limb messages) in three different animals—man, the pony, and the pig (Fig. 6). The comparison is more than usually speculative because the evidence on which it is based is mainly derived from the cat and monkey, but the three animals are chosen because they do not differ



very greatly in size and weight but do differ in the use to which the fore-limb is put. There is evidently a great difference in the extent of the cerebellar area to which impulses concerned with the fore-limb are sent; and the comparison is also useful because it draws attention to the large fraction of the cerebellum which does not seem to be employed in any localized representation of the body and limbs. It shows, in fact, that we are still at the beginning of the story.

### Conclusion

I have tried to give a sketch of a method of research on the central nervous system in which rapid advance is possible and in which it is difficult to foresee how far it may not go. But, as with all long-range research nowadays, the advance has been held up until the younger generation of physiologists can come back from the more urgent problems which they have to solve. Some day military or naval or air physiology should form the subject of a future Abrahams lecture. Compared with these problems of life and death the academic study of the nervous system seems to-day of very little consequence. All I can hope is that an account of its progress may serve as a reminder of the things which were important to us in better times, and as a reminder of a Fellow of the College of Physicians who lived when those times were taken for granted as the natural consequence of civilization.

Figs. 4 and 5 are reproduced by kind permission of the Editor of *Brain*.

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## SOME PROBLEMS IN RIBOFLAVIN AND ALLIED DEFICIENCIES\*

BY

HUGH S. STANNUS, M.D., Ph.D., F.R.C.P.

(Concluded from page 105)

### SIGNS AND SYMPTOMS OF HYPORIBOFLAVINOSIS

The mild constitutional symptoms, including the feeling of being "out of sorts," of loss of "pep," of mental and physical fatigue, might thus be explained, as also perhaps symptoms referred to the heart and gastro-intestinal tract.

All the dermal manifestations support my thesis, I believe. The skin has been regarded as a tissue possessing but a relatively small capillary vascularization, associated with a low metabolism, but this is fallacious. The first statement referred to the number of capillary loops per square millimetre which can be counted by Lombard's method of microscopy and left out of consideration the subpapillary plexus—the plexus which gives to the skin its colour and which itself is made up of giant capillaries. The second statement was based on the tissue-slice respiratory method of estimation, when of course the skin was not exercising any of its normally marked activities. The skin as a whole may be affected, or only those areas whose anatomico-physiological design is specialized in some direction, as I pointed out some years ago.

A mild erythema associated with fine desquamation, referred to by Sydenstricker as pityriasis sicca, may be remarked. It is most easily recognized in the skin of the forehead and face, sometimes on the hands, in the fair-skinned individual. In the pigmented skin of the native the erythema cannot be detected, but the desquamation may be noted.

In other cases the change may be obvious only where the skin is very thin, as in the antecubital fossa, or specialized, as in the case of the scrotum and in the transitional type of skin about the orifices of the body—the palpebral fissures, the nares, the free margin of the prepuce, the vulva and anus—giving rise to the lesions I have described.

Sydenstricker two or three years after his first communication on ariboflavinosis mentioned pruritus of the scrotum and vulva,

\* The Lumleian Lectures (abridged) delivered before the Royal College of Physicians of London, April 18 and 20, 1944.

but made no reference to any visible lesion. On the other hand, an excellent photograph of the scrotal condition was reproduced by Spies and Cooper (1937), but with the subscription "pellagrous dermatitis of the scrotum and thighs." The lesions of the prepuce, vulva, and anus do not appear to have been recognized by American observers. Possibly they have not distinguished them from the urethritis, vaginitis, and proctitis which occur in pellagra.

The seborrhoeic lesions about the nose and in the nasolabial folds are a good example of the disturbance in an area of skin which normally possesses a rather different anatomico-physiological arrangement from the rest of the skin. Whether these lesions are of the same nature as those described by Smith, Smith, and Callaway (1941) under the designation "dyssebacia" is uncertain, as they held that the condition they described was not cured by any one of the known vitamin B<sub>2</sub> complex factors but did respond to autoclaved yeast or liver extract.

The affection of the vermilion portion of the lip—cheilosis—is another example of the incidence of the lesion being associated with anatomical specialization, for here the capillary loops are notably very much closer together than in other parts of the skin.

The best description of the changes in the skin capillaries is contained among observations made by Márquez Blasco and Peraíta (1940) upon patients suffering from nutritional deficiencies during the Spanish Civil War. They found that, using a dermal capillarscope, pathological changes, least marked in simple cases of pellagra, were progressively more accentuated in proportion to the advent and advance of symptoms indicating involvement of the nervous system, including loss of visual and auditory acuity—symptoms which I shall come to shortly.

### Angular Stomatitis

The angular stomatitis calls for some words of comment. The term—not a very happy one—was originally used by myself, and seems unfortunately to have persisted. It is difficult to find a better as, so far as I know, there are no words in any language which distinguish between the opening into and the cavity of, the mouth. Angular stomatitis at least serves to distinguish the lesions so named from "cheilosis," the lesion of the vermilion of the lip, though some American authors—wrongly, I believe—include both under cheilosis.

If the corners of the mouth be examined carefully, with the mouth open but produced into a pout, it will be observed that the vermilion portion of the lips does not encircle the mouth at the angles, but passes internal to the delicate frangum which has become visible—that, in fact, the lips are prolonged on to the inner side of the cheek. This accounts for another common feature in this condition—namely, the presence on the inner side of the cheek of a linear lesion comparable to the angular stomatitis on the skin outside.

That the lesions of riboflavin deficiency become worse if nicotinic acid be given has been noted by several observers without any explanation. I suggest it is due to the pharmacological vasodilator action of nicotinic acid on an already damaged capillary endothelium.

These lesions are, I believe, characteristic, and with experience I think it may be possible to distinguish them from others produced, it has been suggested, by dentures, etc., and from the condition sometimes to be seen in those with turned-down corners to the mouth, patches of herpes, impetigo, lichen, etc. The introduction of the expression "pseudo-ariboflavinosis" by Ellenberg and Pollack (1942) is, I think, much to be deplored.

This leads me to mention the word "perlèche," a term adopted from the French which one would like to see banished from our medical literature. As pointed out a few years ago by myself (1941) in dealing with the history of this affection, it has become a habit—a bad habit, copied by one author from another, in ignorance of its original significance—when referring to angular stomatitis, to give as a synonym this foreign word. It was first used by a French doctor named Lemaître in 1886 as the title of an article—"De la perlèche: du streptococcus plicatilis." He described a condition—which closely resembles angular stomatitis—that he had observed to be common among children in the neighbourhood of Limoges,

where it had long been recognized by the inhabitants under the vulgar term 'perleche'—derived from the verb *lecher*, to lick, as it had been noticed that the sufferers had the habit of "feeling for" the sore place with the tip of the tongue. Lemaistre believed the disease was due to a streptococcal infection and that it was contagious as some 10 to 30% of school-children suffered from the complaint.

Subsequent authors influenced by its supposedly streptococcal origin, used the word *perleche* to denote an impetiginous affection of the corners of the mouth. If, therefore, *perleche* were and be an impetiginous affection the word should not be used for a lesion due to hyporiboflavinosis. On the other hand, it seems to me very possible that the Limoges children were suffering from riboflavin deficiency, in which case the condition, defined as due to a streptococcus, was incorrectly described. In either case to retain the word is only to confuse the issue.

It is of interest in this connexion, however, to note that cultures prepared by Riddle Spies, and Hudson (1940) from lesions at the angles of the mouth in cases of riboflavin deficiency yielded a pure growth of *Staph aureus* in 80% and *Str. haemolyticus* in 20%, and that the organisms disappeared when the lesions healed with riboflavin therapy.

The angular stomatitis occurring in sprue appears to be due to riboflavin deficiency, some uncertainty still exists as to whether the similar condition seen in simple achlorhydric anaemia or idiopathic hypochromic anaemia and in that type presenting the Plummer-Vinson syndrome is due to the same cause. Some observers (Aylrovd Smith and Marun, Rosenbaum and Jolliffe, Machella, Spies etc.) have failed to obtain a satisfactory response to riboflavin therapy. I have met with similar cases but it must not be forgotten that a considerable increase in dosage or administration by parenteral route may be necessary before an effect is obtained.

In regard to the glossitis, Svidenstricker and his colleagues have said "The tongue is clean the papillae flattened and mushroom shaped and hypertrophic, the colour is definitely purplish red or magenta." This tongue is certainly characteristic, but whether of diagnostic value alone seems doubtful. By microscopy the filiform papillae are seen to have lost their keratinized tip, they are mushroomed out, swollen, and slightly oedematous, forming a pavement of semi-transparent hemispheres like minute jellyfish, while in the centre of each may be seen a dilated and distorted capillary loop comparable to those mentioned as occurring elsewhere. Later irregular patchy denudation may occur giving rise to a condition which has been called 'geographical tongue'.

#### Ocular Manifestations

The ocular manifestations of hyporiboflavinosis have received a good deal of attention of recent years. Careful studies of the effects of deficiency states on the eyes of experimental animals began with the work of Wolbach and Howe (1925) upon vitamin A deficiency in the rat and the production of corneal vascularization, a condition resembling interstitial keratitis and cataract.

In 1939 Bessey and Wolbach published their work on vascularization of the cornea in riboflavin-deficient rats. In the same year Svidenstricker and his co-workers, after the original communications by Sebrell and Butler, described the symptomatology of "ariboflavinosis" but no mention was made of ocular signs and symptoms. The following year saw the first reference to eye lesions, and a more elaborate communication appeared on the subject by Svidenstricker and his colleagues. The objective signs described included injection of the bulbar and palpebral conjunctiva and of the fornix, circumcorneal injection engorgement of the limbic plexus, and vascularization of the cornea; further, superficial opacities and deeper interstitial changes, sometimes diffuse, sometimes patchy, were noted also congestion of the sclera and iris, and in some cases frank iritis. The authors concluded that "keratitis" is the principal ocular lesion of ariboflavinosis, the earliest and most common sign is circumcorneal injection.

The full realization of these lesions became possible only when slit-lamp microscopy was introduced for their study, a fact which probably explains their non recognition in the older

syndrome, more especially as the subjects were all coloured peoples with very dark irides.

Apart from the symptoms referable to these conditions—"itching and burning sensations," "roughness of the eyes," and photophobia—the one subjective symptom in all these cases was impaired visual acuity, referred to as dimness of vision or partial blindness associated with mydriasis.

Svidenstricker remarked 'Functional disturbances of vision out of all proportion to visible changes in the cornea were present in a number of patients with oral and lingual as well as ocular lesions of ariboflavinosis' but he offered no explanation. I think American observers have failed to realize the significance of the *subjective* symptoms as distinguished from the *objective* signs. All the congestive signs I look upon as part of the general capillary dysergia, comparable to those in the skin but so situated as to be freely open to examination. On the other hand the visual disturbances I believe to be due to a lesion in the nervous system with no immediate connexion with changes in the eye. That this should be so appears never to have occurred to any of those who have published their findings, that some condition akin to a retrobulbar neuritis would best explain the symptom has never been considered apparently by American observers. I shall refer to this question later.

There are other observations recorded from the United States and elsewhere which are based, I venture to think, on misconceptions in regard to the normal. In the article to which I have already referred mention is made of a striking increase in the number of vessels composing the limbic plexus" and of replacement of the normal narrow avascular zone between the limbic plexus and the sclero-corneal junction by a dense capillary network, etc. Elsewhere the statement is made "For reasons not apparent arcus senilis would seem to offer some obstacle to the extension of the capillaries beyond the sclero-corneal junction."

This is not the place perhaps, to discuss ophthalmological minutiae but inaccuracies have already crept into the literature on the subject, as in H. Jeshers *Advances in Internal Medicine* (1942) and some of our own textbooks, and are in danger of being perpetuated, so that some reference must be made to them.

My own observations—and I speak with considerable experience, having, with my colleague Prof. Brunel Hawes, examined by slit lamp microscopy the eyes of between four and five thousand individuals aged from 3 to 93 years of age, healthy and sick, with and without ocular disease—lead me to believe that there is always a complete limbic plexus and there is no narrow avascular zone between the limbic plexus and the sclero-corneal junction as has been maintained by Kruse. Scleral digitations are outlined by capillary loops. There is never any increase in the number of vessels composing the limbic plexus. Vessels certainly do cross the arcus senilis.

Few authors appear to have recognized that in the limbic plexus they are dealing with a physiologically very active capillary bed, as was so ably demonstrated ten years ago by Basil Graves in his studies on the vascularization of the cornea observations which seem to have escaped the notice of practically everyone who has written on riboflavin deficiency. It is really only a matter of the extent to which vessels are open or closed. I have found that in order to study this problem with advantage it is essential to determine the reactivity of the vessels in this area by the use of capillary dilator and constrictor drugs.

By such means—and so far as I know, no one else interested in riboflavin deficiency has used the method—it is possible to demonstrate a complete limbic plexus for example, in an old man whose limbus on first examination appears to be avascular. On the other hand, one can satisfy oneself that a completely constricted and empty capillary becomes invisible. The method also serves to demonstrate telangiectasis formation, etc.

In regard to the actual vascularization of the cornea my own experience confirms that of some others who have carried out surveys (Youmans et al. 1942, Wilson, 1941, Kodicek and Yudson, 1942, Pett, 1943, Tisdall et al. 1943, Wiehl and Kruse, 1941, Scarborough, 1942, Gregory, 1943, Sandstead, 1942, Macbella and McDonald, 1943, Goldsmith, 1943, Keith Lyle

*et al.*, 1944; Ferguson, 1944; Scott, 1944) in showing that it is not an unequivocal sign of ariboflavinosis; but that such a condition does not occur, as suggested by Vail and Ascher (1942), is incorrect. When these authors assert that—to use their own words—"Sydenstricker's pictures as well as his descriptions suggest that what he termed corneal vascularization is nothing more than extensive engorgement of the pre-existing limbal meshwork except in cases of obvious corneal disease," they display, I think, merely a lack of appreciation of the facts.

Another point I should like to make: my experience goes to show that it is quite impossible, owing to the great variability, to formulate any satisfactory method of notation for describing the degree of vascularity of the limbus and cornea, as has been attempted by some observers, including Keith Lyle and his colleagues (1944). No one seems to have commented on the individuality of the pattern of the intracorneal vascular network, which differs from that in vascularization associated with keratitis of inflammatory origin, etc. It is a point which may prove to have some significance.

Sydenstricker has drawn attention to the appearance of signs of ariboflavinosis in diabetes. The condition called rubrosis iridis—the subject of a communication by myself in 1942—its relationship to glaucoma, and the relationship of both to diabetes may here be mentioned.

As to the cause of the corneal vascularization, Bessey and Wolbach suggested it was of the nature of a compensatory process to bring blood into closer contact with the deeper layers of the corneal epithelium when the cornea is suffering from riboflavin deprivation. This explanation has been generally accepted in America and has found an adherent in Kruse, but to my mind it is no explanation at all and hardly consonant with Nature's methods. It has been assumed that riboflavin exists as such in the cornea and that it reaches the cornea by diffusing from the limbic plexus. Again, it has been held that riboflavin in the cornea is destroyed by light, as it is known that the pure substance is converted into an inactive form by ultra-violet irradiation. I must confess it appears to me strange that Nature should provide the cornea with riboflavin, there to be destroyed by light.

The work of Philpot and Pirie (1943) on the eye of the ox probably points much nearer to the truth of what obtains in man. They found that all the riboflavin present in the ocular tissues is in its coenzymatic form, which is unchanged by sunlight. They give the following values in microgrammes per gramme weight: for the *substantia propria* of the cornea, 0.2; ocular conjunctiva and corneal epithelium, 2.0; retina, 4.0; and, be it noted, lacrimal gland, 6.5; Meibomian gland, expressed secretion, 4.0. These authors pose the very pertinent question, Is it "possible that the riboflavin of the corneal epithelium is obtained from the lacrimal secretions rather than from the blood of the limbal loops"? Personally I feel that such a possibility would best fit the facts.

It appears to have been generally assumed that vascularization of the cornea is part and parcel of the same process as limbic injection. For my part I believe that with the earliest trophic changes in the cornea, due to riboflavin deprivation owing to a deficiency in the lacrimal secretions, proliferation-promoting intercellular hormones—to use the term adopted by Loofbourow (1942) for substances released by intact cells, when submitted to damage, into the surrounding intercellular fluid—are formed which stimulate the loops of the limbic plexus to throw out new vessels.

It would also offer an explanation of the occurrence of corneal vascularization in the vitamin-A-deficient rat which appears to be similar to, if not identical with, that associated with riboflavin deficiency. While Bessey and Wolbach referred to a change in permeability of the corneal epithelium as possibly being an important factor in causing vascularization in vitamin A deficiency, they looked to an interference with corneal respiration, and did not visualize, apparently, the possibility of that same change in permeability denying to the cornea its supply of riboflavin. The supply itself might be deficient, too, as the result of changes in the lacrimal and other glands. It is suggested, therefore, that the corneal vascularization in vitamin A deficiency may be a manifestation of a local riboflavin deprivation.

Corneal vascularization has also been described as associated with the following conditions, but further study will be necessary before their respective relationships are settled: (a) "Some unidentified component of vitamin B complex" (György, Echardt, and Johnson, *The Biological Action of Vitamins*). (b) Lysin and tryptophan deficiency (Trotter Day, 1942; Albanese, Randall and Holt, 1942, 1943). (c) Zinc deficiency (Follis *et al.*, 1942). (d) Sodium deficiency (Fell *et al.*, 1942). (e) Thallium deficiency (Buschke, 1913).

### Neurological Symptoms

To the syndrome under discussion I admitted a group of neurological symptoms, all on the sensory side, chief among which were a sense of muscular weakness, incoordinated ataxia, and paraesthesia—unassociated with any real loss of power, any loss of sensation, or any muscular wasting—together with loss of visual and auditory acuity.

Though in the past these symptoms have been referred to by some authors as due to a peripheral neuritis, possibly influenced by ideas associated with beriberi, they have in no relation to those of that disease; nor have they anything in common with the peripheral neuritis described among alcoholic pellagrins in the United States, where the latter condition seems to have completely overshadowed all of the neurological manifestations.

While I have suggested that these neurological symptoms, as in the case of other parts of the syndrome, are due to hyporiboflavinosis, there is the possibility that some other factor may also be involved.

These neurological symptoms are of the same order whether associated with pellagra or not. They may be recognized in the accounts given by Scott and by Strachan of the neuritis in Jamaica, by Fitzgerald Moore in West Africa, by Land and Pallister in Malaya, etc.; but for a fuller description I am going to the case of an English child, whom I had under my care some ten years ago, suffering from an acute recurrent form of pellagra, exhibiting symptoms which we should now refer severally to nicotinic acid and riboflavin deficiencies. The child—incidentally, the first case of pellagra in this country ever known to have recovered—I was able to watch constantly day by day during a period of observation and during treatment which was with yeast and liver extract. Nicotinic acid and riboflavin were then unknown.

The symptoms were entirely on the sensory side; together they formed a complete picture of the "cerebellar syndrome"—as that term has been used in its wider sense to include muscular weakness ("cerebellar asthenia"), muscular hypotonia, ataxia, asynergia, ataxia, dysmetria, dysidiadochokinesis—together with nystagmus, vertigo, tremor, typical gait, and characteristic "pendulum" knee-jerk. At the same time there was some apparent mental apathy, hyper-emotionalism, as shown by the ease with which the child was moved to laughter or tears; and a facies somewhat reminiscent of Parkinsonism. Visual and auditory acuity were not tested. The most striking point about these symptoms was their changing measure, with rapid oscillations towards improvement or the reverse, suggestive of fluctuations in the exciting cause, a reversible disorder of function. I am going to suggest that the disorder is located in the capillary bed serving certain areas in the central nervous system and that the symptoms are the expression of a metabolic disturbance in nervous tissue produced by the capillary dysregulation resulting from hyporiboflavinosis. All those impulses serving the subconscious synergic regulation of voluntary co-ordinated movements, after relay, reach the cerebellar cortex. To them should be added those coming from Deiters's nucleus, the relay station of the vestibular nerve.

The cerebellar cortex is the receptive centre; co-ordination presumably takes place in the very rich synapse plexus of the molecular and granular layers; while the cerebellifugal fibres arise not in the cortex but from the intracerebellar nuclei, the chief of which is the dentate nucleus. On the other hand, after relay in the posterior horn, the fibres subserving skin sensation, pain, and temperature pass to the ventro-lateral nucleus of the thalamus. The thalamic nuclei are the centres for the conduction of sensory somatic impulses of all kinds before transmission to the cortex, whose activities probably enter into consciousness.

The initial reversible functional disorder, which of course allowed to persist long enough leads to an irreversible lesion, situated I believe, in the synaptic structures of the cerebellum and is caused by a disturbance of its capillary blood supply. For the necessary facts I must turn to observations made on animals.

The metabolic activity of brain tissue is high in the dog. Craige puts the oxygen consumption at 10% of the total for the whole body whereas the brain weighs only 2% of the weight of the animal.

#### Capillarity of Nervous Tissues

The "capillarity"—that is to say, the relative number of capillaries in nervous tissues—varies very considerably in different areas and in different nervous tissue elements. It is greatest in those areas and in those elements in which functional activity is greatest and metabolism highest. Those elements which have the greatest functional activity are the first to suffer the effects of any interference with their normal metabolic needs. As stated by Gasser (1937) the grey matter and the white matter of the central nervous system are differentiated by their metabolic needs. Greater vascularity, greater oxygen consumption and greater susceptibility are characteristic of the centres as opposed to the fibres. This is not due, however, to the cellular content of the centres. The evidence goes to show that it is bound up with the mass of fine protoplasmic strands contributed by dendrites, terminal axon arborizations, and other synaptic structures, which together go to make up what Gasser refers to as the "neurophil"—a word which I think we would spell with a 'y' instead of an 'i,' as it is presumably derived from the Greek  $\phi\upsilon\lambda\eta$  = a clan.

For its proper functioning this system of fine strands of protoplasm demands a continuous expenditure of energy. Lack of oxygen, etc., must soon bring about loss of function. In view of the fact that the surface area of a given volume of cytoplasm increases inversely as the diameter of the strands of which it is made up, it is obvious that the metabolism in the fine strands of neurophil must be much higher than that in the cell bodies and axons.

Dunning and Wolff (1937) estimated (in the cat) the relative surface of the nerve-cell bodies excluding the neurophil, in relation to the length of capillaries per cubic millimetre, in the parietal cortex, the trigeminal ganglion, and the superior cervical ganglion and showed that there was no correlation between the degree of vascularity and the cellular content of the grey matter. He inferred, therefore, that the correlation lay between the degree of vascularity and the neurophil.

The actual degree of capillarity in various parts of the nervous system has also been determined by Craige (1919, 1938). The relative average vascularity of different regions in the central nervous system of the rat is given below in units, adapted from Craige's figures. He showed that the number of capillaries in the grey matter is greater than in the white matter. The least vascular grey matter is still one and a half times richer than the white matter. The vascularity of sensory nuclei is greater than that of the motor nuclei.

(a) Petro lateral column (Burdach)	10
(b) Antero lateral descending tract	12
(c) Antero lateral ascending tract	14
(d) Pyramid tract	20
(e) Postero mesial column (Goll)	24
(f) Substantia gelatinosa Rolandi	34
(g) Vth CN motor nucleus	42
(h) Xth CN nucleus	46
(i) Vth CN motor nucleus	46
(j) Ventral horn	52
(k) Vth spinal nerve nucleus	53
(l) Deiters's nucleus	54
(m) Cerebellar cortex, molecular layer	56
(n) Dorsal horn	58
(o) Inferior olive	59
(p) Superior olive	64
(q) Vth CN sensory nucleus	64
(r) Cerebellar cortex, granular layer	68
(s) Nucleus dentatus	72
(t) VIIIth CN vestibular nucleus	78
(u) VIIIth CN cochlear nucleus	84

The most highly vascularized area in this set of observations was the dorsal cochlear nucleus (84) which is twice that of the

facial motor nucleus (42) and eight times that of the fasciculus cuneatus (10). Nearly equal in vascularity to the cochlear nucleus comes the vestibular nucleus (78), followed by the dentate nucleus (72) and the granular layer of the cerebellar cortex (68). The relative position of the dorsal horn of the cord (58)—which includes Clarke's column—the molecular layer of the cerebellar cortex (56) and Deiters's nucleus (54) should also be remarked.

These figures for capillary vascularity appear to me most significant. They offer I believe, the explanation of the localization of the group of the neurological symptoms that I have described. The cerebellar syndrome is due to a disorder of function of the cerebellar "neurophil" as a result of being a tissue with high capillarity. I have not been able to find figures for the thalamus but a similar disturbance in the thalamus might account for the sensations of "burning pain" without causing loss of skin sensibility. The emotionalism might perhaps similarly be explained, while a widespread but early functional upset in the cortex might produce the Parkinson-like condition and mental dullness. The figure for layer II of the occipital cortex probably approximates to that of the cochlear nucleus, followed in descending proportion by the parietal, temporal, precentral, and insular cortex.

This distribution of functional disorders I shall again refer to when I come to consider such pathological evidence as there is, but here two points may be added.

Oxygen consumption of cats' brain, estimated by the tissue slice method, was found to be about the same in the parietal cortex as in the cervical sympathetic ganglion but seven times that of the trigeminal ganglion—confirming the view that metabolic activity lies in the neurophil rather than in the cells. This correlation is also borne out by the work of E. Gordon Holmes (1930), who showed that the distribution of cytochrome and that of cytochrome oxidase run parallel to each other and to the rate of oxygen consumption.

The sites of the primarily functional lesion causing the loss of visual acuity and that causing loss of auditory acuity are uncertain, but I believe the lesions in the two conditions are of the same nature as elsewhere in the nervous system—i.e. a capillary dysergia. The high figure given for the capillarity of the cochlear nucleus is worthy of note but there is none for the lateral geniculate body. Sydenstricker, who found the fundi normal, seems to suggest that the dimness of vision in his cases was due to the changes in the cornea, loss of auditory acuity he does not mention. It will be remembered, however, that Fitzgerald Moore also found a normal fundus in his early cases but afterwards he ascribed the amblyopia to a retrobulbar neuritis as I had done, and of course later changes in the disk become obvious.

In the Spanish Civil War Grande Covan and Jimenez Garcia (1940) noted, among the syndromes they described, one which consisted of loss of visual and auditory acuity, commonly associated with the affection of the tongue and lips and neurological symptoms including paraesthesiae and ataxia.

Impaired hearing was of course recorded by the older pellagrologists, as also were the ophthalmological conditions (Quaglino, Ferradas, Guaita, Dent, Rampoldi, Ottolenghi). During the present century really very few observations have been published (Whalley, 1909, Tucker, 1911, Ridloo, 1916, Calhoun, 1918, Jaensch, 1930, Krivlov, 1932, Cronin, 1933, Levine, 1934, Carrol, 1936, Fine and Lachman, 1937, Laval, 1939, Mendoza Gonzales, 1941, Alessandri *et al.* 1942).

I think the evidence, so far as it goes, supports the idea that the condition in pellagra is essentially the same as that met with apart from pellagra and included in the hyporiboflavinosis syndrome. I should prefer to call it a (retrobulbar) optic neuropathy.

The lack of systematization of the lesions in the central nervous system has generally been remarked (Kinnier Wilson, 1914, Greenfield and Holmes, 1939, Paul and Depreux, 1939) and remained unexplained up to date. There is a systematization but it is one based on the neurophil.

#### Pathology

The post-mortem findings in riboflavin deficiency in animals are not very conclusive in regard to the nervous system, but

on the whole would seem to lend support to the views expressed above (Street and Cowgill, 1939; Zimmerman, Cowgill, and Fox, 1937; Page, 1937; Wintrobe, Mitchell, and Kolb, 1938; Phillips and Engel, 1939).

There is no certainty concerning the pathological changes in the viscera in man in nicotinic acid and riboflavin deficiencies. It is just worth remembering, however, that degenerative changes occur in the heart muscle in pellagra, that the liver always shows fatty changes, most marked perhaps in infantile pellagra, while in the dog "yellow liver" is characteristic of ariboflavinosis. Scott mentions myocardial changes "with dilatation and congestion of the cardiac capillaries," and an angioma-like condition in the heart.

There is, so far as I know, no account of the post-mortem findings in human riboflavin deficiency. No case of "ariboflavinosis" has come to necropsy in America. None of the cases described by Fitzgerald Moore and by Landon and Pallister found its way to the pathologist. I have therefore turned to the detailed pathological records by Scott upon two cases of the Jamaican disease which he called "central neuritis" but which I have ventured to suggest, in the light of present-day knowledge, may have been acute hyporiboflavinosis. I wondered whether one would find a pathological picture in the central nervous system with irreversible tissue changes, such as might be expected to follow the early reversible functional disorder that I have supposed to occur. It is not possible to deal with these here in detail, but I believe Scott's findings support my thesis.

Scott noted the many points of resemblance between his own findings and those of Singer and Pollock (1913) in pellagra, who in turn had stated that the histopathological picture in pellagra was identical with that described by Adolf Meyer (1901) as "central neuritis." This condition, later referred to by Pearson (1920), I have little hesitation in suggesting is the later stage of the functional disorder I have described. It starts, I believe, in the neurophyl as the result of the capillary dysergia, and spreads to the cell, to be followed by changes in the axone.

The changes found in the pseudo-encephalitis of Wernicke associated with vitamin B<sub>1</sub> deficiency, consisting of capillary dilatation in certain areas of the nervous system—viz., the paraventricular grey matter of the third ventricle, the mammillary bodies, the peri-aqueductal region, the corpora quadrigemina, and the floor of the fourth ventricle—make an interesting comparison.

If, as I have suggested, riboflavin deficiency interferes with the normal functioning of the capillary, with the production of a tissue anoxia, it would seem of interest to compare the nervous symptoms so produced with those referable to the nervous system in chronic carbon monoxide poisoning.

C. K. Drinker in his monograph upon the subject states that headache occurs in 74%, dizziness in 50%, burning of the eyes in 32%, gastro-intestinal disturbances in 24%, drowsiness in 28%, cardiac disturbances in 18%, insomnia in 20%, faintness in 12%, neurological and mental symptoms in 17%. Among the last-named are giddiness, nervousness, emotionalism, tremors, muscular weakness, increased reflexes, neuromuscular pain, sensations of numbness and chilliness, paraesthesiae, ataxia, muscular incoordination, disorders of vision and hearing, neurotic and psychotic manifestations.

The general resemblance of these symptoms to those I have described in the syndrome here dealt with is, I think, worthy of note, especially when it is remembered that carbon monoxide and cyanide are believed to operate by inactivating cytochrome oxidase and thereby inhibiting oxygen consumption by preventing electron transfer—cyanide by uniting with the iron when in the "ferric" form, carbon monoxide when in the ferrous form. Of cyanide I shall not speak, but I might mention here that Quastel (1943) has recently analysed the evidence concerning the inhibition of oxygen uptake by narcotics, and concludes that flavoprotein is the sensitive factor.

#### Summary

An attempt has been made to disengage from the clinical affection we call pellagra a group of symptoms which may also be met with

as a more or less complete syndrome apart from those symptoms generally recognized as due to a nicotinic acid deficiency.

This syndrome includes a good deal more than that to which American authors have given the name "ariboflavinosis." At differences are; however, I think, a question of the comparative intensity and duration of the underlying pathogenic process.

I have considered the whole syndrome, for the sake of convenience, as due to riboflavin deficiency—a hypo-riboflavinosis should prefer to call it rather than an a-riboflavinosis—but some uncertainty must still exist as to whether any other factor in the complex plays a part.

All the symptoms of the syndrome respond to treatment with yeast. It is suggested, in the absence of any knowledge on the subject, that we are warranted in making the assumption that the cells forming the capillary endothelium require all those elements needed by other cells in the body for their normal metabolism—sugar, oxygen, etc., including riboflavin.

It is further suggested that the first tissue to suffer the effects of riboflavin deficiency is the endothelium of the capillary system; the initial result is a reversible functional disturbance of the capillaries—a "capillary dysergia"—which at the present time cannot be more accurately defined, but which is manifested by dilatation of these vessels and impaired flow; that in turn there is an interference with the normal cellular metabolism and in consequence a derangement of tissue function by disturbance in the *milieu intérieur*; and that the derangement of tissue function is relatively greatest in those tissues which possess the highest degree of capillarity and whose metabolism is greatest.

So long as the intensity of the functional disorder be not too great and so long as it do not persist too much, complete recovery may take place, otherwise irreversible processes occur which lead to pathological changes.

The hypothesis put forward would appear to offer an explanation of the incidence of symptoms and distribution of signs in riboflavin deficiency.

The interference with tissue-cell metabolism is probably of the nature of an anoxia in its wide sense.

It is suggested that disorders of capillary function—"dysergia"—quite apart from affections of the rest of the vascular system, may play a much more important part than has commonly been supposed in the pathogenesis of many conditions, including pellagra due to nicotinic acid deficiency.

At the risk of appearing mono-ideistic, I cannot help feeling there is perhaps a wide field awaiting investigation along such lines—a field embracing such widely separated conditions as fibrositis, rheumatism, some psychoses, and neuropathies.

## POST-OPERATIONAL STRAIN IN THE NAVY

BY

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The concept of an operational strain syndrome is open to criticism on a variety of grounds. There is, for example, little evidence that psychiatric breakdowns associated with operational stress differ symptomatically from those that are not. Moreover, not all reactions supposedly associated with operational stress are due to it, and in wartime there is a very real danger of over-emphasizing the dramatic, such as exposure to enemy action, when less dramatic events, such as the regimentation and frustration of Service life, separation from home, and domestic difficulties, may really possess more significance. Again, the conception of an operational strain syndrome runs the grave risk of creating an honourable as opposed to a dishonourable or at least less honourable category.

There is, however, yet another objection, to which curiously little attention seems to have been paid—namely, that the concept is descriptively misleading in that most men break down after, rather than during, a period of stress; and it is with the phenomenon of post-operational strain that this paper is mainly concerned.



### Discrepancy in Sickness Rate Afloat and Ashore

There are a number of observations which are not agreeable to the view that psychiatric casualties attributable to operational stress occur during operational stress. Thus, starting with the psychiatric problems as seen afloat, naval medical officers serving in ships have not hesitated to point out to naval psychiatrists serving ashore that, although at sea evidence of fear may exist in plenty, psychiatric cases do not. On the other hand, naval medical officers serving in naval establishments ashore, such as drafting depots, are keenly aware of the size and importance of the psychiatric problem in naval medicine, and this opinion is fortified by service in a naval hospital. That there is in fact a striking difference in the incidence of psychiatric disorders ashore and afloat is amply confirmed by calculations kindly made by Surg. Cmdr. J. A. Fraser, Roberts, R.N.V.R., Consultant in Medical Statistics to the Navy, although for Service reasons it is not possible to publish the relevant figures at the present time. They can be up to ten times as numerous.

This discrepancy cannot be accounted for by the accumulation and concentration of the neurotic in naval depots ashore (e.g., in one naval depot 90% of psychiatric out-patients are passed fit for service at sea). Nor is the answer to be found in the ingeniously cynical view that men reporting sick ashore with psychiatric symptoms necessarily do so with any conscious or unconscious intention to evade their draft or their duty. Again, to see many of these men should convince anybody that they are not faking their symptoms.

### Development of Post-operational Strain

It is submitted that *reduction of "tempo"* on coming ashore from sea is a potent factor not sufficiently recognized as a cause of symptom development. Men seem to develop a need for the stimulation to which they are accustomed, even if it is unpleasant. Alteration or reduction in the accustomed stimulation is a frequent cause of men reporting sick. It seems reasonable to regard the process as analogous, in slow motion, to the normal experience of feeling worse after danger than during it: the reaction after any excitement is often more disturbing than the excitement itself, especially if opportunities for a satisfactory outlet or distraction are lacking.

The state of physiological anxiety or tension is a condition of heightened responsiveness and preparedness, associated with well-known somatic accompaniments. At sea this increased responsiveness and readiness is not merely acquired passively by "conditioning," but is actively taught and fostered, both individually and collectively; for the safety of the group may depend on the degree of its development. Far from being pathological, it acquires the quality of a virtue which all should share, and is both necessary and completely appropriate. Some permanent degree of tension is thus established and maintained at sea as a biological necessity in order to cope with the emergencies that may at any moment arise; but after an initial relatively short-lived period of adaptation it obtrudes into consciousness only as the result of a special increase or decrement. A partial analogy may be drawn to the initial awareness of the noise of the dynamos on going on board, which then fail to be noticed until their cessation may once more call attention to their previous presence.

When a man goes ashore the increased tension that he has acquired at sea does not disappear immediately; the time required for it to do so varies considerably and is seldom less than a few weeks, although in some it may continue for months and even occasionally for years. During this individually variable period the increase of tension, which at sea was appropriate and necessary, is now incongruous. If a man starts violently at a sudden or loud noise he becomes aware of this incongruity, for sudden noises possess a much less ominous significance than they did. Further, he is aware of the discrepancy between his behaviour and that of his mess-mates, and he may become the object of their gibes. From the subjective standpoint, the increased tension that he has acquired is unpleasant and uncomfortable because it is inappropriate to the reduced tempo of his life; and objectively he shows the clinical signs of an anxiety state. The extent to which he will interpret his condition as evidence

of an illness will depend upon his intelligence and personality and many other factors, and strong reinforcements may exist or develop to regard it as an illness, owing to unrecognized motives of an unworthy kind.

To recapitulate. Men at sea develop a condition of tension, resulting in increased responsiveness and readiness that are physiological and appropriate; but on coming ashore this tension state may become pathological, because it is inappropriate or unnecessarily intense having regard to the altered and reduced tempo of the life. The greater the lag that is shown in adjusting to the tempo that is suitable to the new environment, the more does the state that was previously within normal limits and physiological stand out as being abnormal and pathological. The basic reaction should be regarded as a psycho-biological occurrence, with a good deal of emphasis on the biological component, although more purely psychological determinants (of an impure or even unworthy kind, perhaps) may, and often do, come in secondarily.

Confirmation is readily forthcoming that the sequence of events described above is the correct one for many cases. Thus, when seeking for evidence of an objective kind about a patient's previous condition, it is not uncommon to hear surprise expressed by a shipmate that he should have fallen sick. There may be excellent testimony that the man was apparently normal and aroused no suspicion of disability on board, and equally good testimony of inefficiency and altered behaviour ashore. Again, men with first-class personalities not infrequently develop the symptoms of a severe anxiety state after admission to hospital for treatment for some incidental physical ailment. A careful history will also often disclose that the onset of anxiety symptoms coincided with in-from-sea leave. In this connexion it is noteworthy that the story of onset dating from a previous experience of enemy action is frequently quite inconsistent with the facts and is a retrospective falsification.

It may also be observed that certain men of a good type with persistent anxiety symptoms will ask to return to sea despite clinical signs that might appear prohibitive, and this endeavour to make the environment fit the state and to banish the sense of incongruity is often successful. The uneasiness of some combatant officers away from the front line and the desire of certain fighter pilots to spend their leave either spotting in the Channel or at sea in a destroyer appear to be of somewhat similar origin, and it detracts nothing from the courage of these gallant men to interpret their behaviour as being the expression of a biological need to sustain tension. The difficulties and breakdowns that occur in civilian life on retirement are perhaps examples of the same principle. Finally, the modicum of success which followed "conditioning" by providing psychiatric patients with some of the experiences of war (e.g., artificially produced sounds of dive bombers) may have been due to the manufacture of an artificial environment that was appropriate to the tension which these men experienced. It was soon recognized, however, that a return to duty was equally effective and more economical of manpower.

It seems plausible to postulate that reactive depression is often reactive to reactive anxiety. Reactive depressions pre-eminently occur in men of good personality after long periods of stress, and the affect is appropriate to a sense of having failed to run the course and of having succumbed to an illness bearing a stigma of shame. A belief of having been found wanting in "will power," a sense of impaired efficiency, lack of confidence, and a fear not so much of further enemy action as of experiencing again the tension that it produced, all contribute to the production of these states. The implicit teaching that underlies morale is such that few men fail to experience some sense of insult and guilt when pathological anxiety is experienced, and this may be why a measure of depression is so often mingled with anxiety states. This sense of guilt is less common in civilian life, and depressive accompaniments of anxiety states are also less frequent.

### Prediction and Selection

The fact that those who finally succumb to stress form only a small minority would seem to constitute a weighty argu-

In very young infants, however, owing to certain physiological peculiarities in their skin, positive Schick reactions in susceptible individuals are much less readily evoked, and estimates of immunity obtained by the use of this test during the first few months of life are thus often fallacious. Consequently, the Schick reaction of the recently confined mother, which for practical purposes may be accepted as reflecting the antitoxin titres of both her own and her infant's blood, thus acquires a particular significance in the epidemiology of diphtheria in early infancy.

The following study was made during 1942 and 1943 in a maternity department of a hospital on the south-eastern outskirts of London. A large proportion of the 250 recently confined women examined came from districts in which housing conditions are good. Many of them, however, had spent the earlier part of their life as school-children in one of the Metropolitan boroughs of London, and, since it seemed possible that this might have had some effect upon their immunity as a group, the findings for these women have been recorded separately. The average age of the 250 women was 28.5 years. The Schick tests were carried out according to the usual technique 0 to 5 days after delivery. The sites of inoculation were examined daily for 7 days. The results of the tests are shown in Table I.

TABLE I.—Schick Reactions (Totals and Percentages)

Groups of Women Examined	—ve	0—ve	—ve	0—ve	Totals
London-bred	52 (45.7)	10 (8.5)	43 (36.4)	11 (9.4)	115
Others	75 (56.5)	5 (3.8)	45 (34.1)	7 (5.3)	132
Totals	129 (51.6)	15 (6.0)	88 (35.2)	18 (7.2)	250

#### Schick Reactions in Non-parturient Women

Since it seemed possible, from these rather high rates for positive reactions among recently confined women, that such persons might be more sensitive to diphtheria toxin in the puerperium than at other times, a further series of tests were made upon a group of 62 women who had been admitted to the same hospital for medical or surgical treatment. Their social surroundings were the same, and their average age—31.1 years—was nearly the same. Of this group 58% proved to be either positive or pseudo-positive reactors, so that there seems to be no reason to believe that the puerperal state gives rise to any heightened susceptibility to this toxin. The London-bred women in this group also showed a rather lower proportion of positive and pseudo-positive reactors (52.6%) than the remainder.

#### Positive Reactors in Recently Confined Women in Various Age Groups

In the group of 250 recently confined women there were statistically significant differences between the proportions of positive reactors in the following three subgroups: those 24 years and under; those between 25 and 34 years; and those 35 years and over. The numbers falling into these subgroups, the numbers showing positive or pseudo-positive reactions, and their respective percentages are set out in Table II.

TABLE II

Age Group	No Tested	No Positive	% Positive
14 years and under	88	60	68
15 to 24 years	116	67	58
25 years and over	46	17	37

Eighteen of these 250 recently confined women and 22 of a whole group of 312 stated that they had suffered from clinical diphtheria: 14 of them were among the 137 London-bred women—a proportion which might be expected from the ratio of notified cases to child population in the Metropolitan boroughs between 10 and 20 years ago (see Wright and Wright, 1942). Of these 22 women 12 reacted negatively to the Schick test, 7 positively, and 3 pseudo-positively. Only 4 of the 312 women had been immunized prophylactically against diphtheria; 4 of them had a negative and one had a pseudo-positive reaction.

#### Changes in Schick Reactions at Short Intervals after Injection of Toxoid

It appeared unlikely that so large a proportion of women living in a semi-urban environment could have escaped immunization through casual contact with diphtheria cases or carriers at some period of their lives. It seemed much more probable that most of them had undergone some degree of immunization in the past, but that the exposure was too slight or at too remote a date to maintain their circulating antitoxin titre at or above the critical level for the Schick test. To examine this possibility some of the positive reactors were injected intramuscularly with 1 ccm of T.A.F. on the third or fourth day after their Schick test. A second Schick test, in which toxin alone was used, was carried out four or six days after this immunization. The diameters of the hyperaemic areas present at the peak of the responses were measured, and in most instances the relative intensities of the first and second reactions were noted roughly for comparison. With the help of this combination—the comparatively large "recall dose" of toxoid and the two Schick tests—it was hoped to distinguish those women in the two subgroups: (a) "fully susceptible" and "sub-immune," from (b) "positive immune" and "potentially immune" (see Glenny, 1925).

Of the two subgroups of 20 women each whose tests were repeated 4 and 6 days after receiving the "recall dose" of toxoid, 10 and 9 respectively showed second reactions two-thirds or less the size of those originally found. In the 6-day group, possibly owing to the rather longer interval, the intensity of the hyperaemia in the second test was in almost all instances notably less than in the first. Such changes in the size and intensity of the reaction almost certainly indicate that the second injection of toxin had been more fully neutralized than the first, and consequently that an appreciable amount of antitoxin had been formed actively by such women—a response to this antigenic stimulus that would be unlikely to take place so promptly except in the tissues of an already partially immunized person.

From these observations it seems likely that at least half, and perhaps more, of the positive reactors among the recently confined women fell into the categories termed by Glenny the "positive immune" and the "potentially immune." At some time in the past they would probably have reacted negatively to this test, but, possibly owing to long residence in less densely populated districts, they have relapsed into the positive state.

#### Schick Reactions in the Infants

Schick tests were also carried out at some time during the first 5 days of life upon the infants of 145 of this group of women. The injections were made either in the scapular region or on the outer aspect of the forearm near the elbow. All the test sites were examined daily for 7 days, except in a few

TABLE III

	Infants All Under	Mother —ve Infant —ve	Mother —ve Infant —ve	Mother —ve Infant —ve	Mother —ve Infant —ve
Ruh and McClelland (1923)	7 days	20	75	4	1
Kauter and Ratner (1923)	14 ..	4	39	7	0
Cooke and Sharma (1932)	10 ..	59	204	34	1
Greengard (1932)	14 ..	22	45	33	0
		Agreement		Disagreement	
Totals		268		60	
Percentages		85.4		14.6	
Present series	5 days	66	56	21	2
Totals		122		21	
Percentages		84.1		15.9	

instances in which the mother or infant had left the hospital on the fifth or sixth day. In the infants no reaction was regarded as positive unless it was seen to be present on at least two such examinations. The findings in the present series, together with those of certain earlier workers, are shown in Table III.

In 122 of the 145 mothers and infants tested their reactions agreed. In the remaining 23 there was disagreement—the mother being negative and the infant positive in 2 instances, and the reverse in 21 instances. The circumstances under which these disagreements occurred were as follows:

**Mother Negative and Infant Positive (2 instances).**—In the first of these the mother was pseudo-negative and the infant reacted only faintly on the second and third days. In the other the woman was definitely negative and the infant definitely positive. It may be observed that instances are recorded in which a relatively high antitoxin titre in the maternal blood is accompanied by a much lower, or even untitratable low, level in the cord blood. Von Gröer and Kassowitz (1915) found three such instances in their series.

**Mother Positive and Infant Negative (21 instances).**—In 6 of these instances the mothers were definitely positive. Three of their infants showed a positive reaction on one day only, and were accordingly classified as negative; in one other instance the mother had had diphtheria 24 years before. In 5 other instances the mother was classified as a faint reactor, and in none did the infant show any sign of a positive reaction for even so short a period as 24 hours. In the remaining 10 instances the mothers, three of whom had had diphtheria in childhood, showed pseudo-positive reactions. One infant in this group showed a positive reaction on one day only.

The most common form of disagreement was thus a failure of the infant to react positively when the mother was positive, and especially when she was either a faint or a pseudo-positive reactor. This state of anergy was present in about one-quarter of the infants in whom a positive reaction might have been expected from the result of the test upon the mother. The proportion is rather smaller than that found in the earlier studies, and is probably due to the frequent examination of the test sites in the present series. Moreover, the lighting conditions for examining the present group of infants were unusually favourable.

#### Discussion

The belief is still widely held that the great majority of young infants possess a high degree of congenitally acquired passive immunity to diphtheria for some months after birth. Two circumstances in particular have contributed to this belief. First, many of the observations upon specific immunity in newly born infants were made in Vienna and other European cities, in whose populations diphtheria was particularly prevalent, and the results of these early surveys have been applied rather freely to other places and times without allowing adequately for local differences in the endemicity of the disease. Secondly, insufficient attention has been paid to the phenomenon of skin anergy which is shown by young infants to diphtheria toxin and other noxious agents capable of producing delayed erythematous reactions, so that, for this age group, many negative Schick reactions have been interpreted erroneously in consequence. Together, these misconceptions have led to an exaggerated estimate of the prevalence of congenital immunity during the first few months of life, and the reliance which has been placed upon this supposed insusceptibility is unfounded in a large proportion of instances.

The present observations indicate that considerably less than half of the infants born to women living in a typical outer London suburb have any adequate congenitally acquired immunity to diphtheria. So infrequently do the mothers come into contact with toxigenic *C. diphtheriae* that their circulating antitoxin concentrations fall to levels considerably below the critical titre for the Schick test. While a large proportion of the positive reactors among these recently confined women are themselves immune in consequence of the promptitude with which their antitoxin-forming tissues respond to the secondary stimulus of the specific toxin, their low antitoxin titre during pregnancy confers little or no immunity upon their infants.

At the present time the trend of mortality of infants under 1 year from diphtheria in England and Wales is a declining one, and so long as this fall continues no additional prophylactic precautions seem to be required. In the event of an epidemic rise, however, either in some particular locality or in the country as a whole, two possible measures might be instituted. First, infants might be immunized considerably younger than is now the custom: this procedure has the disadvantage that very young infants seem to respond less well to prophylactic immunization than older infants or young children. Secondly, as Dudley (1934) suggested, it might be desirable to immunize all Schick-positive pregnant women during the latter part of the

gestation period. Such a procedure would at the same time immunize any woman who was susceptible and raise the maternal antitoxin titre to a high level about the time of the birth of the infant.

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## RADIOTHERAPY OF ECTOPIC CALCIFICATION

BY

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For some years radiotherapists have been treating with success deposits of calcium in the tissues, but unfortunately few outside the specialty seem to know of them. In two recent books on bone and joint conditions (McMurray, 1937; Watson-Jones, 1943) no mention is made of radiotherapy at all in this connexion, and few writers on general surgery have commented on this mode of approach, although in America the use of x rays in treatment is much more widely appreciated, and standard works, such as that by Comroe (1941), give full credit to radiotherapy. Ectopic calcium deposits may appear almost anywhere in the body, but of most interest here are those occurring in muscles, tendons, and bursae, as such deposits are in many cases painful and thus attract attention and demand treatment. The shoulder region is often affected, as in the calcified subacromial bursa or supraspinatus insertion, and the olecranon and Achilles bursae are also quite often involved in this process.

No convincing explanation of this deposition has as yet been given, and the formation of actual bone is even more obscure. Many theories have been put forward on the subject; these are summarized by McCurich and Millington (1943). It is only with calcification, and not with true ossification, that we are now concerned, as x-ray treatment has no effect on formed bone, but only on calcium deposits. Calcium is frequently deposited in dead or devitalized tissue, possibly because of the change in pH in such regions, and the lesion with which we are dealing are mostly traumatic in origin, with pain dating from some injury or strain and becoming more persistent with time and the usual methods of treatment. X-ray examination eventually shows the presence of shadow due to the deposition of calcium of an amorphous and flocculent nature. It seems questionable whether it is the calcium that causes the pain, but in most cases if the calcium can be removed the pain also goes to a large extent, and perseverance with physiotherapy will then complete the cure.

Many surgeons recommend and practise surgical removal of the calcium. It was sometimes found at operation, however, that what appeared radiographically to be a large mass of chalk could not be distinguished from surrounding tissues when exposed, and at other times only a small amount of chalky fluid was seen; so there is no guarantee of cure from operation. X-ray treatment offers a method which is devoid of trauma and risk, and in any case does not preclude any more drastic methods later should it fail. The mode of action of the rays is not known, any more than it is with other applications; it may be due to alteration of blood supply, or quite possibly to some change in the pH of the irradiated part. The dosage is small and not harmful, there are no known ill effects, and the patient is not laid up or incapacitated in any way; it must be realized that the effects of x rays are not usually manifest for some time after the treatment has been given, so as a rule it is some four to six weeks before there is any change in the radiographic appearances even if the pain has been relieved earlier.

## Technique

The technique of treatment is not standardized, and good results are obtained by widely varying methods, but one technique which has proved satisfactory in the hands of quite a number of therapists employs repeated small doses of highly filtered x rays—namely, 200 r at 200 kV with 0.5 mm Cu and 1 mm Al filter, given once a week for four doses. Re-examination of the part after four weeks will often show absorption of most of the calcium, if not, the course may be repeated. Only a small area is treated, and there should not be any skin reaction or adverse systemic effect.

Three typical cases are reported below—one occurred in the subacromial bursa, one in the tendo Achillis bursa and one in the soft tissues of the hand. All were of long standing and with treatment all cleared up completely, both radiologically and clinically, although the cause was quite different in each case.

## Illustrative Cases

**Case 1**—An area of calcification was found under the deltoid on x ray examination of this patient, who had had pain and stiffness in the shoulder for five years after falling from a horse. The pain had become continuous and had been accentuated by a course of radiant heat administered by the patient to himself. A single course of treatment was given as above with relief of pain two days after the first dose and no return to date (nine months). Radiographs taken four weeks after treatment showed no definite opacity, only some scattered mottling was seen.

**Case 2**—A burst of the tendo Achillis region followed injury to the heel 12 months ago in this patient suspected of gonococcal infection. Radiographs showed a definite patch of calcification, and a small sinus formed which discharged a creamy fluid at intervals. After one course of treatment the pain was much easier, but the discharge continued and radiographs at this stage revealed considerable diminution in size of the patch of calcium but not complete regression. A second course was therefore given after which the discharge stopped, pain vanished, and radiographic examination showed complete disappearance of the deposit.

**Case 3**—Localized deposits of calcium were found in the hand of this patient who is suffering from a very low grade type of Hodekin's disease. The deposits were palpable and very painful, with some oedema of the surrounding tissues. An attempt was made at surgical removal, but this was unsuccessful as no discrete deposit was found on exposure of the region involved. After one course the pain had gone and radiographs showed almost complete disappearance of the calcium, so no more treatment was given. The patient is well to date, after one year but has grown other deposits elsewhere which have not yet been treated.

## Comment

In these three examples ossification had not occurred, and it must be emphasized that radiotherapy is efficacious only when unorganized calcium is present, but nevertheless in early ossifying lesions x ray treatment will often prevent the formation of bone from the preliminary calcium deposits. In the elbow region a deposition of calcium occurs before ossification in the antecubital muscles and in the early stages will disappear if treated with radiation, some American surgeons even recommend the prophylactic irradiation of elbow injuries to prevent subsequent myositis ossificans. Haematomata may be treated in the same way with small doses of x rays and ossification be prevented in most cases. Unfortunately organized deposits of calcium in the form of biliary and urinary calculi show no response to doses of x rays.

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A post-war programme of measures to reduce road accidents has been published by the Pedestrians' Association (180, Fleet Street, EC4). The proposals include better speed control, stricter enforcement of the law, a higher standard of efficiency among drivers, and a safer motor car. The Association takes the view that the 30 m.p.h. in built up areas is too high a limit for safety and that the limit should be 25 m.p.h. with higher speed limits on main roads outside the built up areas. Proposals for a safety car include placing the engine at the rear, giving the driver a better view of the road, greater manoeuvrability, a shock absorbent frame, and flexible upright fenders in front of the leading wheels with a net catcher between them.

## Medical Memoranda

## General Hypersensitivity to Sulphanilamide after Surface Application

Although the occasional development of general hypersensitivity to sulphathiazole after the application of that drug to skin lesions has been described (*J Amer med Ass* 1943, 121, 406), no mention is made in the Medical Research Council's War Memorandum No 10 (The Medical Use of Sulphonamides) of a similar occurrence with sulphanilamide. The following case may therefore be of interest.

A telegraphist aged 21 complained on March 8, 1944 of a sore throat of 24 hours' duration. His temperature was 101.6°, pulse 100, and respirations 20. The tonsillar lymph glands were palpable and tender, both tonsils were slightly swollen, and the fauces and oropharynx were injected. He was given 2 g of sulphanilamide at 8 p.m., to be followed by 1 g 4 hourly. Next morning his temperature had fallen to 97.4° and his throat felt much better. At 8 p.m., however, 24 hours after sulphanilamide therapy had been started, his total intake being 8 g, the temperature was 103° and a generalized skin rash had developed. It was most marked on the dorsal surfaces of the hands on the forearms and on the feet and legs, and it was morbilliform in character except on the hands, where there were some clear vesicles about the size of a pin head. The throat was only a little sore and injected. No more sulphanilamide was given and the temperature fell abruptly. It was below normal on the 10th but was raised, up to 102° on the following 4 days. The rash faded slowly, and on March 13 it was rather more urticarial than morbilliform. Its distribution had also changed, for it was almost as intense on the front of the chest as on the hands and feet. Ten days later the only abnormality was slight sceline of the skin of the hands, forearms, ankles, and legs, which persisted for a further 3 weeks.

It was found from his previous records that sulphanilamide paste had been applied to an incised wound about 2 in long on the front of the right leg from Oct 9 to 12, 1943—i.e., for four days—five months before this illness. The only other occasion on which he had received medical attention since he was a child was in 1940, when he had a cough for which he was given a 'black bottle'. Thus there seems to be little doubt that the appearance of pyrexia and a rash after only 24 hours treatment was due to sensitization by the surface application of the drug.

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## Weil's Disease without Jaundice

The name Weil's disease has been criticized on the ground that Weil was not the first person to describe the disease, but alternatives such as spirochaetosis icterohaemorrhagica and spirochaetal jaundice which lay so much stress on the jaundice, probably result in many cases being misdiagnosed. We have recently had four consecutive cases in which there was no jaundice.

## FOUR RECENT CASES

**Case 1**—A child aged 4 fell into a brook which was flooded with storm water. The accident occurred in the winter and was followed immediately by a brief febrile illness which was diagnosed as pulmonary collapse and treated with sulphathiazole. Chest symptoms and signs soon disappeared, but the child remained unwell and refused to eat. On the eleventh day she vomited and there was an abrupt rise in the temperature to 105°. On admission to hospital two days later her temperature was 103°, her conjunctivae were injected and there was a trace of albumin in the urine. The serum agglutinated *Leptospira icterohaemorrhagiae*. The acute symptoms rapidly subsided, no other physical signs appeared and the urine was normal after the first day. Nevertheless it was some months before the child was really well again and on several occasions there was a slight rise in the evening temperature.

**Case 2**—This case was discovered accidentally after a short febrile illness originally diagnosed as influenza. The patient was a young doctor who worked in one of the Emergency Public Health Service laboratories. He described an abrupt onset of malaise with fever, pains in the limbs, headache and sore eyes. After six days he had apparently recovered but realized he still lacked energy. He therefore continued to take his temperature and a fortnight after the onset of his illness he found it was 100° on two consecutive evenings. The head of his department, who knew there was no epidemic of influenza at the time, insisted on routine agglutination tests on his serum and the diagnosis of Weil's disease was made in this way. The patient had bathed in the Cherwell four weeks before the illness began—probably too long an interval for infection to have occurred then—but his home was near the river, and rats had been seen there. At this time there were no objective signs of ill health, but he was still very easily tired and it was nearly three months before he felt really fit.

**Case 3**—This patient had also been bathing in the Cherwell. He was sent from a boys' harvest camp with a provisional diagnosis of poliomyelitis. Four days before admission he suddenly developed a severe headache and pains in the legs, and on admission his

temperature was 101°, his eyes were inflamed, and there was albuminuria; the calf and thigh muscles were extremely tender, and the deep reflexes were absent. Weil's disease was immediately suspected, and the blood urea was found to be 74 mg. per 100 ml. For four days he was very ill, but then rapidly became convalescent. The albuminuria disappeared and the blood urea fell to normal; but the sedimentation rate, which was 54 mm. per hour on admission, rose to 96 and remained high. For the next four weeks he felt perfectly well so long as he was kept in bed, but on the 40th day there was a transient recrudescence of fever accompanied by albuminuria. At no stage was he jaundiced, nor did the plasma bilirubin rise above 0.4 mg. per 100 ml.

**Case 4.**—The fourth patient was an airman, aged 22, who was scratched on the leg by a rat. Ten days later he suddenly felt feverish; he complained of headache and pains in the limbs and began to vomit. His temperature was 102°. The fever and symptoms persisted for seven days, when he was admitted to hospital. On admission his temperature was 101° and the conjunctivae were injected; there were no other physical signs and no albuminuria. Three days later he was afebrile and felt much better, but two weeks afterwards he suddenly developed mistiness of vision and was found to have punctate keratitis.

## COMMENT

In each of these four cases the diagnosis was confirmed by agglutination of the *Leptospira icterohaemorrhagiae* by the serum in a titre of 1 in 1600 or higher. Since then we have had a fatal case, with intense jaundice and uraemia, in an Italian prisoner who was employed in draining fields. Hitherto the number of non-icteric cases has been estimated at approximately 50%, though Kramer (1934) of Rotterdam reported 73 cases, of which only 28 developed jaundice, and in cases in which meningitis develops jaundice is more commonly absent than present (Lescher, 1944). The low incidence of jaundice in our series suggests that in the past many non-icteric cases have been missed. We think this would be less likely to happen if the name spirochaetal jaundice was not so misleading and if it was not too exclusively regarded as an occupational disease. Weil's disease should be suspected whenever the sudden onset of fever is associated with headache, pains in the limbs, and conjunctivitis. Albuminuria, a rise in the blood urea, and a high sedimentation rate are also characteristic. Once the cause is suspected the diagnosis is easily confirmed by the specific agglutination reaction. Our cases support the saying, "No jaundice, no death," but emphasize the importance of keeping the patient under observation for several weeks and allowing a prolonged convalescence.

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## A Case of Fat Embolism

We report a case of fat embolism presenting the unusual features of a delayed onset after operation without any of the customary chest signs.

## CASE HISTORY

The patient was a prisoner of war, aged 33. In Aug., 1941, he sustained a tangential bomb wound of his right humerus, with a fracture at the junction of the middle and lower thirds. He was admitted to a military hospital on Oct. 5, 1943, with complete non-union of the fracture. There was a well-healed scar on the outer side of his arm, with generalized muscle-wasting, but no evidence of nerve injury.

A bone-graft operation was performed on Oct. 12. The bone ends were freshened and a 4-in. intramedullary bone peg from the tibia was introduced. A complete shoulder spica was applied. At the close of the operation the patient was somewhat shocked, and one pint of fresh blood was transfused. The early post-operative progress was satisfactory. After 12 days he complained of bleeding from his gums and there was purplish bruising round his left knee and ankle. He was given vitamin C; the stitches were removed from his left leg, which was well healed, and he started to get up and sit in the sun.

Three days later (Oct. 27) he was noisy and irrational at night and incontinent of urine; temperature 98°; pulse 80; no cough, dyspnoea, or cyanosis. The stitches were removed from the right arm via a window in the plaster. The wound healed cleanly, though bruising round the left knee and ankle was more marked. Knee- and ankle-jerks were exaggerated; plantar response was doubtful. There was no evidence of any paralysis. The optic disks appeared normal. Intravenous glucose-saline given. Urine: albumin +; sugar + + +; ketones +; fat globules present. Blood sugar, 170 mg. per 100 c.cm.

Next day (Oct. 28) his general condition had deteriorated: temperature 97°; pulse 88. He was kept tranquil only with luminal and morphine. The plaster spica was removed from the back. Examination of the chest revealed moist crepitations at bases only; no sign of consolidation. On the 30th there was a slight improvement. He was quiet all day without a sedative. On Oct. 31 he was rational.

Drip saline was discontinued after infusion of 36 pints in 34 days. His condition then rapidly improved. A new plaster spica was applied on Nov. 2, and on Nov. 3 he started to get up.

**Laboratory Investigations.**—The blood and urine examinations are best demonstrated in a table, as follows:

Date	Blood Sugar (mg. per 100 c.cm.)	Urine					
		Albu- min	Sugar	Ketones	Acetone	Fat	Casts, Granula and Hyaline
27/10/43	170	+	++++	+	—	+++	—
28/10/43	160	+	++++	+	—	+++	—
29/10/43	150	+	+	+	—	Not tested	—
31/10/43	140	+	Trace	—	—	—	—
1/11/43	140	+	—	—	—	—	—
3/11/43	100	+	—	—	—	—	—
4/11/43	100	+	—	—	—	—	++
13/11/43	—	Trace	—	—	—	—	—
16/11/43	—	—	—	—	—	—	—

The tests employed were: (1) Benedict's test for sugar in the urine (2) Crocclius-Seifert picric acid method for blood-sugar estimation (3) Fat in the urine was demonstrated by staining with Sudan III. Globules of fat varied in size from a few to 30-40 microns in diameter. It was also demonstrated indirectly by the "sizzling test." In this test, adopted by Major J. V. Wilson, R.A.M.C., a loopful of fat-containing urine is burnt in a spirit flame and makes a distinct sizzling, which is very striking compared with that of normal urine. (4) No sputum was available for fat-globule staining.

## COMMENT

The glycosuria and blood-sugar level cannot be entirely explained by the intravenous glucose-saline, because, while this was maintained approximately constant, the blood sugar and glycosuria progressively diminished. Also, the glucose was given at the rate of 0.12 g. per kg. of body weight per hour, whereas in the experimental animal it can be injected at a rate of 0.9 g. per kg. per hour before it appears in the urine. The glycosuria would therefore seem to be, at least in part, of renal origin.

Evidence of renal damage is afforded by the presence of albuminuria and casts, and may be assumed to be due to fat embolism of the kidneys. Glycosuria might thus have resulted from a selective renal damage comparable to that caused by phloridzin. If it occurs with any constancy in fat embolism it might be a point of diagnostic significance. It was observed in another case of fat embolism occurring in 2 N.Z.C.C.S. in the Western Desert in Nov., 1942, which at necropsy was proved to have extensive fat embolism of the kidneys and other organs. Albuminuria and ketonuria were present, but the clinical features and other circumstances of the case differed considerably from the one under review.

We are indebted to Lieut.-Col. A. Cruickshank, R.A.M.C., for permission to publish this case.

G. ST. J. HALLETT, F.R.C.S., Capt., R.A.M.C.  
A. J. M. DRENNAN, M.B., Capt., R.A.M.C.

## Torsion of the Gall-bladder

The rarity of the above condition, I hope, warrants its publication; it is the first such case that I have seen in over 30 years of practice.

Miss A., aged 67, in normal health, was reaching up to put a shilling in a slot meter on Feb. 4 when she was seized with acute abdominal pain under the right costal margin. She was not sick and thought it might be appendix trouble, so she starved herself to some extent as her own means of treatment. The pain persisted, and on Feb. 7 she sent for her doctor. At this time the patient had no rise of temperature or pulse rate, and no sickness, but her pain was severe, and a tender lump was palpable below the costal margin.

I was asked to see her on Feb. 8 and found the conditions as above. The patient was transferred to a nursing home on the 9th, and Dr. Shera, the pathologist, kindly did a white count for me, which showed 6,800 leucocytes only. On Feb. 10 I performed a laparotomy, making a Kocher's gall-bladder incision. The transverse colon was adherent to the liver edge; this separated readily with a gauze swab, and immediately the gall-bladder came into the wound with a long pedicle which untwisted easily. It had been lying in a bed formed by coagulated lymph and exudate. I removed the gall-bladder, ligatured the cystic duct with catgut, drained the cavity, and closed the abdomen. The gall-bladder was found to have two medium-sized stones in it, and was tense and full of almost pure blood. There was no infection.

The patient made an uninterrupted recovery, and went home on March 8.

I am greatly indebted to Dr. Downing for allowing me to publish this case, and to Dr. Shera for the blood count.

Eastbourne.

E. WILSON HALL.



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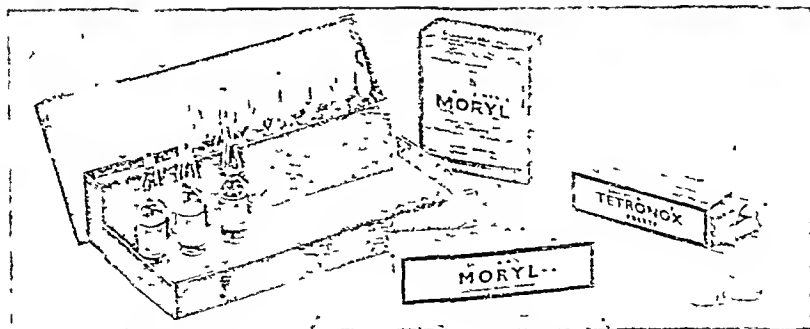
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Vitamin B <sub>6</sub>	-	-	0.45 mg "
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Iron	-	-	2.7 mg "
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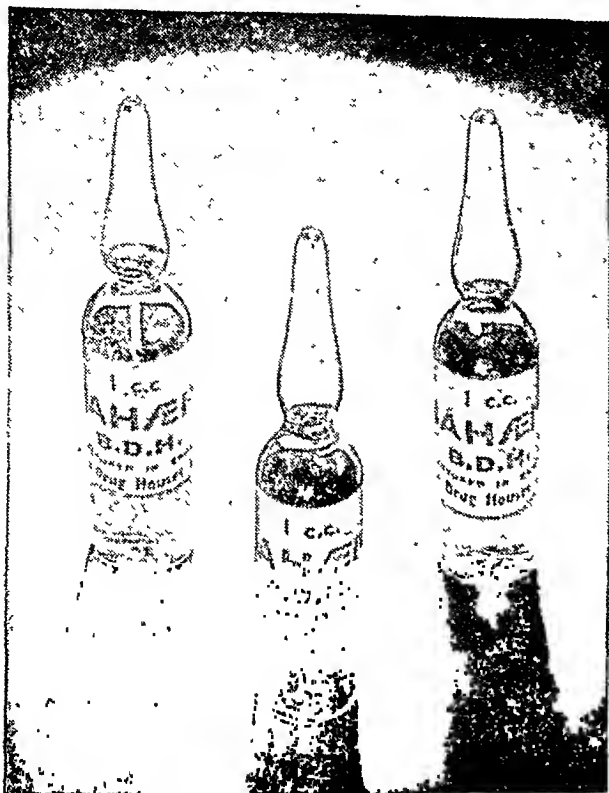
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## Reviews

### RECORD OF MEDICAL PROGRESS

*The British Encyclopaedia of Medical Practice* including Medicine, Surgery, Obstetrics and Gynaecology and other Special Subjects. Medical Progress 1943 and 1944. Under the general editorship of Sir H. Rolleston, Bt. (Price 7s 6d each volume postage extra.) London: Butterworth and Co.

Having completed the onerous task of editing the *British Encyclopaedia of Medical Practice* Sir Humphry Rolleston continues to issue annual supplementary volumes under the title of *Medical Progress* the fourth and fifth of which he before us. The general plan is to divide each volume into three parts: the first composed of three critical general surveys with special articles on subjects of topical interest, the second on recent developments in drug therapy from the pen of Prof W. J. Dilling, while the third, comprising about three quarters of the whole, is devoted to abstracts alphabetically arranged. This method, though convenient for reference, inevitably leads to repetition. Thus, in the 1943 volume the Rh factor is dealt with in four articles, and as each writer explains the facts in a slightly different way the inexperienced reader may be left rather confused. But of the general value and helpfulness of these volumes there can be no doubt. One is left with a lively sense of our indebtedness to the organic chemist in unravelling the complexity of the chemistry of the steroids and vitamins, and for the rapid multiplication of varieties of sulphonamides adapted to different diseases. Quite appropriately war medicine and surgery bulk large, to which Sir Arthur MacNalty contributes a valuable article on public health in the present war. It is perhaps invidious to try to pick out individual articles, but we were specially attracted by Dr A. W. Spence on endocrinology and Dr Oakley on diabetes. On thyrotoxicosis for myasthenia gravis a very cautious attitude is taken, but we were interested to read that W. G. Millar and T. F. Ross, while inquiring into "thyroid death" established a significantly higher degree of aortic hypoplasia in cases of fatal accident than in the controls. Does this confirm the belief of insurance companies that some individuals are naturally "accident prone"?

### A VIEW OF RHEUMATIC FEVER AND CHRONIC ARTHRITIS

*Pathology and Therapy of Rheumatic Fever*. By Leopold Lieber, M.D. Foreword by William J. Maloney, M.D., LL.D., F.R.S.E. Edited by Major William Chesley, M.C. (Pp 211, illustrated 64 5s.) New York: Grun- and Stratton, 1944.

Prof. Lieber, recognized as an authority on the pathology of function, completed this book only a few weeks before his death. His main thesis is that the mechanism of rheumatic fever is allergic sensitization of the mesenchymatous tissues, especially the vascular system in its smaller and smallest branches and he has put forward a strong case supported by scientific and clinical evidence. He states dogmatically that rheumatism is caused by a sensitization to antigens, protein in nature, usually the product of micro organisms which may be pathogenic or non pathogenic, but may also arise in response to foreign proteins which are not of microbial origin. Although the book bears the title *Rheumatic Fever*, the author includes chronic arthritis, which in many forms he regards as of the same nature, but he draws a distinction between rheumatic and non rheumatic chronic arthritis, the latter he is inclined to consider as a systemic disease with involvement of the central nervous system, especially the vegetative centres. His net is indeed cast so widely that many diseases not usually regarded as rheumatic are brought within it, such as dermatomyositis and lupus erythematosus.

The discussion of some of the chronic rheumatic diseases is of interest and often provocative, possibly because Lieber's method of classification cuts directly across the more usually accepted systems. His description of the types and clinical features of spondylarthritis and also of skeletal lesions will provoke criticism and other examples might be instanced. There seems at times to be a tendency to fit the symptoms to the theory instead of the reverse. Dr Maloney who contributes an interesting foreword, justly remarks, "The piling of the clinical complexity of rheumatism upon the confusion of

allergy at first served only to add to the bewilderment," but he regards the arguments in favour as convincing. Whether one accepts the thesis presented by the author or not the book is one to be studied by all who are interested in the problem of the rheumatic diseases.

### PARODONTAL DISEASE

*Parodontal Disease. A Manual of Treatment and Atlas of Pathology*. By E. Wilfred Fish, L.D.S., M.B., D.S. (Pp 185, illustrated 18s.) London: Eyre and Spottiswoode, 1944.

During the last ten years or so a great change has occurred in our attitude towards the group of dental diseases commonly known as pyorrhoea. Too often in the past the dental surgeon and the medical practitioner have advised and indeed demanded the extraction of every tooth in a patient's mouth in order to eradicate a focus of infection. This book describes in detail our present knowledge of the aetiology and treatment of parodontal disease, and shows how with conscientious treatment and hygiene the condition can be cured and the mouth made healthy without subjecting the patient to the distressing ordeal of wholesale extractions. The actual organisms in an uncomplicated case of pyorrhoea are confined to the floor of the minute ulcers on the gum margins and, as the disease progresses, to the ulcers at the bottom of the pockets and not in the deeper tissues. Therefore the author argues, if the pockets round the teeth can be entirely eliminated, the ulcers allowed to heal, and new healthy and hard epithelium be stimulated to grow, the patient is cured if he will undertake by hygiene and home treatment his part in keeping the gum margins hard and healthy.

The early chapters on the aetiology and pathology of pyorrhoea form a sound basis for the development of a system of treatment which is described in detail and contains much original thought and the aim of which is to promote a firm keratinization of the epithelium of the gum margin by constant friction from the toothbrush and wooden toothpick. The operation of gingivectomy might be described as the "surgery of access" for the wooden toothpick, for until the pockets have been eliminated it is impossible for the patient to carry out his most important routine. There is an excellent chapter on the treatment of acute ulcerative stomatitis which should be of special interest to the medical practitioner, this is directed towards protecting the ulcers by coagulation with chromic acid or with zinc oxide and oil of clove packs. The essence of treatment, in the author's own words, is the constant care and advice and the untiring and patient supervision lavished on every part of the gum margin of every patient from childhood to old age.

### Notes on Books

*Primer Congreso Nacional sobre Enfermedades Endemo-Epidemicas* is a bulky report containing papers read at the Argentine First National Congress on Endemo-epidemic Diseases held in Buenos Aires in 1942. The congress took place under the auspices of the department of pathology and clinical study of infectious diseases of the University of Buenos Aires. The subjects discussed include diphtheria, typhus, brucellosis, scarlet fever, Chagas's disease, hydatid disease, respiratory infections, typhoid fever, and a number of other infectious diseases. It is impossible in the space available to do more than mention the principal topics but this volume should be of interest to all who are concerned with public health and can read Spanish. Papers by Prof. A. Sordelli and other distinguished Argentine contributors are included.

*The Public Attitude towards Mental Disease* by Dr. HORACE HILL is a short pamphlet privately printed (Laverstock House Salisbury, 2s. 6d.) with the object of persuading the public to recognize the desirability of the early treatment of mental disease and urge the advantages of life in a mental home for the patient compared to his struggles in the world outside, where he is subject to unfair competition and persistent misunderstanding. The importance of discharge from the home as soon as the patient is well enough is also stressed and the desirability of encouraging him to re-visit the home after his discharge as he would an institution for physical disease is pointed out. In this way stigma would be removed and a more rational attitude towards mental illness fostered. We would all probably agree with the principles enunciated in the pamphlet and if no scientific presentation or new ideas are expected it may be found useful for distributing to patients' friends.

Col. C. A. WEBSTER's vade mecum entitled *Regimental M.O.* contains little to criticize and much to commend. By combining brevity with a free and intimate style the author has managed to cover an amazingly wide field. Apart from its obvious value to the newly commissioned, many medical officers with long experience will welcome a handbook of convenient pocket size, reference to which may save wearisome search in A.M.S.Reggs. or Standing Orders, R.A.M.C. The booklet is published at 2s. 6d. by A. Wheaton and Co. Ltd., Exeter, and royalties derived from its sale will go to the R.A.M.C. Comforts Guild.

## Preparations and Appliances

### REDUCTION OF LEG FRACTURES BY HYDRAULIC TIBIA TRACTION

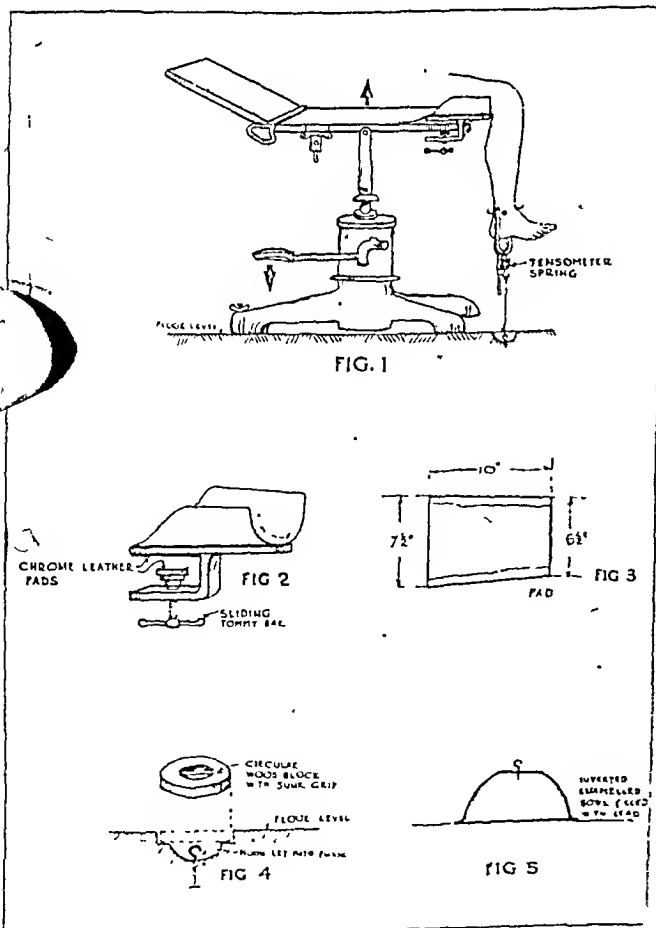
Dr. J. E. STANLEY LEE, F.R.C.S.Ed., medical superintendent, New Cross Hospital, Wolverhampton, writes:

In fractures of the tibia and fibula overriding of the fragments is extremely common owing to sliding in oblique and spiral fractures, and considerable difficulty is experienced in correcting the displacement and in maintaining good alignment. Manual reduction is often unsuccessful and, if swelling is marked, redisplacement occurs even despite a well-applied plaster unless continuous traction is also employed. In the new method here described reduction is accomplished by hydraulic tibia traction with the aid of an operating table equipped with an oil-pump base. Though primarily intended for skeletal traction, the method can also be used with strapping extension where displacement is slight or moderate.

#### Description of Apparatus

The apparatus employed consists of:

- (a) An operating table equipped with hydraulic raising mechanism (Fig. 1).
- (b) A thigh support (Figs. 2 and 3) in the form of a half-section of a truncated cone 10 in. long, made of sheet metal suitably padded,



having a proximal diameter of 7 1/2 in. and a distal diameter of 6 1/2 in., and attached to a strong base with an angled extension piece which passes round the edge of and below the table, to which it is fixed by a screw clamp operated by means of a sliding tommy bar. At the proximal end the sides are cut away to enable the thigh rest to be used for adolescents and children. Chrome leather pads are fitted to the upper surface of the clamp and to the under aspect of the thigh support. The sliding tommy bar provides good leverage, enables the apparatus to be rapidly fixed in position, cannot become detached, and can be pushed out of the way so as to allow ample room for the surgeon's hand and the passage of plaster bandages. The space available between the edge of the apparatus and the back of the leg is not less than 4 1/2 in. The thigh rest incorporated in Watson-Jones's (1932) tibia traction apparatus, of which the above is a modification, can be used.

(c) A tensometer spring (Fig. 1) graduated up to 100 lb., as used by Farquharson (1942).

(d) A hook let into the floor (Fig. 4) or, alternatively, an inverted enamelled bowl filled with lead, with a hook inserted through the bottom of the bowl into the lead filling (Fig. 5), which in the case of a bowl of 10 in. diameter weighs approximately 75 lb.

#### Method of Reduction

A Kirschner wire (or other form of traction pin) is driven through the tibia 1 in. above the ankle-joint, and a stirrup is fixed to the wire (or pin). Next the tensometer spring is hooked to the stirrup and, at its lower end, attached to the hook in the floor (or weight) by a short length of cord (Fig. 1). The thigh is thus supported on the rest with the knee flexed to a right-angle and the limb hanging vertically in the line of gravity, in which position there is no tendency for the fragments to sag backwards, and while the plaster is setting the position of the foot can be controlled by the operator's knee and lateral displacement of the fragments corrected by his hands.

An assistant gently operates the foot pedal attached to the oil-pump base of the operating table while the tensometer spring and cord are held in position until tension is felt. Further elevation of the table by the assistant results in hydraulic traction being applied in the line of gravity. The limb becomes taut, and when the overriding has been fully corrected crepitus is felt by the operator, indicating that the fragments are now in apposition and traction is such that angulation is also corrected. Rotational displacement cannot occur if the axis of the wire is correct, and the toe and the patella consequently point in the same direction. The fragments are then locked against each other by strong lateral pressure of the operator's two hands. This is an essential step, without which accurate reduction cannot be accomplished. So strong is the traction that very firm lateral pressure is necessary. Antero-posterior and lateral radiographs are taken and, if position is satisfactory, plaster is applied.

#### Application of Plaster

A plaster-of-Paris slab is placed directly to the skin over the posterior aspect of the limb from the back of the knee to the toes passing through the stirrup. A thin pad of wool is placed in front of the ankle-joint; but if swelling has not yet taken place it may be advisable to use a thin wool bandage over the front of the foot and leg before the plaster case is completed by encircling bandages. While the cast is setting, strong lateral pressure is again maintained by the palms of the operator's hands, and as soon as the cast is hard traction is released, the knee straightened to 30 degrees short of full extension, and the plaster case then extended to mid-thigh.

#### Subsequent Treatment

In all unstable oblique and spiral types of fractures continuous traction is necessary for the first three to six weeks. The limb is supported on a Braun splint, and 10 to 15 lb. of weight suspended over the pulley, with the foot of the bed raised about 12 in. When swelling has subsided a new plaster case should be fitted. The limb is again held in the hydraulic tibia traction apparatus and the new plaster applied, completely unpadded, from the toes to just below the groin with knee-joint slightly flexed. When the plaster is set the Kirschner wire is removed. Radiographs are taken in two planes, and if alignment is not absolutely accurate it should be corrected by wedging the plaster case.

I am deeply indebted to the writings of Mr. R. Watson-Jones (1932) from which I have drawn freely and at length; to the Wolverhampton Borough Surveyor's Department for the illustrations; to Messrs Guy Motors Ltd., Wolverhampton, who generously made the thigh support to my design for me; and to Mr. McGowan for the weight. Messrs Down Bros. Ltd., London, have kindly undertaken to manufacture and supply the complete apparatus.

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## BRITISH MEDICAL JOURNAL

LONDON

SATURDAY JULY 29 1944

## PROBLEMS OF ARIBOFLAVINOSIS

We print in this and last week's *Journal* an abridged form of the Lumleian Lectures of 1944, given by Dr. Hugh Stannus, who took as his subject riboflavin and allied deficiencies. From a survey of the recent literature it would at first seem that the syndrome characterizing riboflavin deficiency was unknown before 1938, when Sebrell and Butler<sup>1</sup> induced the condition experimentally in a group of women in an institution by feeding them on a diet low in riboflavin. They suggested the name ariboflavinosis for riboflavin deficiency, and although they established that lack of riboflavin gives rise to a definite clinical picture they were not the first to describe it. The essential clinical features of riboflavin deficiency were in fact first described by Stannus<sup>2</sup> over thirty years ago, when he was working among the natives of Nyasaland. His observations made in 1911 were published in 1912 and 1913. It is a sad reflection on our colonial administration that these studies should have been made in one of our Colonies in the days of prosperity before the last war; regrettable that little was done to remedy the defective nutrition of these African natives; and disappointing that only recently has the work of Stannus received the recognition it so well deserves. Twenty years before the discovery of riboflavin he described the ariboflavinosis syndrome—the sore tongue and lips, the sodden excoriated palpebral fissures and angles of the mouth (which he termed angular stomatitis), and the characteristic lesions of the anus and external genital organs. He also described certain neurological features and the characteristic smooth red tongue devoid of papillae and epithelium, known later among American workers as the "magenta tongue." While the contemporaries of Stannus believed that these lesions might be infective in character, he thought that they were the result of dietary deficiency. Beyond this he could not go, as the vitamins, though postulated by Funk in 1912, had not then been differentiated and the existence of riboflavin was quite unknown. The importance of this early work of Stannus lay in the fact that he focused attention on the occurrence of this group of symptoms due to a dietary deficiency yet dissociated from pellagra. In the Lumleian Lectures he reviews the work published before that of Sebrell and Butler in 1938. He pays tribute to Fitzgerald Moore, another worker who laboured for many years trying to defeat malnutrition in the Colonies. To Moore belongs the credit of showing that the disease which was rendering thousands of African natives nearly blind was due to a dietary deficiency and amenable to treatment with a yeast extract. In a series of papers between 1930 and 1939 he described certain

ophthalmological conditions and nervous symptoms which Stannus thinks may have been due to riboflavin deficiency.<sup>3</sup>

Some doubt has recently been cast upon the validity of angular stomatitis and corneal vascularization as manifestations of riboflavin deficiency. Stannus believes that angular stomatitis is characteristic of the condition, though many workers believe that it is not a specific lesion. Thus it is stated to occur as a result of badly fitting dentures,<sup>4</sup> local trauma, and sensitivity to the constituents of chewing-gum<sup>5</sup> and lipstick.<sup>6</sup> Mlachella and McDonald<sup>7</sup> failed to improve a series of cases of angular stomatitis by treatment with riboflavin, though some responded to nicotinic acid, vitamin B<sub>6</sub>, and yeast. Smith and Martin<sup>8</sup> also observed that angular stomatitis may disappear after the administration of vitamin B<sub>6</sub>. Stannus believes that these lesions can be distinguished from the characteristic angular stomatitis of ariboflavinosis, or, as he prefers to call it, hyporiboflavinosis. Even so, a diagnosis of ariboflavinosis should not be made on the existence of stomatitis alone. Considerable discussion has centred around corneal vascularization as a manifestation of ariboflavinosis. Sydenstricker and his co-workers,<sup>9</sup> who drew attention to this sign in 1940, regarded it as pathognomonic of ariboflavinosis and stated that circumcorneal injection, which precedes it, is the earliest and commonest sign of the condition. There appears to have been some subsequent confusion between the terms circumcorneal injection and corneal vascularization. The former is an engorgement of the bulbar conjunctival capillaries of the limbic plexus: the latter is actual invasion of the cornea by capillaries which anastomose to form tiers of capillary loops from which more capillaries develop and extend centripetally. Stannus, who has carried out between 4,000 and 5,000 slit-lamp examinations and is, therefore, qualified to speak on the subject, states that he has seen both circumcorneal injection and corneal vascularization without any evidence of riboflavin deficiency, and that these signs alone are therefore of no diagnostic value in the detection of the deficiency. He agrees that they may occur in patients with riboflavin deficiency, but denies that they are pathognomonic of the condition. His experience confirms that of a number of other investigators who have carried out nutrition surveys during the last two or three years, and have shown that corneal vascularization is fairly common in the population at large in the absence of nutritional deficiency. Sanderstead,<sup>10</sup> for example, found that the incidence of the condition ranged from 80 to 93% in the groups he studied.

A number of workers in the English colonies, including Fitzgerald Moore,<sup>11</sup> Scott,<sup>12</sup> and Landor and Pallister,<sup>13</sup> who all wrote before the recognition of ariboflavinosis as a clinical syndrome, described certain neurological symptoms which did not fit into the clinical picture of beriberi or pellagra. These included burning of the feet, muscular

<sup>3</sup> *West Afr. med. J.*, 1930, 4, 46; 1932, 6, 23; 1934, 7, 119; 1937, 9, 35; *Lancet*, 1937, 1, 1225; *J. trop. Med. Parasitol.*, 1939, 42, 109.

<sup>4</sup> *J. Amer. med. Ass.*, 1942, 119, 770.

<sup>5</sup> *Ibid.*, 1941, 116, 131.

<sup>6</sup> *Arch. Derm. Syph.*, Chicago, 1938, 37, 597.

<sup>7</sup> *Amer. J. med. Sci.*, 1942, 203, 114; 1943, 205, 214.

<sup>8</sup> *Proc. Soc. exp. Biol.*, N.Y., 1940, 43, 660.

<sup>9</sup> *Publ. Hlth. Rep. Wash.*, 1940, 55, 157; *J. Amer. med. Ass.*, 1940, 114, 2437.

<sup>10</sup> *Ibid.*, 1942, 117, 1521.

<sup>11</sup> *Ann. trop. Med. Parasitol.*, 1918, 12, 109.

<sup>12</sup> *Trans. roy. Soc. trop. Med. Hyg.*, 1935, 19, 121.

<sup>1</sup> *Publ. Hlth. Rep. Wash.*, 1938, 53, 2282.

<sup>2</sup> *Trans. Soc. trop. Med. Hyg.*, 1912, 5, 112; 1913, 7, 32.



weakness, ataxia, incoordination, paraesthesiae, and loss of visual and auditory acuity. Stannus accepts these symptoms as manifestations of ariboflavinosis, particularly "burning feet," which he believes is a characteristic neurological finding. To these symptoms he adds others which he has observed. They fit into a condition resembling the cerebellar syndrome—muscular asthenia and hypotonia, jerky clonic contractions, nystagmus, tremor, dysdiadokokinesis, a typical gait, and pendulum knee-jerks. It is interesting to note that American workers, who have contributed the bulk of the literature on ariboflavinosis since 1938, do not mention any neurological manifestations. They describe diminished visual acuity, which might be the result of retrobulbar neuritis.

No satisfactory theory has so far been put forward to explain the pathogenesis of the signs and symptoms of riboflavin deficiency and their peculiar localization. Why are the mucocutaneous junctions of the mouth, eyes, and anus selected? Why is the tongue affected? Why do the nervous symptoms resemble the "cerebellar syndrome"? Stannus has advanced a novel theory based on anatomico-physiological considerations to explain these varied lesions. He believes that they are a manifestation of an acute functional derangement of the capillary circulation of the affected parts. The first tissue to suffer from riboflavin deficiency is the endothelium of the capillary system, which needs riboflavin for its nutrition. The capillaries undergo a reversible functional disturbance, a capillary dysergia, resulting in loss of tone and dilatation. Normal cellular metabolism is upset and tissue functions are disturbed. The first parts to suffer are those with the largest numbers of capillaries, those with the greatest metabolism, and those with a very specialized function. The interference with tissue-cell metabolism is probably of the nature of an anoxia, using this term in its widest sense. If the anoxia is not too prolonged recovery of function takes place in the capillaries when supplied with adequate riboflavin; otherwise irreversible processes leading to pathological changes occur. According to Stannus skin lesions of ariboflavinosis, which occur where the skin is thin or highly specialized, as at the mucocutaneous junctions about body orifices (lips, palpebral fissures, nostrils, prepuce, vulva, anus, scrotum), are due to capillary congestion, with resulting impaired nutrition of the skin. The colour of the "magenta tongue" of ariboflavinosis is the result of capillary dilatation and a sluggish blood flow. While Stannus grants that the changes in the cornea are due to riboflavin deficiency, he believes that the visual disturbances associated with the latter have no immediate connexion with the eye but are part of a lesion in the central nervous system. The neurological manifestations, says Stannus, are the expression of a metabolic disturbance in nerve tissue produced by capillary dysergia, the more vascular tissue being the first to suffer—i.e., the grey matter and cerebellar neuropil.

Any satisfactory theory of the pathogenesis of ariboflavinosis, particularly one involving the capillaries, must be based on histopathological findings. From the pathologist's point of view, if not from the clinician's, it is disappointing that no cases of human riboflavin deficiency have come to necropsy so far. Studies with the dermal

capillarscope in the living might help to support the theory of Stannus. It has been shown with the use of this instrument that there are capillary changes in the skin in pellagra.<sup>13</sup> A microscopical study of the skin of subjects with riboflavin deficiency might yield interesting results.

## THE "TRIPLE" AND THE "CONJOINT"

If effect is given to the recommendation of the Goodenough Committee that every medical school should be an integral part of a university, one school in London and three in Scotland will either cease to teach or undergo absorption. The West London Hospital Medical School is the last in the field of undergraduate medical education; it was opened in 1937, and in the session 1942-3 it had 38 students, all women. The decision on its application for admission to the University of London was deferred pending a general review of the provision for women students. The Goodenough Committee is of opinion that an increase in the number of University of London schools cannot be justified, and that, important as the contribution of this school to the training of women students has been, it should not continue its undergraduate work beyond possibly the next four or five years.

The three Scottish schools have a different background. The Anderson College of Medicine in Glasgow was established as part of "Anderson's University" in 1795. John Anderson, professor of natural philosophy and friend of James Watt, endowed the school with a meagre legacy out of keeping with his rather grandiloquent prediction for it; but it struggled on and prospered, and came to have more teachers than the University of Glasgow. Later its medical side was separated from the other departments of technology and given its own domicile and governing body. The second school, St. Mungo's College, Glasgow, owes its origin to the steps taken to rehabilitate the Royal Infirmary after the severe blow it received when the University was removed to the west side of the city and the Western Infirmary built alongside. The Royal Infirmary School of Medicine, for which a charter was obtained in 1889, became St. Mungo's College. The third school, that of the Royal Colleges of Edinburgh, consists of lecturers licensed by the two Colleges and in most cases recognized by the University. It is a single corporate body governed by a board. In the last academic year for which figures are available Anderson College had 252 undergraduate students, St. Mungo's 339, and the School of Medicine of the Edinburgh Royal Colleges 359. From these three schools the majority of the candidates for the Scottish triple diploma are drawn.

Extramural teaching—there were other schools of the kind which flourished in Glasgow for a short time in earlier days—has played a great part in Scottish medical education. The rostrums of these schools attracted teachers of eminence, especially the great anatomists. The schools were able to parallel the courses in the University; their fees were lower, and they offered opportunities for teaching and taught which the more rigid methods of the University

denied. But university teaching itself altered and widened. A large increase took place in the number not only of professors but of departmental lecturers and assistants, and facilities were offered for research, so that the abler of the young medical graduates tended to seek appointments in the University rather than in the extramural schools. The tendency is all towards integration with the University, with its liberal atmosphere and intellectual stimulus and the contacts it offers with other learning. If in this process extramural teaching disappears it is an evolutionary development and takes nothing from the lustre of the past achievement of these schools.

In another direction the Goodenough Committee suggests further concentration upon the university. In urging that the University of London—and this also applies in a measure to Oxford and Cambridge—should reconsider the standard of its final examination, introducing "internal" features bringing it more into line with its teaching and holding the examination more frequently, also that university grants to schools might be conditioned by the number of students taking the university degree, the Committee is obviously placing the English Conjoint Board examination in some peril. The history of the "Conjoint" goes back to the latter part of the nineteenth century. In 1873 we find the Medical Reform Committee of the British Medical Association expressing satisfaction with steps taken to form a Conjoint Examining Board for England, but it was not until ten years later that the two Royal Colleges agreed that a diploma be granted in conjunction on the results of the final examinations held on their behalf by the Examining Board. Thereafter the licence of the Royal College of Physicians and the diploma of membership of the Royal College of Surgeons were no longer granted separately as qualifying for admission to the *Register*. The conjoint examinations in England and also those in Scotland (by the Colleges of Physicians and Surgeons of Edinburgh and the Faculty of Physicians and Surgeons of Glasgow) were approved by the General Medical Council in 1884. The Medical Act, 1886, laid it down that a qualifying examination might be held for the purpose of granting a diploma conferring the right of registration by "any combination of two or more corporations in the same part of the United Kingdom who may agree to hold a joint examination in medicine, surgery, and midwifery, and of whom one at least is capable of granting such diploma as aforesaid in respect of medicine and one at least is capable of granting such diploma in respect of surgery." The Conjoint Board examinations in England have proved very popular, especially among London students, owing to the attractive alternative they offered to the London University Final M.B. B.S. which is out of line with the teaching of the school and is a stiff "external" examination, reminiscent of the days when the university was an examining body only. The "Conjoint" enables Oxford and Cambridge students to qualify a year earlier than they can do by taking their university degrees. Of the practitioners who qualified from London schools in 1933-7, 2,414 were registered on their diploma of the English Conjoint Board, and only 192 on a university degree, though it should be added that a university degree was obtained later by about

one third of them. From the other universities 414 were registered on the Conjoint diploma.

One incidental result of a decline in popularity of the Conjoint examination would be a diminished revenue of the Royal Colleges. The amount which the Royal College of Surgeons received from the Conjoint Examination Board in 1942-3 was £11,168—more than half the total income of the College. But it is not to be disputed that competition between the university and the Conjoint Board examinations is educationally bad, and that a university examination ought to be regarded not as something separate from the student's record during his course of training but rather as a final check upon it. If, again, as in the case of the extramural schools, the portended changes in medical training threaten the numerical pre-eminence of the "Conjoint," no reflection will be conveyed on the diploma, for it is agreed that the examination is of good vocational standard, only slightly different from that of the university, and with the same subjects.

### SURGICAL TREATMENT OF CORONARY DISEASE

It is now some seven years since surgeons first attempted to provide a new blood supply for the heart which was being starved by progressive coronary sclerosis. Claude Beck was a pioneer in this field of surgery in America, and in two recent papers he and his physician colleague Harold Feil review the results of the past few years.<sup>1,2</sup> It appears that there have been few new discoveries or startling improvements in technique. Some might have come from this country had it not been for the early death of Laurence O'Shaughnessy, whose operation of cardio-omentopexy had already given promising results.

During his experimental work on dogs Beck observed that the gradual reduction of the blood supply to a small area of the heart, by ligation of the arterial branches supplying the area, results in a "trigger" mechanism. When a certain degree of anoxaemia has been reached further slight reduction in the blood supply causes sudden ventricular fibrillation and death. In contrast two of the main coronary arteries may be partially occluded, producing a less degree of anoxaemia over a larger area, without causing death. Beck draws two conclusions from these observations: first, that acute anoxaemia of a small part of the cardiac muscle can act as a trigger or irritable zone which may throw the whole mechanism into the convulsions of ventricular fibrillation, and second that a very small improvement of the blood supply to the irritable zone can reduce its irritability and prevent it from "firing". The blood supply to the heart can be increased by effecting communications between the coronary vessels and other arteries outside the heart—for instance by grafts, or by producing intercoronary anastomoses. The coronary arteries communicate very little with one another, but inflammation on the surface of the heart produces anastomotic channels between them. Beck showed that ligation of the descending ramus of the left coronary artery in normal dogs caused death in 70% of cases, but when the surface of the heart had previously been abraded to set up inflammation and adhesions the mortality after ligation of this vessel was only 38%. Beck's operation aims at producing inflammatory adhesions between the heart and

the parietes by applying powdered asbestos to the surface of the heart and by laying grafts of mediastinal fat against it. His illustrations demonstrate conclusively that vascular channels are formed in such adhesions, both in animals and in man.

Unfortunately the results of this procedure are not encouraging. Feil describes 37 patients treated by the Beck operation: there were 14 operative deaths, and 23 survived. Of the latter, 14 were improved and are still living, 9 died within four months to six years of operation, all from coronary disease, and 5 of these experienced relief of their symptoms. Patients with severe coronary disease rarely survived the operation, and those that did survive were unimproved. Therefore the early case with only slight myocardial damage should be chosen for operation; but even in the later cases of the series, when such selection was being applied, the operative mortality was 35%. Grave as is the prognosis of coronary disease, such a mortality will discourage most physicians from submitting their patients to this hazard. Nevertheless there is now considerable evidence that these operations do, in most cases, reduce the severity of the symptoms and even prolong life if the patient can survive the initial shock. It is therefore to be hoped that future improvements in technique will lower the operative mortality. There is certainly scope for more research in this field.

### HEALTH RECORD OF THE U.S. ARMY

The Surgeon-General's statistical report for 1943, circulated by the U.S. Office of War Information, gives some interesting facts and figures. The number of men examined during the year was 5,200,000; the number recruited into the Army was 2,400,000, and into the Navy, Marine Corps, and Coast Guard 900,000; the number rejected was 1,900,000 (36%). The Army certificate-of-disability-for-discharge rates have run rather high. The majority of such discharges occurred within the first three months of service, suggesting that mental and physical defects were missed at the medical recruitment examinations. The health of the U.S. Army has been better than it was at any time during peace. Up to the end of 1943 only 3% of the wounded had died of their wounds. The Army's over-all death rate from disease was 0.6 per thousand per annum, this despite the fact that American soldiers are fighting on all fronts, in all climates, and exposed to all diseases. The death rate for pneumonia before the advent of sulphonamide drugs was 24%; the present Army death rate is 0.7%. The death rate from meningitis, which forty years ago killed 80% of those contracting it, was reduced to 38% in the last war and, through the use of "sulpha" drugs, has now fallen to 4.2%. The admission rate for tuberculosis has declined from 12 per thousand per annum in the last war to 1.2 in the present war. The programme for recruitment of individuals with venereal disease was officially inaugurated in October, 1942. Special V.D. hospitals were built at each of the 34 reception centres, with a total of 6,510 beds. Recruits having venereal disease were referred to these hospitals, where they were examined and treated. The U.S. Army is vaccinated against smallpox, paratyphoid, typhoid, and tetanus. Typhoid fever, which was the scourge of armies until 1912, has been reduced to insignificance. There have been no deaths from typhus, though this disease is endemic in North Africa. There has been no tetanus in the vaccinated, and vaccination against yellow fever has prevented any incidence of this disease. Vaccination is available when there is danger of exposure to cholera and plague. Against the

menace of insects as carriers of disease the sanitary service has developed the Freon pyrethrum bomb which, upon the turning of a spigot, will spray a plane or tent or barrack killing all flies, mosquitoes, and bed-bugs in the area treated. This spray is non-toxic to man. The synthetic compound, known as "DDT" (dichlorodiphenyltrichlorethane) has been introduced for killing lice; the use of this powder (which is also effective against flies) enabled the United States Typhus Commission to prevent the development of an epidemic of typhus fever in Naples. The report on the dental service states that rejections for dental defects ran to around 5%. It was decided then that if a recruit had no malignant disease or extensive osteomyelitis in his jaw he would be accepted regardless of the number of serviceable teeth. This threw an immense load upon the Army Dental Corps. During the years 1942 and 1943 14,600,000 cases were treated, and 31,000,000 teeth were filled; more than 1,400,000 bridges and dentures were supplied, 196,000 dentures mended, and more than 6,000,000 teeth replaced by dentures and bridges.

### MEDICAL FILMS

There should be plenty of room for the use of the moving film in medical education. If anyone had doubts on this subject the viewing of the two films recently made by the British Council should have removed them. The moving picture tells a story that often enough can be told with poor effect in words only. In fact there is always the risk that the word will accumulate many meanings remote from what it stands for. One such word is "rehabilitation," which at the moment is in danger of almost becoming a political slogan. The recent British Council film, "Accident Service" (see *B.M.J.*, June 10, p. 789), made it vividly plain to all and sundry just what rehabilitation is. We can think of no better way of informing the medical student of what rehabilitation is than by showing him this film. It is even possible that the film will teach more than a visit to such a centre as Berry Hill Hall, because the film is the product of many minds, and gathers up into one whole all the numerous links in the medical and surgical chain that rehabilitates the injured or diseased person. But films can become an educational force in medicine only if they are well done, and they can be well done only if the expert film technician and the expert medical technician are given a free hand to work out their common problem on an equal footing. The film technique should be as good of its kind as the medical or surgical technique; if the student's mind is to be satisfied. Until the perfect library of medical films can be formed we must rely upon the slightly imperfect copies that owe their existence usually to the enthusiasm of amateur medical cinematographers. Full use of the films that now exist can be made only if they are fully catalogued and classified by some central organization. Recently the Scientific Film Association set up a medical standing committee "to further the production and distribution of medical films suitable for circulation within the medical profession, either for training and teaching purposes or for the general dissemination of information." After the war it is hoped to set up a central medical film library, and as a step towards this any doctors who know of or have medical films are asked to inform the secretary of the Medical Standing Committee, Dr. S. J. Reynolds, 14, Hopton Road, Streatham, S.W.16. So that the information about each film may be systematically assembled a questionnaire has been drawn up by the Scientific Film Association which will be sent to any inquirer. Ordinary membership of the Scientific Film Association is open to anyone interested in the subject.

## SOME COMMON PAEDIATRIC PROCEDURES A REASSESSMENT FOR CHILD WELFARE PRACTICE\*

BY

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It has seemed to me suitable, in addressing this audience, to confine my remarks to such aspects of the subject as are the day-to-day concern of the worker in the child welfare clinic. The choice of a few points of common paediatric procedure for your reconsideration has therefore been based on cases referred to me from welfare centre practice or presented as problems to midwives and students in maternity departments. If, then, my conclusions seem to many to be self-evident, I must plead that to others they have seemed less obvious.

### The Crying Baby

Handbooks on the care of babies quite rightly tell their readers that the treatment of the crying baby is to find out the cause of its crying and correct it; yet in practice it is not at all uncommon for mothers to complain that their babies cry for hours on end, and an examination of such babies shows no abnormality to account for this behaviour. Endless and apparently motiveless crying is extremely disturbing to the mother, and may result in such anxiety that lactation fails. Even without such a serious consequence the symptom is distressing both to the baby and to all who hear it, and calls for treatment. I think in many cases, though the crying was started by some momentary discomfort, its persistence is due to the discomfort occasioned by the crying itself. The baby gets hot and its pillow wet, and so the crying continues. In these cases, after excluding by thorough examination an organic cause of pain, the giving of a sedative is amply justified. It is important, however, to give it in sufficient dose to ensure that the habit of crying is broken. Nothing discourages the mother more than to be given a medicine which she hopes will soothe the infant and then to have her hopes frustrated. For an infant 6 months old, for instance, phenobarbitone, gr. 1/2, would be an appropriate dose. The sedative need not be repeated for more than three or four nights as a rule.

### Breast-feeding

The commonest errors in the handling of the breast-feeding of the newborn child seem to be due to anxiety and pessimism—anxiety lest the newborn infant should be underfed in the early days of life, and pessimism with regard to the mother's ability to suckle her child. Admittedly the factors influencing lactation are incompletely understood and complex—too complex for detailed discussion here; but it is clear that successful breast-feeding does not depend entirely on mechanical factors such as the stimulation of the nipple by sucking and the emptying of the breast. Endocrine influences of much complexity play an important part, and anxiety or pessimism or a display of even cheerful ignorance by nurse, doctor, or health visitor will often effectively disturb what should be a normal lactation. My plea, therefore, is for a much more intelligent and intensive field study of lactation. Such study would show, among many things, how great is the variation in the appetites of normal newborn babies and in the time taken for lactation to become established. I am depressed at the number of infants discharged from maternity hospitals at the age of 2 weeks or less, wholly artificially fed. Often in such cases I learn that on or about the tenth day after delivery the mother has been given tablets to dry up her milk and told that she has an insufficient supply. There is nothing pathological in the fact that on the tenth day the supply of breast milk is less than 2½ fl. oz. per lb. of the infant's body weight. I think it is a fair generalization to say that, in the case of a healthy mother and infant, it is never possible in the first three weeks to state that lactation will not be established and should be abandoned. I have made it a rule, in a midwifery department where the newborn babies are in my care, that no infant is ever to be given a complementary feed (I except water and saline) without my being notified. As a result such feeding is, in normal cases, practically unknown.

In contrast let me instance a case referred to me last year. A mother aged 20 was sent with her 9-weeks-old infant to see me because he was restless and crying, and vomited. The baby had been born in a private nursing home, and had never been put to the breast. The mother had been purged and had her breasts bound up on the third day, and a variety of proprietary foods had been given to the infant. On examining the mother's breasts I found that a few beads of milk could be expressed. She was obviously disappointed that she had been thought incapable of suckling her child. I gave her the ordinary advice for re-establishing lactation,

but warned her not to be unduly depressed if she failed. She wrote 44 weeks later to tell me that her infant was fully breast-fed. The indiscriminate use of synthetic oestrogens has of course made the re-establishment of wrongly abandoned lactation more difficult.

The study of natural lactation can be carried out only by the paediatrician who sees the baby from birth onwards. The time available to the obstetrician or midwife—two or three weeks as a rule—is too short for a proper study to be made. This, incidentally, is a further argument, if one is still needed, for the paediatric supervision of the newborn babies in maternity units. The premature termination of lactation, like the termination of pregnancy, is a step which may have serious consequences, and should never be undertaken without a full knowledge of the factors involved and a careful consideration of the medical indications.

The formation of an abscess in the lactating breast is a complication of breast-feeding that needs much study. There is apparently a widespread failure to appreciate the aetiological factors and what should be the aim of treatment. Most cases of suppurative infection in the lactating breast are preceded by obstruction of the milk ducts, producing a tender, knotty breast. Treatment of this condition and prophylaxis of abscess formation should clearly aim at removing the obstruction and re-establishing the milk flow. Taking the baby off the affected breast and tight bandaging are therefore to be condemned.

When an abscess has definitely formed it is still too often forgotten by the surgeon that he has two patients—the mother and the infant. No treatment of breast abscess should be considered entirely satisfactory which does not achieve as its end-result normal lactation. A fissure in the nipple should be considered a danger signal, for it may be a portal of entry for infection to the deeper breast tissues. In any event, the fissure itself is extremely painful and may render breast-feeding from the affected side temporarily impossible. If, on account of pain, breast-feeding has to be suspended, particular care must be taken, while the fissure is under treatment, to prevent milk engorgement of the breast, either by manual expression or by the use of the breast pump. The objects of local treatment of the fissure are disinfection and rest, just as if it were an ulcer anywhere else in the body. There are many ways of achieving these ends, but a very practical method, and one that gives rapid relief of pain, is the application of a lead nipple-shield between feeds.

### Artificial Feeding

The technique of artificial feeding should be elastic and be modified to suit the individual infant's requirements, and in this important branch of paediatrics rule-of-thumb methods have little place. One not uncommonly sees infants suffering from dietetic upsets who have been treated by many changes of the brand of dried milk offered but none in the composition or quantity of the food. The only change has been in the branded name on the tin. The slavish belief in the advertised merits of proprietary brands of dried milk has interfered with the wider use of national dried milk. In this respect some hospitals have been much to blame. An infant is admitted to hospital and fed on a proprietary brand of straight full-cream dried milk; if he does well the mother is naturally reluctant to change to national dried milk when the infant returns home. Thus she pays at the chemist's shop three or four times as much as she would pay for the identical product at the food office or clinic.

### Respiratory Infections in Childhood

Chronic nasal discharge in small infants with resulting snuffles or nasal obstruction is a very common symptom. The origin of these snuffles is probably a mild catarrhal infection of the nose, but the persistence of the symptom is often due to mistaken attempts to clear the nose with pledgets of cotton-wool. These pledgets are useless for the purpose for which they are intended, and the delicate mucous membrane of the infant's nose is always irritated and often injured by their use, and a chronic infection results. Most cases of snuffles will clear up when the use of such pledgets is discontinued.

Whether tonsils should be removed or not is a question asked frequently in welfare centre practice. It clearly requires careful and individual consideration. No one who has seen some of the bad results of indiscriminate tonsillectomy will fail to realize the importance of a right decision. The tonsil undoubtedly plays a large part in the defence of the respiratory tract of the young child against infection, and its removal while still capable of healthy function will only weaken the defence. I do not think it is an over-simplification of the problem to state that there are but two indications for the removal of the tonsils in children under 5 years old. The first is hypertrophy of the tonsil to a degree which interferes with the child's swallowing; the second is chronic infection of the tonsil, resulting either in repeated auto-infection of the respiratory tract or in the child's becoming a carrier of pathogenic organisms which cannot be eliminated by other means. It is important to remember that a history of repeated acute infections in the child is not necessarily an indication for removal of the tonsils. The repeated infections may be due simply to repeated exposure to an outside source of infection. The same principles

\* Lecture (abridged) given in London to the Maternity and Child Welfare Group of the Society of Medical Officers of Health.

should be applied to consideration of the removal of adenoids. The adenoids should be removed if they are the site of chronic infection, or if their hypertrophy obstructs the nasal air-way or interferes with the drainage of the paranasal sinuses or middle ear.

In the prophylaxis of respiratory infection in childhood it is still not uncommon to find that clinics are exposing children to ultra-violet light. The uselessness of this procedure was well shown by Dora Colebrook as long ago as 1929. She studied three groups of children, of which one was exposed to ultra-violet light, another to a screened lamp from which no ultra-violet rays came, and the third served as a control. She found no significant difference in the incidence or duration of respiratory infections in the three groups; the very small and insignificant difference being favourable to the control group. In the absence of any work to contradict these findings it seems to me that the exposure of children to ultra-violet light is quite unwarranted.

#### Strawberry Naevi

The strawberry naevus or capillary haemangioma is quite a common birthmark, and a great number of cases are still referred to hospital, often with the suggestion that they should be treated with CO<sub>2</sub> snow, with radium, or by excision. The natural history of these naevi was studied by W. A. Lister (1938), and he found, in a series of 77 children with 93 naevi who were watched for periods varying from one to seven years, that there was no exception to the rule that naevi which grew rapidly during the early months of life subsequently retrogressed and, of their own accord, disappeared, on the average at about the fifth year.

My experience is in accordance with Lister's findings. Any form of treatment is bound to leave a scar, whereas natural retrogression of the naevus leaves normal healthy skin. The chief difficulty in practice is to persuade the child's mother that the naevus will retrogress after reaching its maximum size at the age of about 12 months. My practice is to make an exact tracing of the naevus on a piece of "cellophane" or washed x-ray film and transfer this pattern to paper. This paper is dated and given to the mother to keep. She may then observe for herself that the naevus does not further increase in size, but gradually shrinks or fades. In many cases the retrogression starts in patches in the middle of the naevus, but after the age of about 12 months the edges, even if they are the last bits to disappear, do not spread.

#### Circumcision

This mutilation has a long history which is of great anthropological interest. But its popular justification on hygienic grounds seems to be of quite recent origin and of extremely doubtful validity. As it is not free from hazard and discomfort it is well, when considering it as a surgical procedure, to take stock of the indications for the operation. So far as I know, there is but one—phimosis; this being defined as a stenosis of the preputial orifice which prevents retraction of the prepuce behind the corona of the glans penis. In most cases in which circumcision is performed no attempt is made to assess whether phimosis is present or not; for normally the prepuce of the infant is lightly adherent to the glans, and it is these adhesions which prevent retraction. If the adhesions are divided—and this can easily be done either by digital retraction or with a probe, though I do not suggest that it is a desirable routine procedure—it will be found that phimosis is rare. If the preputial orifice is smaller than the urinary meatus—an extremely rare occurrence—interference with urination will occur and operation is certainly necessary. But I doubt whether operation is indicated in degrees of phimosis in early infancy. Indeed, it has been noted that some degree of phimosis, as above defined, is normal in young infants.

I have heard it suggested that a long and inflamed prepuce or the so-called "cauliflower prepuce" indicates circumcision. This condition is in fact an absolute contraindication to circumcision. The "cauliflower prepuce"—the site of cellulitis, oedema, and even ulceration—is the result of an ammonia dermatitis. To remove such a prepuce is to expose the more delicate glans and the urinary meatus to the same trauma with a far more painful result—namely, meatal ulceration. One might as well urge a man to remove his steel helmet in an air raid because it was being dented by falling "flak."

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P. A. O'Leary and W. E. Herrell (*Proc. Mayo Clin.*, 1944, 19, 20) record the treatment of a case of late cutaneous syphilis with penicillin. The patient was a 42-year-old married woman who for eight years had had a nodular syphilid of the nose. She was given 20,000 units of penicillin intravenously twice a day for 8 days. The result is described as striking, and three weeks after the course of treatment all that was left was some residual pigmentation. Serum tests for syphilis remained unchanged.

## THE LISTER INSTITUTE

### Long-term Investigations

The report of the Governing Body of the Lister Institute of Preventive Medicine, given at the recent annual meeting, contains brief accounts of many continuing investigations which cannot be expected to reach finality in any one year. Some of the members of the staff are on active service abroad and seconded to a Government Department. A number of the workers are enjoying research facilities at Oxford, and others at Cambridge. One event of the year was the establishment by the Medical Research Council, which is administering the London blood supply depots on behalf of the Ministry of Health, of a unit at the Institute for research into, and filtration of, blood plasma and serum for transfusion, and the Director of the Institute, Dr. Alan N. Drury, is chairman of the Blood Transfusion Research Committee.

Two of the workers, Dr. R. A. Kekwick and Dr. M. F. Mackay, have been studying problems arising in the large-scale processing of human serum and plasma. They have found that the adjustment of the reaction of plasma to pH 5.4 with sterile citric acid before ether extraction provides a method for the quantitative removal of fibrinogen, as well as for removing the unstable lipid complexes. After readjustment of the product to pH 7 followed by Seitz filtration, a transfusion fluid is obtained which remains stable for at least twelve months. It is added that problems arising in the kaolin processing of plasma have been surmounted and the Serum Unit has been filtering the entire output of the London blood transfusion depots before dispatch to Cambridge for freeze-drying.

### Serological and Bacteriological Studies

One of the serological studies undertaken concerns the treatment of louse-borne typhus by anti-proteus OX19 serum. Dr. A. Felix has been working on this serum from the horse and a few preliminary trials have been carried out in North Africa in collaboration with Capt. T. E. Woodward of the United States Typhus Commission. Six selected severe cases were treated; three patients received the serum intravenously and three intramuscularly. All did well, though one of them had been in a comatose state for several days. These trials have shown that large doses of the serum are well tolerated and that as a result of the injections an initial low-titre OX19 reaction in the patient's serum can be increased from twenty to thirty times.

Dr. Felix and Miss Callow have continued the typing of typhoid, paratyphoid, and food-poisoning bacilli with the Vi bacteriophage. A paper by them on the typing of paratyphoid B bacilli in this way was published in the *British Medical Journal* of July 31, 1943 (p. 127). One hitherto unknown Vi-phage type of the typhoid bacillus was identified during the past year as being responsible for a small outbreak of typhoid fever. This type does not seem to be indigenous to the British Isles, as it has been traced to a chronic carrier who acquired the infection during the war in South Africa more than forty years ago. On the other hand, a Vi-phage type of *Bacillus paratyphosus* B has been found which must be considered indigenous. The number of known Vi-types and subtypes of the paratyphoid B bacillus is now five.

### Nutritional Studies

The Ministry of Food has been anxious to ascertain more accurately the requirement for vitamin A as derived from pre-formed vitamin A and from the provitamin carotene. This has been done by a human experiment carried out on volunteers, who were conscientious objectors, at the Sorby Institute at Sheffield. Since July, 1942, these volunteers have received a diet made as deficient as possible in vitamin A and carotene; a small number have served as positive controls receiving supplements of these substances. Observation was specially directed to the measurement of capacity for dark-adaptation. At the end of a year none of the volunteers showed any definite signs of deterioration of the visual threshold, but after fourteen months one subject began to show this deterioration, with slight skin symptoms, and a very low value for plasma vitamin A, all of which signs progressed rapidly until he was given a small daily dose of the vitamin, when the symptoms slowly regressed. The experiment has indicated how large are the vitamin A reserves in the liver of the healthy human adult.



and that a daily dose of vitamin A, smaller than that usually recognized as the daily requirement, is enough to stop depletion and restore the organism to health, though whether to perfect health is still uncertain.

The nutritive value of the nitrogenous substances of the potato has been under investigation. Weight for weight, the nitrogen of the potato has been found to have a biological value at least equal to that of the proteins of whole wheat, though only about one-half of the potato nitrogen is in the form of protein. It is believed that a supplementary action occurs between the protein and non-protein nitrogenous substances in the tuber, probably attributable to the amino-acids present in the latter, which explains why the total nitrogen of the potato, though half is non-protein, has at least as high a nutritive value for growth as an equivalent amount given in the form of potato protein. The nutritive value of proteins from other foods has been found to be enhanced by the addition of protein-free potato juice.

A nutritional survey of women employed in Oxford factories and of local housewives of similar age and social position was carried out from the autumn of 1942 to the end of 1943. On the whole the nutritional state deteriorated very slightly during that period, but more so among the factory workers than among the housewives.

#### Other Researches

Work on the cultivation of vaccinia virus on the chorio-allantoic membrane of the developing chick has been resumed with a view to preparing sufficient quantities of suitable virus for field trials and for clinical use in vaccination. The differences in the lesions inflicted on this membrane by strains of virus derived from sheep and those derived from the calf, which were reported four years ago, are being made the subject of further investigation, and it is hoped to determine which strain is the more suitable for Jennerian prophylaxis. Observations are also being made to determine the best method of preserving stocks of cultivated virus and a convenient form in which it can be issued for clinical use.

A large number of studies are recorded on the effects of different combinations of hormones and vitamins on young adult and old rats. Thus vitamin A, B, or C, administered alone, caused only slight changes in the liver and kidneys, but striking changes followed administration of thyroid hormone in non-toxic doses, including pronounced hyperplasia of hepatic cells, hypertrophy of kidney tubules, etc. Simultaneous administration of the vitamins with the hormone did not significantly alter the effect of the latter. Large doses of the hormone produced a pronounced atrophy of cells and other changes, and here vitamin B had a beneficial effect (regenerative hyperplasia of cells).

Many other biochemical, biophysical, and physico-chemical experiments are recorded.

#### ORDER OF ST. JOHN OF JERUSALEM

The following medical promotions in and appointments to the Venerable Order of the Hospital of St. John of Jerusalem have been announced:

As Knights Capt. H. F. Powell, M.B.E., Lieut.-Gen. Sir Alexander Hood, K.C.B., C.B.E., K.H.P., Lieut.-Gen. Sir Gordon G. Jolly, K.C.I.E., I.M.S., Drs. E. C. Bateman, O.B.E., and W. Stewart, As Commanders (Brothers), Drs. C. Gardiner-Hill, K. S. Maurice-Smith, F. L. Newton, and C. E. C. Wilson, Brig. W. W. S. Johnston, C.B.E., D.S.O., M.C., Major-Gen. F. S. Mills, C.I.E., I.M.S., Col. H. H. E. Russell, O.B.E., V.D. As Associate Commander (Brother), Dr. A. D. E. Behrang, As Officers (Brothers), Drs. H. J. O'D. Burke-Gaffney, O.B.E., H. C. Sindersen, C.M.G., M.V.O., O.B.E., S. J. W. Donald, E. A. H. Russell, O.B.E., V.D., H. E. Skeete, O.B.E., J. S. Harbison, S. F. Chellappah, O.B.E., and N. Cairne, Brig. Sir W. S. Duke-Elder, Cols. A. H. Harty, C.I.E., I.M.S., and R. Hay, C.I.E., I.M.S., Lieut.-Col. W. George, M.C., T.D., Lieut.-Cols. R. F. D. MacGregor, C.I.E., M.C., I.M.S. (ret.), G. Verhese, C.I.E., I.M.S., and J. E. Gray, I.M.S., Capt. T. C. A. Sweetnam and F. W. P. Sullivan, As Associate Officers (Brothers), Lieut.-Col. A. N. Chopra, I.M.S., Major S. A. Paymaster, I.M.S., Capt. G. G. Linaye, Dr. M. N. Mahadevan, As Officer (Sister), Dr. Cornelia B. S. Elwood, C.B.E., As Serving Brothers, Surg. Lieut. Cmdr. R. E. Matters, R.A.N., Lieut.-Col. A. I. Cox, I.M.S., Majors J. D. Murdoch, I.M.S., and A. B. Slack, M.C., Drs. J. H. Pettiger, G. A. Fisher, M.C., T.D., C. R. White, R. St. J. Kenn, W. W. Knapton, G. C. Campbell, L. A. Watson, H. S. Taylor-Young, R. Brown, A. N. MacRae, K. D. Bean, E. M. McAlpine, C. D. Hough, V. F. Ryan, T. J. Coakley, G. R. Lipp, M.C., K. G. Salmon, P. H. Stewart, G. G. Dudd, R. McL. Carmichael, J. A. Davies, and C. E. R. Norman, As Associate Serving Brothers, Lieut.-Col. R. M. Kharegar, I.M.S., Capt. B. S. Chalm, Dr. B. Bose, H. N. Dewan, M. F. Bismi, I. Lipedze, S. Bloom, P. R. Kuppuswami and P. Vaidyanathan, As Serving Sisters, Drs. Muriel R. Powell, Daphne W. Dear, Margaret Swete, and Alice M. Headwards.

## Correspondence

### B.M.R. Determinations on Ambulatory Patients

SIR.—I read with very great interest the paper on the determination of basal metabolism on out-patients by Dr. J. Douglas Robertson (May 6, p. 617). The problem of ambulatory basal metabolic rate determinations arose in the Montreal General Hospital approximately 20 years ago. The method investigated corresponded almost exactly with that of Dr. Robertson, and the conclusions were the same. During the last 20 years we have performed approximately 50,000 basal metabolic rate tests on ambulatory patients, and, as Dr. Robertson has pointed out, "these so-called ambulatory determinations are not significantly different from those tests carried out at the bedside under strictly basal conditions.—I am, etc.,

I. M. RABINOWITCH,

Director, Department of Metabolism, Montreal General Hospital.

### Why Tie the Cord?

SIR.—I have read with much interest the letters by Dr. E. W. Price (June 3, p. 772) and Dr. K. J. Franklin (June 24, p. 857) on "Why Tie the Cord?" Whether or not it is necessary to tie the cord depends on the presence or absence of a closing mechanism in its vessels. Certain radiological observations focused our attention on the intra-abdominal portion of the umbilical arteries. For the past year I have been examining sections of these arteries. A full account of the results will be published elsewhere, but the following notes, some of which are based on this work, may be of interest with regard to the present question.

In the intra-abdominal portion of the umbilical arteries sub-endothelial ridges are found which project into the lumen of the vessel. These ridges lie within the internal elastic lamina and the tunica media. They consist mainly of longitudinal and oblique muscle fibres (see Fig. 1). Their prominence

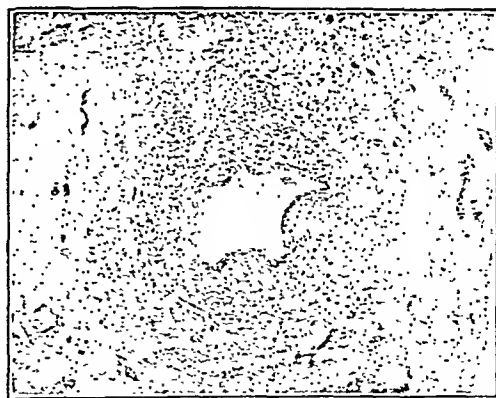


FIG. 1

varies with the state of the vessel. In structure and appearance they resemble the ridges found in the penile and uterine arteries (Kiss, 1921) and the pulmonary artery and ductus arteriosus (Pfeifer, 1902). They are found throughout the intra-abdominal portion of the umbilical artery from approximately the level of the base of the bladder to the umbilicus. It is of some interest to note that Jankovich (1939) described somewhat similar structures in the extra-abdominal portion of the artery. The function of the ridges appears to be to bring about a fairly complete closure of the umbilical arteries following birth—the circular muscle of the tunica media contracting and driving the ridges into the lumen.

With regard to the vein, the muscle fibres in the vessel wall are relatively deficient compared with those in the artery. The circular muscle fibres are found in scattered bundles and do

the pericardium by applying powdered asbestos to the surface of the heart and by laying grafts of mediastinal fat against it. His illustrations demonstrate conclusively that vascular channels are formed in such adhesions, both in animals and in man.

Unfortunately the results of this procedure are not encouraging. Feil describes 37 patients treated by the Beck operation: there were 14 operative deaths, and 23 survived. Of the latter, 14 were improved and are still living, 9 died within four months to six years of operation, all from coronary disease, and 5 of these experienced relief of their symptoms. Patients with severe coronary disease rarely survived the operation, and those that did survive were unimproved. Therefore the early case with only slight myocardial damage should be chosen for operation; but even in the later cases of the series, when such selection was being applied, the operative mortality was 35%. Grave as is the prognosis of coronary disease, such a mortality will discourage most physicians from submitting their patients to this hazard. Nevertheless there is now considerable evidence that these operations do, in most cases, reduce the severity of the symptoms and even prolong life if the patient can survive the initial shock. It is therefore to be hoped that future improvements in technique will lower the operative mortality. There is certainly scope for more research in this field.

### HEALTH RECORD OF THE U.S. ARMY

The Surgeon-General's statistical report for 1943, circulated by the U.S. Office of War Information, gives some interesting facts and figures. The number of men examined during the year was 5,200,000; the number recruited into the Army was 2,400,000, and into the Navy, Marine Corps, and Coast Guard 900,000; the number rejected was 1,900,000 (36%). The Army certificate-of-disability-for-discharge rates have run rather high. The majority of such discharges occurred within the first three months of service, suggesting that mental and physical defects were missed at the medical recruitment examinations. The health of the U.S. Army has been better than it was at any time during peace. Up to the end of 1943 only 3% of the wounded had died of their wounds. The Army's over-all death rate from disease was 0.6 per thousand per annum, this despite the fact that American soldiers are fighting on all fronts, in all climates, and exposed to all diseases. The death rate for pneumonia before the advent of the sulphonamide drugs was 24%; the present Army rate is 0.7%. The death rate from meningitis, which forty years ago killed 80% of those contracting it, was reduced to 38% in the last war and, through the use of "sulpha" drugs, has now fallen to 4.2%. The admission rate for tuberculosis has declined from 12 per thousand per annum in the last war to 1.2 in the present war. The programme for recruitment of individuals with venereal disease was officially inaugurated in October, 1942. Special V.D. hospitals were built at each of the 34 reception centres, with a total of 6,510 beds. Recruits having venereal disease were referred to these hospitals, where they were examined and treated. The U.S. Army is vaccinated against smallpox, paratyphoid, typhoid, and tetanus. Typhoid fever, which was the scourge of armies until 1912, has been reduced to insignificance. There have been no deaths from typhus, though this disease is endemic in North Africa. There has been no tetanus in the vaccinated, and vaccination against yellow fever has prevented any incidence of this disease. Vaccination is available when there is danger of exposure to cholera and plague. Against the

menace of insects as carriers of disease the sanitary service has developed the Freon pyrethrum bomb which, upon the turning of a spigot, will spray a plane or tent or barrack, killing all flies, mosquitoes, and bed-bugs in the area treated. This spray is non-toxic to man. The synthetic compound known as "DDT" (dichlorodiphenyltrichlorethane) has been introduced for killing lice; the use of this powder (which is also effective against flies) enabled the United States Typhus Commission to prevent the development of an epidemic of typhus fever in Naples. The report on the dental service states that rejections for dental defects ran to around 5%. It was decided then that if a recruit had no malignant disease or extensive osteomyelitis in his jaws he would be accepted regardless of the number of serviceable teeth. This threw an immense load upon the Army Dental Corps. During the years 1942 and 1943 14,600,000 cases were treated, and 31,000,000 teeth were filled; more than 1,400,000 bridges and dentures were supplied, 196,000 dentures mended, and more than 6,000,000 teeth replaced by dentures and bridges.

### MEDICAL FILMS

There should be plenty of room for the use of the moving film in medical education. If anyone had doubts on this subject the viewing of the two films recently made by the British Council should have removed them. The moving picture tells a story that often enough can be told with poor effect in words only. In fact there is always the risk that the word will accumulate many meanings remote from what it stands for. One such word is "rehabilitation," which at the moment is in danger of almost becoming a political slogan. The recent British Council film, "Accident Service" (see *B.M.J.*, June 10, p. 789), made it vividly plain to all and sundry just what rehabilitation is. We can think of no better way of informing the medical student of what rehabilitation is than by showing him this film. It is even possible that the film will teach more than a visit to such a centre as Berry Hill Hall, because the film is the product of many minds, and gathers up into one whole all the numerous links in the medical and surgical chain that rehabilitates the injured or diseased person. But films can become an educational force in medicine only if they are well done, and they can be well done only if the expert film technician and the expert medical technician are given a free hand to work out their common problem on an equal footing. The film technique should be as good of its kind as the medical or surgical technique if the student's mind is to be satisfied. Until the perfect library of medical films can be formed we must rely upon the slightly imperfect copies that owe their existence usually to the enthusiasm of amateur medical cinematographers. Full use of the films that now exist can be made only if they are fully catalogued and classified by some central organization. Recently the Scientific Film Association set up a medical standing committee "to further the production and distribution of medical films suitable for circulation within the medical profession, either for training and teaching purposes or for the general dissemination of information." After the war it is hoped to set up a central medical film library, and as a step towards this any doctors who know of or have medical films are asked to inform the secretary of the Medical Standing Committee, Dr. S. J. Reynolds, 14, Hopton Road, Streatham, S.W.16. So that the information about each film may be systematically assembled a questionnaire has been drawn up by the Scientific Film Association which will be sent to any inquirer. Ordinary membership of the Scientific Film Association is open to anyone interested in the subject.

## SOME COMMON PAEDIATRIC PROCEDURES A REASSESSMENT FOR CHILD WELFARE PRACTICE\*

BY

DOYNE BELL, D.M.

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It has seemed to me suitable, in addressing this audience, to confine my remarks to such aspects of the subject as are the day-to-day concern of the worker in the child welfare clinic. The choice of a few points of common paediatric procedure for your reconsideration has therefore been based on cases referred to me from welfare centre practice or presented as problems to midwives and students in maternity departments. If, then, my conclusions seem to many to be self-evident, I must plead that to others they have seemed less obvious.

### The Crying Baby

Handbooks on the care of babies quite rightly tell their readers that the treatment of the crying baby is to find out the cause of its crying and correct it; yet in practice it is not at all uncommon for mothers to complain that their babies cry for hours on end, and an examination of such babies shows no abnormality to account for this behaviour. Endless and apparently motiveless crying is extremely disturbing to the mother, and may result in such anxiety that lactation fails. Even without such a serious consequence the symptom is distressing both to the baby and to all who hear it, and calls for treatment. I think in many cases, though the crying was started by some momentary discomfort, its persistence is due to the discomfort occasioned by the crying itself. The baby gets hot and its pillow wet, and so the crying continues. In these cases, after excluding by thorough examination an organic cause of pain, the giving of a sedative is amply justified. It is important, however, to give it in sufficient dose to ensure that the habit of crying is broken. Nothing discourages the mother more than to be given a medicine which she hopes will soothe the infant and then to have her hopes frustrated. For an infant 6 months old, for instance, phenobarbitone, gr. 1/2, would be an appropriate dose. The sedative need not be repeated for more than three or four nights as a rule.

### Breast-feeding

The commonest errors in the handling of the breast-feeding of the newborn child seem to be due to anxiety and pessimism—anxiety lest the newborn infant should be underfed in the early days of life, and pessimism with regard to the mother's ability to suckle her child. Admittedly the factors influencing lactation are incompletely understood and complex—too complex for detailed discussion here; but it is clear that successful breast-feeding does not depend entirely on mechanical factors such as the stimulation of the nipple by sucking and the emptying of the breast. Endocrine influences of much complexity play an important part, and anxiety or pessimism or a display of even cheerful ignorance by nurse, doctor, or health visitor will often effectively disturb what should be a normal lactation. My plea, therefore, is for a much more intelligent and intensive field study of lactation. Such study would show, among many things, how great is the variation in the appetites of normal newborn babies and in the time taken for lactation to become established. I am depressed at the number of infants discharged from maternity hospitals at the age of 2 weeks or less, wholly artificially fed. Often in such cases I learn that on or about the tenth day after delivery the mother has been given tablets to dry up her milk and told that she has an insufficient supply. There is nothing pathological in the fact that on the tenth day the supply of breast milk is less than 2½ fl. oz. per lb. of the infant's body weight. I think it is a fair generalization to say that, in the case of a healthy mother and infant, it is never possible in the first three weeks to state that lactation will not be established and should be abandoned. I have made it a rule, in a midwifery department where the newborn babies are in my care, that no infant is ever to be given a complementary feed (I except water and saline) without my being notified. As a result such feeding is, in normal cases, practically unknown.

In contrast let me instance a case referred to me last year. A mother aged 20 was sent with her 9-weeks-old infant to see me because he was restless and crying, and vomited. The baby had been born in a private nursing home, and had never been put to the breast. The mother had been purged and had her breasts bound up on the third day, and a variety of proprietary foods had been given to the infant. On examining the mother's breasts I found that a few beads of milk could be expressed. She was obviously disappointed that she had been thought incapable of suckling her child. I gave her the ordinary advice for re-establishing lactation,

but warned her not to be unduly depressed if she failed. She wrote 4½ weeks later to tell me that her infant was fully breast-fed. The indiscriminate use of synthetic oestrogens has of course made the re-establishment of wrongly abandoned lactation more difficult.

The study of natural lactation can be carried out only by the paediatrician who sees the baby from birth onwards. The time available to the obstetrician or midwife—two or three weeks as a rule—is too short for a proper study to be made. This, incidentally, is a further argument, if one is still needed, for the paediatric supervision of the newborn babies in maternity units. The premature termination of lactation, like the termination of pregnancy, is a step which may have serious consequences, and should never be undertaken without a full knowledge of the factors involved and a careful consideration of the medical indications.

The formation of an abscess in the lactating breast is a complication of breast-feeding that needs much study. There is apparently a widespread failure to appreciate the aetiological factors and what should be the aim of treatment. Most cases of suppurative in the lactating breast are preceded by obstruction of the milk ducts, producing a tender, knotty breast. Treatment of this condition and prophylaxis of abscess formation should clearly aim at removing the obstruction and re-establishing the milk flow. Taking the baby off the affected breast and tight bandaging are therefore to be condemned.

When an abscess has definitely formed it is still too often forgotten by the surgeon that he has two patients—the mother and the infant. No treatment of breast abscess should be considered entirely satisfactory which does not achieve as its end-result normal lactation. A fissure in the nipple should be considered a danger signal, for it may be a portal of entry for infection to the deeper breast tissues. In any event, the fissure itself is extremely painful and may render breast-feeding from the affected side temporarily impossible. If, on account of pain, breast-feeding has to be suspended, particular care must be taken, while the fissure is under treatment, to prevent milky engorgement of the breast, either by manual expression or by the use of the breast pump. The objects of local treatment of the fissure are disinfection and rest, just as if it were an ulcer anywhere else in the body. There are many ways of achieving these ends, but a very practical method, and one that gives rapid relief of pain, is the application of a lead nipple-shield between feeds.

### Artificial Feeding

The technique of artificial feeding should be elastic and be modified to suit the individual infant's requirements, and in this important branch of paediatrics rule-of-thumb methods have little place. One not uncommonly sees infants suffering from dietetic upsets who have been treated by many changes of the brand of dried milk offered but none in the composition or quantity of the food. The only change has been in the branded name on the tin. The slavish belief in the advertised merits of proprietary brands of dried milk has interfered with the wider use of national dried milk. In this respect some hospitals have been much to blame. An infant is admitted to hospital and fed on a proprietary brand of straight full-cream dried milk; if he does well the mother is naturally reluctant to change to national dried milk when the infant returns home. Thus she pays at the chemist's shop three or four times as much as she would pay for the identical product at the food office or clinic.

### Respiratory Infections in Childhood

Chronic nasal discharge in small infants with resulting snuffles or nasal obstruction is a very common symptom. The origin of these snuffles is probably a mild catarrhal infection of the nose, but the persistence of the symptom is often due to mistaken attempts to clear the nose with pledgets of cotton-wool. These pledgets are useless for the purpose for which they are intended, and the delicate mucous membrane of the infant's nose is always irritated and often injured by their use, and a chronic infection results. Most cases of snuffles will clear up when the use of such pledgets is discontinued.

Whether tonsils should be removed or not is a question asked frequently in welfare centre practice. It clearly requires careful and individual consideration. No one who has seen some of the bad results of indiscriminate tonsillectomy will fail to realize the importance of a right decision. The tonsil undoubtedly plays a large part in the defence of the respiratory tract of the young child against infection, and its removal while still capable of healthy function will only weaken the defence. I do not think it is an over-simplification of the problem to state that there are but two indications for the removal of the tonsils in children under 5 years old. The first is hypertrophy of the tonsil to a degree which interferes with the child's swallowing; the second is chronic infection of the tonsil, resulting either in repeated auto-infection of the respiratory tract or in the child's becoming a carrier of pathogenic organisms which cannot be eliminated by other means. It is important to remember that a history of repeated acute infections in the child is not necessarily an indication for removal of the tonsils. The repeated infections may be due simply to repeated exposure to an outside source of infection. The same principles

\* Lecture (abridged) given in London to the Maternity and Child Welfare Group of the Society of Medical Officers of Health.

should be applied to consideration of the removal of adenoids. The adenoids should be removed if they are the site of chronic infection, or if their hypertrophy obstructs the nasal air-way or interferes with the drainage of the paranasal sinuses or middle ear.

In the prophylaxis of respiratory infection in childhood it is still not uncommon to find that clinics are exposing children to ultra-violet light. The uselessness of this procedure was well shown by Dora Colebrook as long ago as 1929. She studied three groups of children, of which one was exposed to ultra-violet light, another to a screened lamp from which no ultra-violet rays came, and the third served as a control. She found no significant difference in the incidence or duration of respiratory infections in the three groups; the very small and insignificant difference being favourable to the control group. In the absence of any work to contradict these findings it seems to me that the exposure of children to ultra-violet light is quite unwarranted.

### Strawberry Naevi

The strawberry naevus or capillary haemangioma is quite a common birthmark, and a great number of cases are still referred to hospital, often with the suggestion that they should be treated with CO<sub>2</sub> snow, with radium, or by excision. The natural history of these naevi was studied by W. A. Lister (1938), and he found, in a series of 77 children with 93 naevi who were watched for periods varying from one to seven years, that there was no exception to the rule that naevi which grew rapidly during the early months of life subsequently retrogressed and, of their own accord, disappeared, on the average at about the fifth year.

My experience is in accordance with Lister's findings. Any form of treatment is bound to leave a scar, whereas natural retrogression of the naevus leaves normal healthy skin. The chief difficulty in practice is to persuade the child's mother that the naevus will retrogress after reaching its maximum size at the age of about 12 months. My practice is to make an exact tracing of the naevus on a piece of "cellophane" or washed x-ray film and transfer this pattern to paper. This paper is dated and given to the mother to keep. She may then observe for herself that the naevus does not further increase in size, but gradually shrinks or fades. In many cases the retrogression starts in patches in the middle of the naevus, but after the age of about 12 months the edges, even if they are the last bits to disappear, do not spread.

### Circumcision

This mutilation has a long history which is of great anthropological interest. But its popular justification on hygienic grounds seems to be of quite recent origin and of extremely doubtful validity. As it is not free from hazard and discomfort it is well, when considering it as a surgical procedure, to take stock of the indications for the operation. So far as I know, there is but one—phimosis; this being defined as a stenosis of the preputial orifice which prevents retraction of the prepuce behind the corona of the glans penis. In most cases in which circumcision is performed no attempt is made to assess whether phimosis is present or not; for normally the prepuce of the infant is lightly adherent to the glans, and it is these adhesions which prevent retraction. If the adhesions are divided—and this can easily be done either by digital retraction or with a probe, though I do not suggest that it is a desirable routine procedure—it will be found that phimosis is rare. If the preputial orifice is smaller than the urinary meatus—an extremely rare occurrence—interference with urination will occur and operation is certainly necessary. But I doubt whether operation is indicated in lesser degrees of phimosis in early infancy. Indeed, it has been suggested that some degree of phimosis, as above defined, is normal in the young infant.

I have heard it suggested that a long and inflamed prepuce or the so-called "cauliflower prepuce" indicates circumcision. This condition is in fact an absolute contraindication to circumcision. The "cauliflower prepuce"—the site of cellulitis, oedema, and even ulceration—is the result of an ammonia dermatitis. To remove such a prepuce is to expose the more delicate glans and the urinary meatus to the same trauma with a far more painful result—namely, mental ulceration. One might as well urge a man to remove his steel helmet in an air raid because it was being dented by falling "flak."

### REFERENCES

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P. A. O'Leary and W. E. Herrell (*Proc. Mayo Clin.*, 1944, 19, 20) record the treatment of a case of late cutaneous syphilis with penicillin. The patient was a 42-year-old married woman who for eight years had had a nodular syphiloderm of the nose. She was given 20,000 units of penicillin intravenously twice a day for 8 days. The result is described as striking, and three weeks after the course of treatment all that was left was some residual pigmentation. Serum tests for syphilis remained unchanged.

## THE LISTER INSTITUTE

### Long-term Investigations

The report of the Governing Body of the Lister Institute of Preventive Medicine, given at the recent annual meeting, contains brief accounts of many continuing investigations which cannot be expected to reach finality in any one year. Some of the members of the staff are on active service abroad or seconded to a Government Department. A number of the workers are enjoying research facilities at Oxford, and others at Cambridge. One event of the year was the establishment by the Medical Research Council, which is administering the London blood supply depots on behalf of the Ministry of Health, of a unit at the Institute for research into, and filtration of, blood plasma and serum for transfusion, and the Director of the Institute, Dr. Alan N. Drury, is chairman of the Blood Transfusion Research Committee.

Two of the workers, Dr. R. A. Kekwick and Dr. M. E. Mackay, have been studying problems arising in the large-scale processing of human serum and plasma. They have found that the adjustment of the reaction of plasma to pH 5.4 with sterile citric acid before ether extraction provides a method for the quantitative removal of fibrinogen, as well as for removing the unstable lipid complexes. After readjustment of the product to pH 7 followed by Seitz filtration, a transfusion fluid is obtained which remains stable for at least twelve months. It is added that problems arising in the kaolin processing of plasma have been surmounted and the Serum Unit has been filtering the entire output of the London blood transfusion depots before dispatch to Cambridge for freeze-drying.

### Serological and Bacteriological Studies

One of the serological studies undertaken concerns the treatment of louse-borne typhus by anti-proteus OX 19 serum. Dr. A. Felix has been working on this serum from the horse, and a few preliminary trials have been carried out in North Africa in collaboration with Capt. T. E. Woodward of the United States Typhus Commission. Six selected severe cases were treated; three patients received the serum intravenously and three intramuscularly. All did well, though one of them had been in a comatose state for several days. These trials have shown that large doses of the serum are well tolerated, and that as a result of the injections an initial low-titre OX 19 reaction in the patient's serum can be increased from twenty to thirty times.

Dr. Felix and Miss Callow have continued the typing of typhoid, paratyphoid, and food-poisoning bacilli with the Vi bacteriophage. A paper by them on the typing of paratyphoid B bacilli in this way was published in the *British Medical Journal* of July 31, 1943 (p. 127). One hitherto unknown Vi-phage type of the typhoid bacillus was identified during the past year as being responsible for a small outbreak of typhoid fever. This type does not seem to be indigenous to the British Isles, as it has been traced to a chronic carrier who acquired the infection during the war in South Africa more than forty years ago. On the other hand, a Vi-phage type of *Bact. paratyphosum* B has been found which must be considered indigenous. The number of known Vi-types and subtypes of the paratyphoid B bacillus is now five.

### Nutritional Studies

The Ministry of Food has been anxious to ascertain more accurately the requirement for vitamin A as derived from pre-formed vitamin A and from the provitamin carotene. This has been done by a human experiment carried out on volunteers, who were conscientious objectors, at the Sorby Institute at Sheffield. Since July, 1942, these volunteers have received a diet made as deficient as possible in vitamin A and carotene; a small number have served as positive controls receiving supplements of these substances. Observation was specially directed to the measurement of capacity for dark-adaptation. At the end of a year none of the volunteers showed any definite signs of deterioration of the visual threshold, but after fourteen months one subject began to show this deterioration, with slight skin symptoms, and a very low value for plasma vitamin A, all of which signs progressed rapidly until he was given a small daily dose of the vitamin, when the symptoms slowly regressed. The experiment has indicated how large are the vitamin A reserves in the liver of the healthy human adult,

and that a daily dose of vitamin A, smaller than that usually recognized as the daily requirement, is enough to stop depletion and restore the organism to health, though whether to perfect health is still uncertain.

The nutritive value of the nitrogenous substances of the potato has been under investigation. Weight for weight, the nitrogen of the potato has been found to have a biological value at least equal to that of the proteins of whole wheat, though only about one-half of the potato nitrogen is in the form of protein. It is believed that a supplementary action occurs between the protein and non-protein nitrogenous substances in the tuber, probably attributable to the amino-acids present in the latter, which explains why the total nitrogen of the potato, though half is non-protein, has at least as high a nutritive value for growth as an equivalent amount given in the form of potato protein. The nutritive value of proteins from other foods has been found to be enhanced by the addition of protein-free potato juice.

A nutritional survey of women employed in Oxford factories and of local housewives of similar age and social position was carried out from the autumn of 1942 to the end of 1943. On the whole the nutritional state deteriorated very slightly during that period, but more so among the factory workers than among the housewives.

#### Other Researches

Work on the cultivation of vaccinia virus on the chorio-allantoic membrane of the developing chick has been resumed with a view to preparing sufficient quantities of suitable virus for field trials and for clinical use in vaccination. The differences in the lesions inflicted on this membrane by strains of virus derived from sheep and those derived from the calf, which were reported four years ago, are being made the subject of further investigation, and it is hoped to determine which strain is the more suitable for Jennerian prophylaxis. Observations are also being made to determine the best method of preserving stocks of cultivated virus and a convenient form in which it can be issued for clinical use.

A large number of studies are recorded on the effects of different combinations of hormones and vitamins on young adult and old rats. Thus vitamin A, B, or C, administered alone, caused only slight changes in the liver and kidneys, but striking changes followed administration of thyroid hormone in non-toxic doses, including pronounced hyperplasia of hepatic cells, hypertrophy of kidney tubules, etc. Simultaneous administration of the vitamins with the hormone did not significantly alter the effect of the latter. Large doses of the hormone produced a pronounced atrophy of cells and other changes, and here vitamin B had a beneficial effect (regenerative hyperplasia of cells).

Many other biochemical, biophysical, and physico-chemical experiments are recorded.

#### ORDER OF ST. JOHN OF JERUSALEM

The following medical promotions in and appointments to the Venerable Order of the Hospital of St. John of Jerusalem have been announced

As Knights Capt H F Powell MBE, Lieut-Gen Sir Alexander Hood, KCB, CBE, KHP, Lieut-Gen Sir Gordon G. Jolly, KCIE, IMS, Drs F C Boulton, OBE, and W. Stewart, As Commanders (Brothers) Drs C Gardiner-Hill, K S Maunz-Smith, F L Newton, and C E C Wilson, Brig W W Johnston, CBE, DSO, MC, Major-Gen, P S Mills, CIE, IMS, Col H H E Russell, OBE, VD As Associate Commander (Brother) Dr A D E Behnam, As Officers (Brothers) Drs H J O'D Burke-Gaffney, OBE, H C Sanderson, CMG, MVO, OBE, S J W Donald, E F A Russell, OBE, VD, H E Skeete, OBE, J S Harrison, S F Chellappa, OBE, and N. Caine, Brig Sir W Duke-Elder, Col A H Hart, CIE, IMS, and R. Hay, CIE, IMS Lieut-Col W George, MC, TD, Lieut-Col R F D MacGregor, CIE, MC, IMS (ret.), G Verghese, CIE, IMS, and J E Gray, IMS, Capt T C A Sweetnam and F W P Sullivan, As Associate Officers (Brothers), Lieut-Col A N Chopra, IMS, Major S A Paymaster IMS, Capt G G Limaye, Dr M N Mahadevan As Officer (Sister) Dr Cornelia B S Elwood, CBE, As Serving Brothers, Surg Lieut. Cmdr R F Masters, RAN, Lieut-Col A I Cox, IMS, Major J D Murdoch, IMS, and A B Slack, MC, Drs J. H. Pottinger, G A Fisher, MC, TD, C R Webb, R St. J. Kenn, W W King Brown, G C Campbell, L A Watson, R S Taylor-Young, R Brown, A J. Coakley, K D Bear, E M M Alpar, C D Hough, V F Ryan, T. K. Coakley, G R Lipp, MC, K G Salmon, P H Stewart, S G Budd, R N L Carmichael J A Davies and C E R Norman, As Associate Serving Brothers, Lieut-Col R M Khatri, IMS, Capt B S Chalm, Drs B Bose H N Dewan, M F Bism, I Lipsedge, S Bloom, P R Kuppaswami and P Vaidyanathan As Serving Sisters, Drs Muriel R Powell, Daphne W Dear, Margaret Swete, and Alice M Headwards

## Correspondence

### B.M.R. Determinations on Ambulatory Patients

SIR.—I read with very great interest the paper on the determination of basal metabolism on out-patients by Dr. J. Douglas Robertson (May 6, p. 617). The problem of ambulatory basal metabolic rate determinations arose in the Montreal General Hospital approximately 20 years ago. The method investigated corresponded almost exactly with that of Dr. Robertson, and the conclusions were the same. During the last 20 years we have performed approximately 50,000 basal metabolic rate tests on ambulatory patients, and, as Dr. Robertson has pointed out, "these so-called ambulatory determinations are not significantly different from those tests carried out at the bedside under strictly basal conditions.—I am, etc.,

I. M. RABINOWITCH.

Director, Department of Metabolism, Montreal General Hospital

### Why Tie the Cord?

SIR.—I have read with much interest the letters by Dr. E. W. Price (June 3, p. 772) and Dr. K. J. Franklin (June 24, p. 857) on "Why Tie the Cord?" Whether or not it is necessary to tie the cord depends on the presence or absence of a closing mechanism in its vessels. Certain radiological observations focused our attention on the intra-abdominal portion of the umbilical arteries. For the past year I have been examining sections of these arteries. A full account of the results will be published elsewhere, but the following notes, some of which are based on this work, may be of interest with regard to the present question.

In the intra-abdominal portion of the umbilical arteries sub-endothelial ridges are found which project into the lumen of the vessel. These ridges lie within the internal elastic lamina and the tunica media. They consist mainly of longitudinal and oblique muscle fibres (see Fig. 1). Their prominence



Fig. 1

varies with the state of the vessel. In structure and appearance they resemble the ridges found in the penile and uterine arteries (Kiss, 1921) and the pulmonary artery and ductus arteriosus (Pfeifer, 1902). They are found throughout the intra-abdominal portion of the umbilical artery from approximately the level of the base of the bladder to the umbilicus. It is of some interest to note that Jankovich (1939) described somewhat similar structures in the extra-abdominal portion of the artery. The function of the ridges appears to be to bring about a fairly complete closure of the umbilical arteries following birth—the circular muscle of the tunica media contracting and driving the ridges into the lumen.

With regard to the vein, the muscle fibres in the vessel wall are relatively deficient compared with those in the artery. The circular muscle fibres are found in scattered bundles and do



not form a complete ring. Although there are ridges projecting into the lumen they are poorly developed and deficient in muscle fibres (see Fig. 2). Connective tissue is much in evidence.

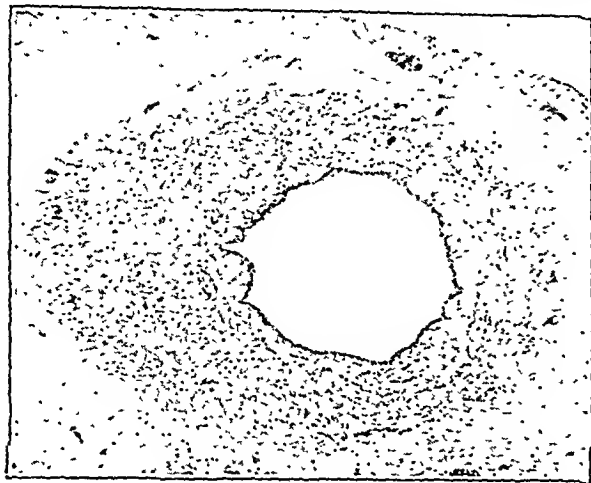


FIG. 2

The closing mechanism—namely, circular muscle and longitudinal ridges—is thus poorly developed in the umbilical vein. It should be noted, however, that Barclay, Franklin, and Prichard (1942), as a result of investigating the ductus venosus by means of radio-opaque substances, have demonstrated in certain animals a closing mechanism in the duct at its commencement.

There is no doubt, therefore, about the existence of a closing mechanism in the umbilical vessels, and although that in the vein does not appear very marked the mechanism in the ductus venosus may make up for this deficiency. In the African natives described by Dr. Price this closing mechanism in the umbilical vessels seems to function satisfactorily, but this is not always so. In this country, bleeding from an umbilical stump, even after it has been ligated, is not uncommon, and occurs at least often enough to warrant the suggestion in some textbooks that a second ligature should be applied to the umbilical-cord stump. Even in Rachmanow's cases, quoted by Dr. Franklin, although he found the cord did not need to be tied in 83% of his 10,000 patients, it had to be ligated in the remaining 17%—and that is not exactly a small number. One could perhaps account for Dr. Price's findings by racial difference. All one can say is that in the umbilical vessels a closing mechanism does exist, but this mechanism cannot always be depended upon. It would seem advisable, therefore, to continue ligating the umbilical-cord stump.—I am, etc.,

Department of Anatomy, University of Glasgow.

IAN W. MONIE.

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## Perineal Tears in Normal Confinements

SIR.—I have been medical officer to an emergency maternity hospital since September, 1940, and I have been able to note the number of perineal tears which occur and which require one or more stitches. This hospital deals only with normal confinements, and the figures given below are for cases attended by midwives only; forceps cases are not included. I have personally dealt with all tears.

In the first 1,000 cases there were 236 tears: primiparae 191, multiparae 45; approximately 23.5%. I was surprised at this figure, as in private work the number of cases in which a doctor is called in seems very small. Through the kindness of Dr. A. E. Tibbitts, medical officer of health for Notts, I have obtained the percentage of medical aid notices sent in by midwives in 1,000 cases. The figure is 11.3%, and this includes all cases which require assistance—i.e., malpresentation, obstructed labour, etc.—and not only for perineal tears.

The only conclusion one can come to from these figures is that there are a considerable number of cases with perineal tears in domiciliary maternity work which are left without attention.—I am, etc.,

Retford.

H. E. HUMPHRYS.

## Infant Feeding

SIR.—In my work as a public vaccinator I have been impressed by the frequency with which I have come across mothers who complain of the fretfulness, tendency to prolonged crying, and failure to settle after feeds of their infants. My first inquiry in these cases almost always obtains the same answer. What quantity of milk is given at each feed? With breast-fed babies the reply is usually "Twenty minutes"; if the bottle is used it is "six ounces" or "seven," etc., as the case may be. In other words, the mothers have had it impressed upon them that baby should be given a fixed amount based on its age.

There are two reasons why this impression is made on mothers in clinics by nurses and health visitors, and even a paediatrician who wrote in your columns recently: (1) No allowance is made for the fact that a baby's appetite may vary, and vary it certainly does. (2) The boggy of overfeeding. Now it follows that if we are to make allowance for the fact that a baby's appetite varies we can only do so by giving the baby as much as it wants at each feed, and the invariably excellent results of so doing are sufficient proof that this practice is based on sound common sense.

Provided the quality of the milk is correct, the natural act of regurgitation in a greedy baby makes overfeeding impossible, and another cause of any symptoms such a baby may have should be sought. I believe that a very great advance in infant feeding, to say nothing of preventive medicine, would be achieved if all concerned would base their advice to mothers on these fundamental common-sense facts, and if the manufacturers of milk powders could be persuaded to remove from their tins, etc., the columns of figures linking the age of the child with fixed volumes of milk, leaving only details of the proportion of powder to water to ensure the correct mixture.—I am, etc.,

Wimfrith, Dorset.

P. R. BOUCHER.

## Milk for School-children

SIR.—In your annotation on nutrition and the war (July 15, p. 84) you state, apparently on the authority of Dr. V. P. Sydenstricker, that "growing school-children, however, do not get enough first-class protein—youngsters of 6 get only half a pint of milk daily." The first contention may or may not be true, but a child of 6 can get half a pint of milk daily on his household ration and, in addition, one-third or two-thirds of a pint of milk at a reduced price under the Milk-in-schools Scheme, of which 76.4% of elementary-school children avail themselves.—I am, etc.,

Board of Education, S.W.1.

J. ALISON GLOVER.

## Estimation of Dental Caries

SIR.—Dr. Dorothy Smith implies (July 15, p. 94) that because Lady Mellanby has shown that caries detectable by probe and mirror alone has decreased since 1929 the investigation should not have been undertaken. Such criticism is as ungenerous as it is invalid.

The Dental Board, with an income of £20,000, devotes £250 to dental research. The official journal has not even commented on a paper of far-reaching significance to the dental profession.

Criticism from Oxford of the methods of a distinguished layman in the field of dietetics and dental research is singularly misplaced.—I am, etc.,

Blackheath.

GUY NEELY.

## Stomatology

SIR.—Much is being written about the practice of medicine and the training of the medical student, but nothing so far has been said about that increasingly important branch of medicine which, if I may use the term better known on the Continent than here, comes under the heading of stomatology.

a Continental usage this term designates the study of the abnormalities and diseases of the mouth, including the teeth, as a positive branch of medicine and not as a superspecialty of dentistry.

I hope that the respective findings of the Goodenough and the Teviot Committees will be so co-ordinated ultimately as to incorporate stomatology as a recognized study within the acuity of medicine.

Machinery for producing many more practitioners in this branch is especially necessary at the present juncture when there is a move to simplify the dental training and, in some quarters, a strong desire to separate dentistry from medicine.

From stomatologists should be drawn the appropriate consultants in a fully organized social health service, and it would be to them that the public might justifiably look for productive research in the biological complexities of the prevention of dental diseases.—I am, etc.,

London W 1

C BOWDLER HENRY

### Pentothal Anaesthesia

SIR—The correspondence in your columns on the administration of pentothal, started by Dr Montuschi (May 27, p 731) and followed by letters from Dr Sandiford and myself (June 17, p 825), was originally intended to help many relatively inexperienced anaesthetists, in the Forces and on the Home Front, in the use of this drug. In your issue of July 15 (p 93) you publish two letters—one from Mr Thacker Neville and the other from Dr Oswald Murphy. The only point that these two letters have in common is that they both apparently stray from this original intention. Mr Thacker Neville's letter I consider to be most dangerous for the following reasons.

1 Operations on the nose and throat, in which there is a possibility of blood, pus, mucus, or other debris in the pharynx, are very likely to be complicated by laryngeal spasm, and the inexperienced anaesthetist should, except for induction, avoid pentothal, which is especially liable to this complication. Mr Neville makes no mention of any packing, posture, or suction. Some or all of these are essential to prevent aspiration of debris or initiation of laryngeal spasm.

2 He considers picrotoxin to be "far superior to oxygen." Picrotoxin is a very potent convulsant, and it is only indicated in gross overdose of barbiturate. I have never had to use it during anaesthesia, although I always have it handy and have used it successfully in cases of attempted suicide by barbiturates. Maintenance of a clear airway, careful dosage, and the liberal use of oxygen by controlled respiration where necessary, should avoid the need for picrotoxin.

3 Mr Neville's fourth precept—never to give as much as morphine gr 1/4—is not in accord with his self-confessed practice. A few days ago he did a septum, Caldwell-Luc, phenoidectomy and tonsillectomy all on the same patient, who had received morphine gr 1/4 as part of his premedication.

4 I can conceive of no pathological reason why painting the face with industrial spirit should cause the death of a woman inadequately anaesthetized with pentothal. Such unsubstantiated bogies cause an air of witchcraft and voodoo to attend the administration of anaesthetics, which should be a rational procedure. Such bogies, once started, are very difficult to track down. Here is one at its source and it should be promptly exorcised.

5 Nowhere in his letter does Mr Neville mention any scheme of dosage, so his extra notes do not add anything to Dr Sandiford's most helpful advice.

Dr Murphy, on the other hand, errs on the side of extreme caution. Much of his advice is a counsel of perfection, which we are unable to attain under war conditions.

1 There are not enough experienced anaesthetists available to restrict the use of this valuable drug to them alone. But they can by helpful advice and sound example, save many a patient his life and many an occasional anaesthetist the unpleasantness of discovering the snags for himself.

2 Pentothal, in suitably small doses is excellent for shocked, toxic or debilitated cases, but the anaesthetist must know how to ascertain the correct dose, and in such cases the inexperienced should use the anaesthetic agent he knows best.

3 I agree that the strength of pentothal solution should never exceed 5%, and should be weaker for more serious cases.

4 An assistant, if available is useful to hold up the jaw, but this act does not necessarily preclude the possibility of laryngeal spasm.

5 Isn't Dr Murphy's rate of injection rather too slow? At this rate he must have been injecting for 20 minutes to induce anaesthesia in the second case he quotes. Pentothal is excreted so rapidly in the resistant patient that if injection is very slow the patient is excreting it as fast as it is injected.

Finally, I would suggest that pentothal anaesthesia is not only "not always child's play," it is never child's play. I tell my students that there is no such thing as "fool proof" anaesthesia, but fools should not attempt to give anaesthetics.—I am, etc.,

London W 1

F W ROBERTS

### Sodium Pentothal in Nasal Operations

SIR—While reading Mr Thacker Neville's account of his only death under pentothal anaesthesia (July 15, p 93) I was arrested by the statement of his anaesthetist that death was due to the application of industrial spirit to the face (hardly a severe surgical stimulus) during the induction of anaesthesia. In the absence of any mention of the occurrence of laryngospasm, rightly or wrongly I gained the impression that death was considered to be due to primary cardiac failure. I should welcome the opinion of other anaesthetists as to the possibility of such an occurrence. In my opinion, when using pentothal in nasal surgery, the most important safety factor is efficient post-nasal packing to prevent any blood reaching the larynx and setting up laryngospasm. I should also like to stress the futility of anything except the gentlest artificial respiration in severe cases of laryngospasm until the cords relax, when the administration of oxygen under pressure is life saving. Finally, in cases of cessation of respiration due to pentothal overdose, relative or absolute, while not denying the beneficial effects of intravenous picrotoxin, I should, after the adoption of the Trendelenburg position, place rhythmical inflation of the lungs with oxygen under pressure as the most certain therapeutic measure, and would go so far as to say, "Never use pentothal unless there is at hand some means of carrying this out"—I am, etc.,

E R DINGLE

Hon. Anaesthetist, Darlington Memorial Hospital

### The Cold Agglutinins

SIR—I have read with interest the paper by Dr Currie and your leading article on cold agglutinins (July 1, p 16). These agglutinins may be either specific or non-specific. Auto-agglutinins usually belong to the latter class, and those which are active at greater than room temperature have been found in association with many morbid conditions, but rarely occur in the blood of healthy persons.

One of the most important features of autohaemagglutination is the "critical temperature" at which the antibody fails to react with the patient's cells. I have seen auto-agglutinins associated with haemolytic anaemia on three occasions and in all these cases the critical temperature was greater than 30°C. The many other instances of autohaemagglutination which I have studied have not shown a critical temperature as great as 30°C, nor has any case been one of haemolytic anaemia. I therefore attach considerable importance to this feature, which seems to be of more significance than, for example, the antibody titre.—I am, etc.,

Manchester

F STRATTON, M.D.,  
Regional Transfusion Service

### Intravenous Barbiturates in Hysteria

SIR—Psychiatrists will read with some interest the article by Drs Lambert and Linford Rees (July 15, p 70) on the treatment of 247 cases of hysteria by three separate methods—intravenous barbiturate, general psychiatric treatment, and hypnosis. The interest, I think, will not reside so much in the fact which emerged that there were no significant differences in the results of the three forms of treatment. The more important, not to say startling, fact is that mere symptomatic recovery is accepted by the authors as the adequate test for evaluating the results. "The criterion of return to duty as an indication of therapeutic success was found to be unsatisfactory."

factory" mainly, apparently, because it implied the need for a total assessment of the case and not merely improvement in the symptoms.

With an easy therapeutic target of this kind, spectacular successes are to be expected. In fact, from my experience, I would say it is pretty certain that equally good results would be obtained in a similar group of cases if they were given no special treatment, but simply told that they would not be sent back to duty if they recovered from their symptoms within a specified time.

We evidently had higher therapeutic aims in the last war, and I suggest that the article would have been somewhat less misleading if the authors had referred not to the treatment of hysteria, as they do, but to the treatment of the symptoms of hysteria.—I am, etc.,

London, W.1.

FREDERICK DILLON.

### Chemotherapy in Otitis Media

SIR,—I read with great interest the article by Mr. Dingley on the dangers of sulphonamide therapy in otitis media (June 3, p. 747) and with astonishment some of the correspondence which has followed. I am quite sure that neither by word nor by suggestion did Mr. Dingley propose the abolition of sulphonamides in all types of middle-ear infection, but what he was emphasizing was that chemotherapy was not, in itself, a substitute for myringotomy in a case where pus was present behind the drum. With this contention I find myself in hearty agreement. That sulphonamide therapy in early cases of otitis media will hasten their cure and thereby reduce the number that would doubtless have gone on to a mastoid infection will, I think, be a matter for general acceptance. The response is often dramatic; but I do feel that when pus is present behind a drum, that drum is safer and better opened, and there is more chance thereby of avoiding the mastoid operation than by pouring in sulphonamides, even in full doses.

I agree, too, with Mr. Dingley in his warning that the sulphonamides in such cases can mask symptoms. I have seen several, and the lesson to be learnt is, I think, that while sulphonamides do achieve great things it is not reasonable to expect them to do everything, least of all finally to sterilize and render innocuous pus that is behind the ear-drum.—I am, etc.,

Cheam, Surrey.

C. CARRON BROWN.

### Mastoiditis and Mastoidectomy

SIR,—I have carefully and with deep interest read Mr. W. H. B. Magauran's letter (July 1, p. 23) in answer to mine of March 18 and May 6. He states that he has performed during recent months 97 conservative mastoid operations. Conservative! I cannot conceive of any less conservative method of treating an ear case than by mastoidectomy. If this is Mr. Magauran's idea of the meaning of conservative, then he and I are poles apart, and I cannot accept his definition of the words dangerous, disfigurement, pain, and good or bad results.

Mr. Magauran will agree that the majority of the cases he operates upon are those typical ones described in every textbook as cases of otitis media which require the operation of mastoidectomy. This, I again state, I have through years of observation and as the result of my experience since 1912, and more especially since 1919, come to disagree with entirely, and to form the opinion that the teaching for the last forty years or so on this subject has been wrong and disastrous to the public.

The 14 cases which Mr. Magauran cites are remarkably like those I quoted as following mastoidectomy: (1) *General streptococcal meningitis*.—I find that has been the most frequent cause of death after mastoidectomy. (2) *Meningeal reactions with virid C.S.F.*—Cause similar but much less reaction. (3) *Otitic hydrocephalus and subdural abscess*.—Caused by chiselling in a septic cavity and removing the bony barrier separating it from the brain. The other cases—lateral sinus infection (he missed out infection of the jugular vein), external rectus paresis, facial paresis, vertigo, extradural abscess, etc.—have all been seen by practitioners to have followed mastoidectomy. Bezold's abscesses have been opened frequently

and the bone at the tip of the mastoid found cupped from the outside but hard and sound when the aural surgeon has gone on to open the mastoid bone, proving that the infection comes from outside and has not penetrated through this very hard bone. As to painful dressings, the patient is the one to answer that; the distress is not easily forgotten.

I am glad Mr. Magauran agrees that those cases which he calls "mastoiditis" and I call "otitis media" can be cured conservatively. He states: "In a series of 132 cases of acute mastoiditis treated in one hospital complete resolution occurred in 77 cases with conservative treatment. . . . The remaining 55 cases had mastoid operation either immediately or after conservative treatment had failed." Mr. Magauran thus differs from his fellow aural surgeon, Mr. Gordon Mowat, who, in the *Journal* of April 8 (p. 512), in answer to my letter of March 18, writes: "Almost any case of mastoiditis will subside without operative treatment, but, nevertheless, infection of the mastoid is present, and the ears continue to discharge." Mr. Mowat states his belief that all cases of discharging ears should have mastoidectomy performed within six weeks of the discharge commencing. He does not say how soon he would operate, whether immediately or on the last day of the six weeks. Nevertheless he states that mastoiditis is never cured except by mastoidectomy. I, on the other hand, find that all those cases can be cured by a very simple conservative treatment. I maintain that if those of the 55 cases cited by Mr. Magauran as having had the mastoid operation performed immediately had been given a chance of conservative treatment, and those which were operated upon after a period of conservative treatment had been treated as I have advised, the whole 132 cases would have completely recovered—not just 77.

Mr. Magauran and his fellow aural surgeons would earn the undying gratitude of a multitude of sufferers if they would agree to try proper and careful conservative treatment, say, for the next six months. The tools required are few—a small bottle of hydrogen peroxide, a small bottle of methylated spirit, some cotton-wool, and a pair of fine aural forceps. The other requisites—one of the emollient types of drops ("sedonan"), aspirin and phenacetin powders, an inhalant—are not so immediately necessary. The time taken is not long. I spend about half an hour on my first visit and ten minutes or a quarter of an hour on my subsequent ones. I visit for about three days running and then once a week. My average time for a cure is six weeks—i.e., about nine visits. Some cases clear up remarkably quickly, and often those with the most alarming symptoms of pain, pushing forward of the ear, etc. Others have a fairly harmless watery discharge for many weeks, but know how to treat themselves, and only call to see me once in a while to be reassured that all is going well. The pain I practically stop on my first visit. In fact I do not leave the house until the patient smiles and says there is little or no pain, and in small children generally when they have fallen asleep after relief from pain.

Mr. Magauran's misgiving is very natural; it is a good sign. It was my misgiving after carefully watching aural surgeons operate and seeing young and healthy friends and relatives die or have a great struggle to recover from mastoidectomy that made me refuse ever to have a patient of this large practice operated upon for "mastoid," and the results, as I state, have been uniformly excellent. Treatment with such results for 25 years is surely worth a real trial. Courage, patience, and care are all that is required. The first is very necessary after we have all been taught just the reverse of what I have stated. I advise doctors, if they do have to have a patient operated upon for otitis media, to go to the theatre and see the crude, unscientific operation it is, and ask themselves seriously, Is this operation necessary and is it a safe one?—I am, etc.,

Edinburgh.

H. HILTON BROWN.

### Sulphonamide Prophylaxis of Gonorrhoea

SIR,—It was most surprising to read (May 20, p. 695) that responsible authorities had used sulphonamides in the prophylaxis of gonorrhoea. Here in the Gold Coast there has never been any effective control of the sale of these drugs to the public. As everybody gets gonorrhoea they soon became very popular, and for years now the people have been

dosing themselves with tablets indiscriminately, not only for gonorrhoea but for every kind of complaint, even using them as a "pick-me-up."

In times of scarcity the price has risen to a shilling a tablet; forged tablets have appeared on the market; and professional thieves have found stocks of sulphonamides more attractive than tulk. Thus conditions have been ideal for the development and spread of resistant strains. Already in the larger centres a high proportion of gonococcal and puerperal infections fail to react to a sulphonamide; it may very soon become quite useless.

Thus to share a valuable drug to the wolves of commerce seems an inexcusable insult to medical science. Will penicillin share the same fate?—I am, etc.,

Kolondua, Gold Coast.

G. I. ALEXANDER.

### Gonorrhoea in North Africa

SIR.—The cases described by Col. Campbell are typical of those we used so frequently to come across in the days of irrigation treatment. As I pointed out some ten years ago the sequelae of post-urethral and epididymal troubles are probably due to irrigation with lodgment of the infection in the seminal vesicles. When this occurs vasotomy—as I then advocated—is the only treatment which will bring about a cure. This also holds good to-day for all cases in which sulphonamide treatment fails. If Col. Campbell will treat his cases by vasotomy he will find that they will not require to remain in hospital for more than three to four days, by which time all discharge and symptoms will have disappeared and the patient be fit for duty.—I am, etc.,

Sandbach, Cheshire.

J. F. PLATT.

### Stilboestrol in Cancer

SIR.—On my return from a holiday I was interested to read your annotation (July 1, p. 17) wherein you stated that Huggins of Chicago was the first to suggest that stilboestrol might play an important part in the treatment of malignant disease, and that you considered the evidence is strong that its mode of action is by inhibiting the gonadotrophic hormone of the anterior pituitary.

I am unfortunately not in a position here to find out when Huggins thought of it, but may I with all due humility point out that I, quite unaware of Huggins's work, also suggested this treatment in a letter to the *Journal* of July 27, 1940 (p. 133), mentioning that stilboestrol most probably had an inhibitory effect on the secretion of the anterior pituitary, and quoting E. L. Noble's experiments in support of this theory. Do please credit us with some imagination in Britain as well as the Americans.

The use of stilboestrol in cancer is full of promise, and I am pleased to know that the clinical experiments are to be continued.—I am, etc.,

Leigh-Bland, Wigan.

J. THOMSON SMITH, M.D.

### Tarso-metatarsal Dislocation

SIR.—It was with great interest that I read Surg. Lieut. Dorrell's account of a case of tarso-metatarsal dislocation in our issue of July 1.

I have in course of preparation an article describing five cases of this dislocation which it has fallen to my lot to treat during the last 2 or 3 years. In three of these the injury has been almost identical with that described by Mr. Dorrell—(1) two the foot was crushed by the landing-wheel of an aircraft and in the third by the wheel of a double-decker bus. In each case the vehicle was moving very slowly (the aircraft etc. being towed into a hangar and the bus was reversing), and I agree that it is the slow crushing of the foot which reduces the dislocation. My treatment was similar to Mr. Dorrell's, but the bus injury required skeletal screw action with wires through the calcaneus and metatarsal heads. In the other cases reduced easily by manipulation with a instant click.

As Mr. Dorrell points out, the immediate prognosis is good but late prognosis is problematical. I have been unable to follow up my cases for longer than 6 months.—I am, etc.,

Cheltenham

DAVID A. RICHMOND,  
Surgeon, F.R.C.S.

## Obituary

SIR HUGH RIGBY, Bt., K.C.V.O., F.R.C.S.

We regret to announce the death on July 17 of Sir Hugh Rigby, Sergeant-Surgeon to the King from 1928 to 1932, and consulting surgeon to the London Hospital and the Poplar Hospital for Accidents. In 1922 he operated on the late Duke of Kent, then Prince George, for appendicitis; and it was he who on Dec. 12, 1928, performed at Buckingham Palace the operation for empyema which was the turning-point in King George V's very severe and protracted illness.

Hugh Mallison Rigby was born in Dublin on May 19, 1870, son of John Rigby, M.A., late superintendent of the Royal Small Arms Factory at Enfield. He was educated at Dulwich College and at University College, London, and studied medicine at the London Hospital, where he soon made his mark as a man of great promise. He graduated M.B. (Lond.) in 1895, B.S. (with first-class honours and gold medal) in 1897, and M.S. in 1901; and obtained the F.R.C.S. (Eng.) diploma in 1900. At the London Hospital he held a succession of junior posts: house-surgeon and house-physician immediately after qualifying, and then surgical registrar, demonstrator of anatomy and tutor in elementary clinical surgery, and demonstrator of clinical pathology. He was elected assistant surgeon to the hospital in 1902 and later became full surgeon. During the last war he served, with the rank of colonel, A.M.S., as consulting surgeon to the R.E.F. in France and to the London District. His services were mentioned in despatches and he was created K.C.V.O. in 1918.



(Holt and Fry)

Sir Hugh Rigby was appointed surgeon-in-ordinary to the Prince of Wales and surgeon to the Prince of Wales's Household in 1923, and Sergeant-Surgeon to the King in 1928. He was created a baronet in June, 1929, and became Honorary Surgeon to the King in 1932. He retired from the active staff of the London Hospital before reaching the age limit and was elected consulting surgeon, but he continued in private practice for some years. In addition to his duties at the London and the Poplar Hospitals he has been surgical consultant to the City of London Maternity Hospital, to the East Ham Hospital, and to a number of cottage hospitals in the neighbourhood of London. In 1931 he received the Honorary Fellowship of the Royal College of Surgeons in Ireland, and two years later the honorary degree of M.Ch. from the National University of Ireland.

When he finally gave up active work Sir Hugh Rigby went to live at his country home, Long Durdorf, Petersfield, Hants. Throughout his career he was essentially a working surgeon, sound in judgment and in action, inspiring the confidence of all who served him and all whom he served. He avoided publicity and left medical politics to others. His writings were few; an occasional paper on a surgical subject and the article on diseases of the vesicophagus in *Choyce's System of Surgery*.

### SIR WILLIAM LISTER

We have received the following appreciation from H. H. S.:

As one of the younger generation of eye surgeons I wish to pay a tribute to Sir William Lister, whose example as an eye surgeon was quite admirable. Those of us who attended his clinic and his operations at Moorfields will always remember him for his humanity and kindness in handling patients, his intense enthusiasm for ophthalmology, and his exquisite skill as an operator. In the theatre his behaviour gave us a perfect example of the qualities that make a great surgeon: unperturbability, a high degree of technical skill

which never varied whatever the circumstances, and a quiet orderly manner which gave confidence to the patient and the theatre team. His grace and his unhurried ways were good to see. His few courteous words to a patient on entering the theatre to undergo the ordeal of an eye operation under local anaesthesia never failed to give reassurance, and when the operation was over and the dressings applied a gentle tap on the shoulder and a quiet voice saying, "All has gone very well and you have behaved admirably," did much to induce that state of contented composure so necessary after an eye operation.

As a teacher he was gifted with dramatic talent in describing a case. So vivid were these accounts of his clinical experiences that their memory is quite indelible. Some of us, now 15 years or more after he taught us, can recall fully the contusion in the eye of the Charterhouse boy keeping wicket and the complications which befell the fine cavalry officer suffering from basal-celled carcinoma of an eyelid, and others.

He belonged to a generation of great men in the field of ophthalmology. For those of us who have had the privilege of being taught by him his memory will remain ever fresh in our minds as a most courteous and gallant gentleman, a surgeon of the highest quality, and a teacher whose enthusiasm has given us a lasting inspiration.

Dr. ROGER NELSON WILCOX, medical officer of the East African Medical Service, died on April 10 at Salisbury Hospital, Southern Rhodesia, after an illness of two months. Born in 1903, the younger son of George Wilcox of Ealing, London, he was educated at St. Paul's School and received his medical education at St. Thomas's Hospital, qualifying M.B., B.S. Lond. in 1929, and obtaining the D.L.O. in 1930. After holding the posts of house-surgeon to the ear, nose, and throat department at St. Thomas's he then became house-surgeon at the Kent and Canterbury Hospital. Joining the Colonial Medical Service after a course at the Tropical School, where he obtained his D.T.M.&H., he was posted to Nyasaland in 1931, where he served for 13 years and continued there until his death. He was a very keen member of the B.M.A., and attended all meetings of the Nyasaland Branch, whose president writes: In harness until his last illness, Wilcox's premature death is deeply mourned by his many hundreds of friends in Nyasaland. He was beloved by all his patients, who were quick to realize that his shy manner on first acquaintance was merely superficial. As well as his great service to the Europeans in Nyasaland as medical officer in charge of Blantyre European Hospital he also worked for many years for the African community, and he was stationed at Port Herald, Karonga, and Kota-Kota Districts. He is deeply missed by his African staff and by all his Indian and African patients. He was a very able surgeon and specialized on the ear, nose, and throat. In particular, his old friends in Blantyre and his colleagues in Nyasaland and the district officers with whom he was stationed feel his passing has left a great gap. He was an excellent diagnostician and very kind-hearted with all with whom he came in contact. He was a wonderful listener and had a very keen sense of humour, and was a staunch and loyal friend. He was also a keen sportsman, playing an excellent game of tennis and golf.

News has reached England of the death of ROSS MILLAR, M.A., M.D., C.M., at Ottawa on June 15. Dr. Millar will be remembered by many of the medical officers of the R.A.M.C. in the Third Army during the 1914-18 war, where he served for two years with No. 37 C.C.S., and for the final year of the war with No. 9 C.C.S. as surgical specialist. After the close of the war Dr. Millar returned to his home in Nova Scotia, where he resumed his private surgical practice and was elected a Fellow of the Canadian College of Surgeons. In 1928 he was appointed Director of Medical Services in the Dominion Department of Pensions; and he moved to Ottawa, where he resided until his death. He joined the Halifax Branch of the B.M.A. in 1906 and remained an enthusiastic member of the Association after its Canadian local units were disbanded.

Dr. FRANCIS WHITE HOPE ROBSON, who died on July 2 at Bournemouth, received his medical education at Edinburgh University and the Royal College of Surgeons, Edinburgh. He graduated M.B., C.M. in 1893, and in 1900 took the M.D. with honours; he also held the Medico-Psychological Certificate. After a few years in house-surgeon appointments and four years in a country practice he settled in Southampton and had a busy practice there for 32 years. He held an appointment as public vaccinator for the Shirley district, and also acted as test lymph vaccinator in Southampton for the Ministry of Health. He was for 15 years medical officer to the Southampton Corporation children's homes. He took an active part in Southampton medical work; and was secretary to the Panel Committee for five years after the National Health Insurance Act came into force;

he was also on the committee and acted as treasurer to the local public medical service when Southampton played a leading part, and was among the first to enter the fight in what was known at that time as the Battle of the Clubs. He also was a member of the Southampton Insurance Committee, Tuberculosis Committee, and the Medical Service Subcommittee. Hope Robson retired to Bournemouth in 1936. He was a member of the B.M.A. for over 40 years. He invented a simple aspirator which could be operated with any ordinary syringe, and so eliminated the need for using a suction pump.

Dr. FREDERICK HENRY died at his home in Oldpark Road, Belfast, on July 5, aged 43. He was the second son of the late Major Robert Henry of the Indian Army, and qualified M.B., B.Ch., B.A.O. of the Queen's University of Belfast in 1927. After some experience in general practice in Liverpool and in Glamorganshire he returned to Belfast and gained for himself a growing practice and the confidence and affection of his patients and his colleagues. He dearly loved his work and left nothing undone to elucidate a problem or to relieve suffering.

"C. G. L." writes: A host of doctors will learn with sorrow of the death of Mr. A. HARDES, who for 30 years was with what is now the British Medical Bureau, where he managed the "locumtenens department." Here he was the intermediary between thousands of "tenentes" and the territorial owners of "loci," and to his task he brought gifts of kindness; helpfulness, insight, and tact. To many he was but a voice over the telephone, but his personality came over the wire in the same way as the impact of an actor's personality may come over the wireless.

## The Services

Cpts. E. J. Bowmer, D. H. McCollum, and F. Zangen, R.A.M.C., and Capt. T. Stephens and Lieut. T. G. Jones, I.A.M.C., have been awarded the M.C. in recognition of gallant and distinguished services in Italy.

### CASUALTIES IN THE MEDICAL SERVICES

*Killed.*—War Subs. Capt. J. D. Laurie, R.A.M.C.

*Died.*—Major R. J. Franklin, R.A.M.C.

### DEATHS IN THE SERVICES

By the death on July 15 at Birnam of Col. FREDERICK PERCIVAL MACKIE, C.S.I., O.B.E., M.Sc., M.D., F.R.C.P., F.R.C.S., I.M.S., that service has lost one of its most distinguished members at the age of 69. He was educated at Dean Close School, Cheltenham, at the Bristol Medical School and St. Bartholomew's Hospital, and qualified in 1897. In 1902 he passed the F.R.C.S. Eng. and in the same year gained first place in the entrance examination for the I.M.S. and won prizes at Netley. In 1903 he was medical officer to the Younghusband mission to Tibet and in 1905 entered the Bacteriological Research Department as assistant director of the Plague Research Laboratory, Bombay. Among other important research appointments he was a member of the Uganda Sleeping Sickness Commission in 1908, and special research officer on kala-azar in 1911. Much of the research work he carried out in Bombay was on plague, but his most noteworthy discovery was that the spirillum of relapsing fever, which is common in Bombay, is transmitted by the bites of body lice. He was also associated with Col. Hamilton Fairley in important work on the dietetic treatment of sprue and also worked at dysenteries, enteric fever, and schistosomiasis. During a period of leave he passed the M.R.C.P., and in 1919 was elected to the Fellowship for his researches; he became an M.Sc. Bristol in 1916 and D.P.H. in 1925. He also saw military service in Baluchistan and served during the war of 1914-18, when he was twice mentioned in dispatches and received the O.B.E. In 1920 he held the professorship of pathology at Calcutta for a short time; in 1921 he became Director of the Pasteur Institute in Assam; and in 1923 he was appointed Director of the Haffkine Institute, Bombay, where so much of his earlier work had been done. Among senior administrative posts he officiated as Public Health Commissioner, Government of India, in 1928, Surgeon-General with the Government of Bombay in 1929, and Director of the Pasteur Institute and Research Laboratory, Shillong, in 1931. He also held the appointments as Honorary Surgeon to H.M. the King and to the Viceroy of India. On his retirement under the age rules Col. Mackie soon found scope for his abilities, first as pathologist at the London School of Tropical Medicine and soon after as chief medical officer to the British Overseas Airways Corporation, and he worked at the fumigation of planes to destroy the



yellow-fever-carrying mosquitoes. His great abilities and painstaking and most reliable work placed him in the forefront of medical research workers in India.

#### Correction

A typing error in the obituary notice of Capt. S. C. H. Hood (July 15, p. 97) gave the date of his death as July 13 instead of June 13.

## Universities and Colleges

### UNIVERSITY OF MANCHESTER

At the last meeting of the Council the Vice-Chancellor announced the offer of £5,000 from the Governors of the Royal Manchester Children's Hospital towards the foundation of a Child Health Institute. This offer is the first promise received since a conference was recently held in the University to consider the establishment of an Institute of Child Health. The conference was attended by representatives of some of the local authorities, the voluntary hospitals, and other institutions interested in child health. The Vice-Chancellor explained that the cost of a professorial department in this subject would be from £7,000 to £10,000 per annum, and that the establishment of the department would depend on the provision of the necessary funds from outside sources. The proposal had been met by a most encouraging response from those present at the conference, who had promised to raise with the various bodies they represented the question of annual grants for this purpose.

Dr. G. Bridge of Preston has made a gift of £10 per annum, to provide a prize in obstetrics in the Final M.B., Ch.B. examination.

### UNIVERSITY OF SHEFFIELD

The Council of the University received on July 14 from Sir Arthur Hall, M.D., F.R.C.P., a volume of personal reminiscences and an album of photographs illustrating the development of the Sheffield School of Medicine since its inception. The Council accorded its warm thanks to Sir Arthur Hall for this gift.

### ROYAL COLLEGE OF SURGEONS OF ENGLAND

At a quarterly meeting of the Council held on July 13 Sir Alfred Webb-Johnson was re-elected President and Sir Girdling Ball and Mr. C. Max Page Vice-Presidents. Mr. R. Milnes Walker was elected a member of the Court of Examiners for a period of three years from August 3 next.

The following appointments were made for the ensuing year:

**Honorary Professors.**—Mr. Cecil A. Jell, one lecture on Conservative Surgery of Carcinoma of the Rectum and Recto-sigmoid; Mr. T. B. Layton, two lectures on the Inflammations of the Middle-ear Cleft: considered Clinically, Pathologically, and Therapeutically from the Individual and National Standpoints; Surg. Capt. Lambert C. Rogers, one lecture on Ligation of Arteries; Mr. D. M. Stern, one lecture on the Aetiology and Treatment of Prolapse, with Special Reference to Cervical and Stress Incontinence; Major H. S. Shucksmith, one lecture on Abdominal Injuries in Battle Casualties: Clinical Aspects in 100 Personal Cases; Squad, Ldr. T. Craddock Henry, one lecture on Aviation Injuries of the Face; Miss Jean M. Dollar, one lecture on the use of Plastics in Ophthalmic Surgery; Squad, Ldr. D. N. Matthews, one lecture on Storage of Skin for Autogenous Grafts; Mr. Andrew K. Monro, one lecture on the Treatment of Acute Appendicitis; Mr. James Patrick, one lecture on a Study of Supination and Pronation, with Special Reference to the Treatment of Forearm Fractures; Mr. A. S. Aids, one lecture on Injuries of the Pancreas and their Surgical Treatment.

**Arms and Gale Lectures.**—Prof. Francis Davies, one lecture on the Early Development of the Human Embryo; Dr. D. V. Davies, one lecture on the Synovial Membrane and the Synovial Fluid of Joints; Mr. J. T. Chesterman, one lecture on Some Alterations of the Neuromuscular Balance of the Intestine and their Clinical Significance.

**Erasmus Wilson Demonstrations.**—Mr. L. E. C. Norbury, O.B.E., one demonstration; Mr. R. Davies-Colley, C.M.G., three demonstrations; Mr. C. E. Shattock, one demonstration; Mr. Timothy M. Tyrrell, one demonstration with ophthalmic pathological material.

**Arnott Demonstrator.**—Prof. A. J. E. Cave, six demonstrations.

The fifteenth Macloghlin Scholarship was awarded to S. T. H. H. Pibbeam of Lewes County School. Dr. F. K. Sanders and Mrs. H. P. Herbert were re-elected Leverhulme Research Scholars. Votes of thanks were given to Mrs. Crile for a representative collection of works of the late G. W. Crile, to Dr. W. Loudon Strain for a gift of more than 100 books, and to Miss C. F. Thompson for pamphlets and medals from the collection of her father, the late C. J. S. Thompson.

#### Diplomas

A Diploma of Membership was granted to Peter Haosell. Diplomas were granted, jointly with the Royal College of Physicians of London, as follows:

**DIPLOMA IN PUBLIC HEALTH.**—Lectora A. Crawford, C. E. Jamson, Susan M. Traver, R. K. W. Yang.

**DIPLOMA IN PSYCHOLOGICAL MEDICINE.**—R. S. Allison, T. H. B. Gladstone, A. Goldberger, R. R. H. Mitchell, H. J. O'Loughlin, F. Reiman, A. M. Stearn-Wallace.

**DIPLOMA IN LARYNGOLOGY AND OTOTOLOGY.**—M. M. A. Cader, E. H. M. Foven, L. E. Gardner, A. G. Gibb, J. B. Sugden.

### ROYAL COLLEGE OF PHYSICIANS OF EDINBURGH

A quarterly meeting of the College was held on July 18, the President, Dr. A. Fergus Hewat, in the chair. Dr. J. Colin Caird (Edinburgh), Dr. T. A. MacGibbon (Thetford, Norfolk), Dr. T. McL. Galloway (Carlisle), Dr. W. D. Henderson (Woking, Surrey), and Dr. H. P. Tait (Edinburgh) were introduced and took their seat as Fellows of the College. Dr. W. F. Brown (Ontario, Canada) and Dr. R. Maxwell Johnstone, M.C. (Edinburgh) were elected Fellows.

#### CONJOINT BOARD IN SCOTLAND

The following candidates, having passed the final examination, have been admitted L.R.C.P.Ed., L.R.C.S.Ed., and L.R.F.P.&S.Glasg.: D. J. Alexander, G. A. F. Bain, J. Bates, W. A. Benson, J. M. Blyth, T. Bowden, A. A. Bradley, J. McD. Cairns, F. J. Clarke, T. Dibdin, F. F. Dougall, A. J. K. Finlayson, S. Freedlander, Joan E. Gray, S. Harris, J. Hendrie, Helen W. Kerr, A. S. Little, G. B. Macaulay, W. McIntyre, T. G. McKendrick, A. S. A. Monem, J. McC. Murdoch, A. J. Neil, W. A. Robson, S. R. Shaw, Dorio S. Smith, J. A. Smith, Fanny Stang, D. Sweeney, V. P. Vohra, J. T. Weir, J. H. White, H. W. Woolner.

## Medical Notes in Parliament

### White Paper Legislation

Sir HENRY MORRIS-JONES on July 20 asked the Minister of Health whether, in view of the general misgiving about the White Paper proposals on a National Health Service, expressed in recent months by many local authorities, voluntary hospital associations, and the medical and allied professions, he would postpone the introduction of legislation pending further discussion in the House, or until after a general election. Mr. WILLINK did not think that there was any general desire or that it was the wish of the House that the Government should depart from the procedure previously announced, which assumed a stage of full discussion with the professional and other organizations concerned, followed by the submission of legislative proposals.

### Flying-bomb Casualties

On July 18 Sir HENRY MORRIS-JONES asked the Home Secretary when he intended publishing the number of casualties from flying bombs and what period the statement would cover. Miss WILKINSON referred to the statement covering the month of June which was published on July 14. Similar statements would be published for succeeding months. Replying to Mr. Douglas, Miss Wilkinson said that the figures for June related entirely to casualties caused by flying bombs; there were no casualties through piloted aircraft. On security grounds the Government thought it would be undesirable if they published separate figures for casualties from piloted and from non-piloted aircraft. It would tell the enemy too much. The figures covered all casualties from non-piloted aircraft, both Service and civilian.

### Evacuation from London

From July 2 to July 20 over 170,000 women and children were evacuated from London in organized parties. Mr. Willink remarks that considering the large numbers involved and the speed of the operation, it has been effected with a smoothness that reflects credit on all concerned. Some difficulties have inevitably occurred, but the reception in the safer areas has on the whole been very satisfactory. He urges upon those who have been evacuated to safer areas that they should remain there.

**Penicillin for Prisoners of War.**—Sir JAMES GRIGG, replying on July 13 to Mr. Robertson, said that small quantities of penicillin were being sent through the agency of the British Red Cross Society to selected medical officers for the treatment of specified patients in hospitals in enemy countries where our prisoners were.

**Claims for an Arthritis Treatment.**—Mr. E. P. SMITH asked on July 13 whether the Minister of Health knew that arthritis had been successfully treated with "erron," a derivative of ergosterol, at the Cook County Hospital, Chicago. Mr. WILLINK said his information was that the claims made for the product called "erron" in the treatment of arthritis were not accepted by the most authoritative medical opinion in the United States, and that clinical evidence over some seven years past did not warrant the belief that it had beneficial effects.

**Diagnosis of Smallpox.**—Mr. WILLINK stated on July 14 that he had arranged to issue to all medical officers of health a statement showing what conditions justified a diagnosis of smallpox, and what diseases should be noted between a case of smallpox and other diseases.

## Medical News

The Council of Epsom College will shortly proceed to award St. Anne's Scholarships to girls attending Church of England schools. Candidates must be fully 9 and under 16 years of age, and must be orphan daughters of medical men who have been in independent practice in England or Wales for not less than five years. The value of each scholarship is dependent upon the means of the applicant and the locality and fees of the school selected. Forms of application can be obtained from the Secretary's Office, Epsom College, Epsom, Surrey, and must be completed and returned by Oct. 15.

The American Association for the Advancement of Science will hold its annual meeting for 1944 at Cleveland, Ohio, from Sept. 11 to 16. Two previous annual meetings have been cancelled at the request of the U.S. Office of Defense Transportation.

A plan of the organization of medical services in UNRRA in both the European region and in Washington has just been issued. In the European region there is a standing technical subcommittee on health (chairman, Dr. Melville Mackenzie) comprising fourteen accredited representatives of the national health administrations of member Governments. This has three expert commissions: one on quarantine and one on health problems of displaced persons (chairman of both is Dr. P. G. Stock); and a third on nutrition under the chairmanship of Sir J. C. Drummond. The Health Division Staff of UNRRA includes: Dr. Andrew Topping (Director of Health), Dr. Neville Goodman and Dr. Dudley Reekie (Deputy Directors), and Drs. G. Stuart, G. Johnstone, F. Daubanton, and R. Coigny (medical officers). In addition the following have been appointed to the field staff (medical): Dr. J. J. Paterson, Dr. H. Stanley Banks, Dr. J. Balfour Kirk, and Dr. K. W. C. Sinclair-Loutit.

Dr. Walter B. Cannon, professor emeritus of physiology, Harvard Medical School, has been appointed visiting professor of physiology at the New York University College of Medicine.

The Army Council has given permission for Col. M. Stoddart-Scott, T.D., M.D., R.A.M.C., Creskeld Hall, Arthington, Yorks, to be announced as prospective Conservative candidate for the Pudsey and Otley Parliamentary Division of the West Riding of Yorkshire.

## EPIDEMIOLOGICAL NOTES

### Discussion of Table

In *England and Wales* during the week there were only small variations in the trends of infectious diseases. There were 57 fewer cases of whooping-cough than last week, and 47 of scarlet fever, but measles went up by 68.

Diphtheria notifications were 7 fewer than last week's low record. The largest decline in the incidence of scarlet fever was in Essex, where 30 fewer cases were recorded. The local trends of whooping-cough fluctuated: Essex had 84 fewer cases than last week, and Warwickshire 38; but Kent had 42 more, Gloucestershire 41 more, and Hertfordshire 40 more. There were 37 fewer cases of measles in Kent and 39 in Staffordshire, but 42 more in Wiltshire and 34 more in Essex. One-fifth of the total cases of measles were recorded in Lancashire.

Dysentery notifications numbered 132—3 fewer than in the preceding week. The increase in Glamorganshire from 12 to 25 cases was the only local rise of any size. The largest of the other returns were Lancashire 20, and Surrey 12.

In *Scotland* there was a general decline in the incidence of infectious diseases—96 fewer cases of measles, 48 fewer of whooping-cough, 47 of dysentery, 45 of diphtheria, and 23 of scarlet fever. Both diphtheria and dysentery were at the lowest level during recent months. Almost one-third of the total of diphtheria notifications, 29 out of 91, were recorded in Glasgow. The largest returns for dysentery were Glasgow 14, and Edinburgh 13.

In *Eire* the incidence of measles remained high. The largest return was from Clare, Ennis U.D., with 129 of the 210 cases. There was a small rise in the notifications of diphtheria and whooping-cough, three-quarters of the cases of the latter being in Dublin C.B. The 62 cases of diphtheria were spread over thirty-five registration areas.

In *Northern Ireland* the notifications of measles fell from 55 to 29, but those of scarlet fever rose slightly, from 45 to 52. Only 13 cases of diphtheria were notified, the lowest total for two months.

### Week Ending July 15

The returns of infectious diseases in England and Wales during the week included: scarlet fever 1,394, whooping-cough 2,323, diphtheria 491, measles 2,536, acute pneumonia 437, cerebrospinal fever 59, dysentery 156, paratyphoid 7, typhoid 8.

## INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended July 8

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year, for: (a) England and Wales (London included), (b) London (administrative county), (c) Scotland, (d) Eire, (e) Northern Ireland

Figures of Births and Deaths, and of Deaths recorded under each infectious disease are for: (a) The 126 great towns in England and Wales (including London) (b) London (administrative county), (c) The 16 principal towns in Scotland, (d) The 13 principal towns in Eire, (e) The 10 principal towns in Northern Ireland.

A dash — denotes no cases; a blank space denotes disease not notifiable or no return available.

Disease	1944					1943 (Corresponding Week)				
	(a)	(b)	(c)	(d)	(e)	(a)	(b)	(c)	(d)	(e)
Cerebrospinal fever ..	45	2	24	1	—	49	4	26	3	—
Deaths ..	—	1	1	—	—	—	1	—	—	—
Diphtheria ..	425	12	91	62	13	580	45	118	59	3
Deaths ..	5	—	—	2	2	13	1	2	1	—
Dysentery ..	132	5	48	2	—	93	12	64	1	—
Deaths ..	—	—	—	—	—	—	—	—	—	—
Encephalitis lethargica, acute ..	1	—	1	—	—	2	—	—	1	—
Deaths ..	—	—	—	—	—	—	—	—	—	—
Erysipelas ..	—	—	41	6	—	—	34	4	2	—
Deaths ..	—	—	—	—	—	—	—	—	—	—
Infective enteritis or diarrhoea under 2 years ..	—	—	—	—	—	—	—	—	—	—
Deaths ..	35	8	13	12	5	42	10	8	44	5
Measles* ..	2,571	130	77	210	25	3,593	168	97	29	3
Deaths ..	1	—	2	1	—	—	—	1	—	—
Ophthalmia neonatorum ..	56	—	13	—	—	82	3	22	—	—
Deaths ..	—	—	—	—	—	—	—	—	—	—
Paratyphoid fever ..	8	—	9(B)	—	—	12	—	1	—	—
Deaths ..	—	—	—	—	—	—	—	—	—	—
Pneumonia, influenza† (from influenza) ..	539	45	11	2	1	502	19	2	—	6
Deaths ..	10	1	1	—	—	9	1	5	—	—
Pneumonia, primary ..	—	—	179	15	—	—	195	23	—	—
Deaths ..	—	35	8	7	—	—	15	8	2	—
Polio-encephalitis, acute ..	1	—	—	—	—	2	1	—	—	—
Deaths ..	—	—	—	—	—	—	—	—	—	—
Polio-myelitis, acute ..	7	—	5	1	—	6	3	2	—	—
Deaths ..	—	—	—	—	—	—	—	—	—	—
Puerperal fever ..	—	—	16	—	—	—	4	24	—	—
Deaths ..	—	—	—	—	—	—	—	—	—	—
Puerperal pyrexia‡ ..	164	11	14	—	1	125	8	18	—	1
Deaths ..	1	—	—	—	—	—	—	—	—	—
Relapsing fever ..	—	—	—	—	—	—	—	—	—	—
Deaths ..	—	—	—	—	—	—	—	—	—	—
Scarlet fever ..	1,390	87	164	19	52	1,959	132	209	40	44
Deaths ..	—	—	—	—	—	—	—	—	1	—
Smallpox ..	—	—	—	—	—	—	—	—	—	—
Deaths ..	—	—	—	—	—	—	—	—	—	—
Typhoid fever ..	3	—	4	5	2	8	2	4	12	4
Deaths ..	2	—	—	—	—	1	1	—	—	—
Typhus fever ..	—	—	—	—	—	—	—	—	—	—
Deaths ..	—	—	—	—	—	—	—	—	—	—
Whooping-cough* ..	2,323	171	62	73	15	2,284	100	94	28	30
Deaths ..	16	3	5	1	2	8	2	3	1	—
Deaths (0-1 year) ..	312	48	63	31	16	293	43	42	30	28
Infant mortality rate (per 1,000 live births) ..	—	—	—	—	—	—	—	—	—	—
Deaths (excluding stillbirths) ..	4,717	1,217	585	196	142	3,591	560	601	194	115
Annual death rate (per 1,000 persons living) ..	—	—	13.4	12.7	5	—	13.5	12.8	5	—
Live births ..	7,579	914	935	411	285	6,418	762	995	386	275
Annual rate per 1,000 persons living ..	—	—	19.0	—	5	—	20.3	25.4	5	—
Stillbirths ..	194	20	36	—	—	172	20	28	—	—
Rate per 1,000 total births (including stillborn) ..	—	—	37	—	—	—	28	—	—	—

\* Measles and whooping-cough are not notifiable diseases in Scotland, and the returns are therefore an approximation only.

† Includes primary form for England and Wales, London (administrative county), and Northern Ireland.

‡ Includes puerperal fever for England and Wales and Eire.

§ Owing to evacuation schemes and other movements of population, birth and death rates for Northern Ireland are no longer available.

## Letters, Notes, and Answers

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### ANY QUESTIONS?

#### Haemorrhage after Gastro-jejunostomy

Q.—A man now aged 58 had, at the age of 30, a gastro-enterostomy for duodenal ulcer. He kept in good health until the age of 52, when he had recurrence of dyspepsia. Five months ago he had a severe haemorrhage, mostly in the form of melaena, but also with some vomiting of dark blood. I should be glad of answers to the following questions in relation to this case: (1) Is there any means of telling whether the haemorrhage was from the original ulcer or from a new one on the stoma (peptic) or a new one in the duodenum? (2) Does it make any difference to the treatment where the site of the ulcer is, and, if so, what? (3) Have there been any recent advances in treatment beyond the usual dieting, etc., and the taking of magnesium trisilicate between meals? (4) Is the taking of vitamin A really helpful in healing the ulcer, and is the taking of vitamin C in tablet form (ascorbic acid) undesirable?

A.—Haemorrhage with or without indigestion after gastro-jejunostomy for duodenal ulcer almost always comes from the anastomotic margin and not from the duodenum. In the absence of indigestion it may be from acute ulcers associated with marginal gastro-jejunitis; when indigestion is present, it is likely to be from a chronic gastro-jejunal or jejunal ulcer. The treatment is similar to that of duodenal ulcer, but rest in bed with hourly feeds, with or without magnesium trisilicate or aludrox and atropine, must generally be continued for an even longer period, generally 6 to 8 weeks instead of 4 to 6 weeks. After this the patient must remain permanently on a suitable post-ulcer regime, the most important feature of which is the taking of food at intervals of not more than 2 hours throughout the day. Additional vitamins do not hasten recovery, but when fresh orange or tomato juice is not available 50 mg. ascorbic acid dissolved in milk should be given on account of the deficiency of the diet in vitamin C.

#### Tenderness after Shaving

Q.—In these days of make do and try-to-sharpen safety razor blades, what is the most effective treatment of the facial skin (especially of that of the tender upper lip) before and/or after shaving?

A.—A brushless shaving cream may be substituted for soap, or an electric razor used if obtainable. Zinc cream as a basis for calamine lotion, used after shaving, will probably be found curative.

#### Liver Stores and Ketosis

Q.—Is there any evidence that, in the absence of starvation, emotion or exertion or excitement can deplete the liver of glycogen so completely that there is not much left for conversion into blood sugar? A short biochemical explanation of ketosis, which is fairly common in children, would be of interest.

A.—The glycogen content of the liver depends upon input and output balance, and upon nervous and endocrine controlling factors. It is undoubted that sympathetic activity associated with emotion, excitement, or exertion may cause a temporary decrease in the glycogen stores. If, however, adequate food intake is maintained (which is not always the case under these conditions) it is improbable that the sympathetic activity could be sufficiently prolonged to maintain a state of glycogen depletion. The effect of emotion, excitement, or exertion on the complex interrelationships between insulin and the pituitary and adrenal cortical hormones is not known. The generally accepted view of ketosis is that the major source of ketonic bodies is fat. If the proportion of carbohydrate to fat being burnt is lowered, there appears to be difficulty in the combustion of aceto-acetic acid. The accumulating aceto-acetic acid is decarboxylated by reductases to form beta-hydroxy-butyric acid and by decarboxylases to form acetone.

Imbalance between carbohydrate and fat may occur due to exogenous factors, such as a high fat diet, or to endogenous causes,

such as depletion of carbohydrate stores in starvation, lack of insulin with consequent interference with carbohydrate oxidation, or to excessive mobilization of fat as by ketogenic hormones. Ketones may also arise from other sources than fat, such as the non-nitrogenous residue of aromatic amino-acids. In ordinary cases of ketosis found in clinical practice, however, it is probable that an upset of fat and carbohydrate metabolism is the main underlying cause.

#### Hallucinations and Heart Failure

Q.—In two cases of decompensated heart failure, hallucinations of a vivid and realistic character developed, and not many days after their first appearance both patients died. How is the occurrence of these hallucinations to be explained, and are they of any prognostic significance?

A.—Hallucinations of all kinds are liable to appear when the functions of the cortex are interfered with. Deficient oxygenation of the blood is one of the commonest causes of such an interference, and seems to be particularly common in the causation of visual hallucinations. For instance, many perfectly healthy people have vivid visual hallucinations, of the unreality of which they are aware, in the half-dreamy state before going off to sleep (hypnagogic hallucinations). Some people can even entertain themselves with a sort of automatic cinema-show before dropping off. In the patients referred to, the appearance of the hallucinations was the sign of an increase in cardiovascular inefficiency, and so could be legitimately regarded as of bad prognostic significance. In these patients there may have been also other signs of impaired cortical function—e.g., some failure of memory for recent events or of the power of concentration.

#### Treatment of Anxiety Symptoms

Q.—A man of 31, suffering from anxiety symptoms consisting mainly of excessive nervousness and tremulousness in company, apparently the result of unknown factors originating in early childhood, has been advised to undergo a course of electric shock treatment. Present circumstances make it impossible for him to undergo a prolonged analysis, and it is suggested that shock treatment, though not a cure, may somewhat alleviate the symptoms. He is an intelligent type, whose interests are mainly on mathematical and other intellectual lines, and his fear is that the treatment may impair his faculties. Though not entirely disabling, his condition is distressing because it cuts him off from social contacts and is a serious handicap in his career, and he is therefore quite willing to face the risk of fractures, which have been mentioned as a possibility. What advice can be given as regards risks, immediate and late? Presumably shock therapy would not interfere with analytical or other treatment at a later date.

A.—Electrical convulsion therapy is not desirable. The evidence that it helps this class of condition is practically nil, and its administration here would be the purest empiricism. The possibility of such treatment injuring intellectual powers must always be borne in mind. Psychotherapy of an intensive sort is the correct treatment, and it may not prove to be a prolonged matter.

#### Galactorrhoea

Q.—Could you suggest treatment for a serous discharge from both nipples of a patient who has been so afflicted for eight years, since an unsuccessful pregnancy (premature stillbirth)? Hormone therapy has been unsuccessful. At no time has there been blood. There is no apparent mastitis.

A.—The history suggests that the discharge is due to a persisting secretory function of the mammary glands and that it is either milk or analogous to it. Galactorrhoea, as this symptom is called, is rare, but extraordinary examples have been recorded from time to time through the centuries, sometimes even in virgins and men. It can result from lesions in the pituitary gland or the adjacent parts of the brain, and in particular is associated with acromegaly. Ovarian tumours such as lutein cysts have also been reported as causing it. It sometimes follows ovarian failure and has been described as a cyclical phenomenon coinciding with, or replacing, menstruation. The above possibilities should be excluded, but a more simple explanation should be kept in mind. Lactation can be maintained almost indefinitely by local stimulation of the breasts, and if the patient is continually attempting to express the discharge to confirm its presence, that might be enough to account for its persistence.

If a cause cannot be found, treatment is difficult. The breasts should be well supported by a brassiere and all forms of manipulation avoided. Assuming that it is oestrogenic hormone therapy which has failed, it would be worth while trying the effect of androgens, either testosterone propionate intramuscularly or methyl testosterone sublingual tablets. The dose will be a matter for trial, but large amounts may be required. Alternatively, ethisterone might be helpful. Iodine and iodides have also been used, apparently with good effect in some cases.

## Aniline Poisoning

**Q.**—(1) Is it known what abnormal compound of haemoglobin exists in the blood in cases of anilism in those cases of poisoning by aniline or its compounds, and in the particular case of T.N.T.? (2) Is this compound formed by direct combination in the alveoli of the lungs when fine dust or fumes of T.N.T. are inhaled, or is it formed by the action on the blood of T.N.T. absorbed through the skin, or by both channels? (3) Is the bone marrow affected in these cases of anilism, and, if not, why does cyanosis persist for several weeks when cases are removed from contact. (4) Can the abnormal haemoglobin compounds carry any oxygen whatever? (5) Does toxic hepatitis play any part in the production of cyanosis in cases of anilism?

**A.**—(1) The compound formed is chiefly methaemoglobin, with possibly some nitrohaemoglobin. (2) These compounds are formed by the action of T.N.T. on the blood after absorption through both skin and lungs, and possibly to some extent by ingestion. (3) In cases of pure anilism, without the rarer incidence of true aplastic anaemia, there is usually a depression of red-cell elements, with a consequent anaemia, accompanied by a fall of haemoglobin. True aplastic anaemia may be a feature of T.N.T. poisoning without cyanosis. (4) Methaemoglobin and nitrohaemoglobin carry no oxygen, but it must be remembered that only a certain percentage of haemoglobin is converted into these abnormal compounds. (5) Toxic hepatitis has no direct connexion with cyanosis, but the liver, the bone marrow, and the haemoglobin may be attacked simultaneously as well as separately.

## Tap Water and Blood Transfusion

**Q.**—A blood transfusion was done on a patient. Tap water was used for rinsing and boiling rubber tubing, needle, and glass tube. The patient had a severe reaction during the transfusion and was quite ill for 48 hours. The transfusion was of fresh blood and was cross-matched. Was his reaction due to the tap water used? Is freshly distilled water now always used, even at the front? Are many people so allergic to tap water? Do these reactions occur even in glucose-saline transfusions if tap water is used?

**A.**—It is maintained by certain workers that London tap water can be used for rinsing and cleaning transfusion apparatus. The Emergency Transfusion Service would not use the tap water for rinsing and boiling rubber tubing, needle, and glass tube unless the apparatus was subsequently dried and autoclaved. It is possible, of course, that a small amount of dried protein from previous transfusions remained in the apparatus, but the most likely explanation of the reaction is the use of tap water. At the front dry sterilized apparatus is provided. I should expect reactions to occur in glucose-saline transfusions if tap water were used, but know of no evidence on this point.

## Sunlight and Tuberculosis

**Q.**—Is sunlight, artificial or natural, harmful in cases of active pulmonary tuberculosis? Can it be given with safety in gradually increasing doses? Is it the case that those people who tan as the result of exposure to the sun will not derive any harm from this practice, and vice versa? What is the position with regard to tuberculosis of other regions?

**A.**—The use of sunlight, artificial or natural, is dangerous in active pulmonary tuberculosis. Its value is rather problematical and is outweighed by the danger unless prescribed by an expert. It is not the case that those people who tan easily as a result of exposure to the sun will derive no harm from this practice, though they are less likely to do so. The use of carefully graduated doses of sunlight in cases of bone-and-joint, glandular, and peritoneal tuberculosis is very valuable, but the best results will be obtained by those with experience. The questioner is recommended to consult *Actino-Therapy* by Rollier for details.

## Cysts of Buccal Mucous Glands

**Q.**—For the past nine months a patient has had recurrent cysts of the buccal mucous glands. The condition was limited to the inside of the lower lip to the left of the midline—approximately over the distribution of the terminal branches of the left mandibular nerve. Recently the opposite side has been affected also. The cysts periodically break, liberating a clear fluid which shows nothing microscopically. Many local treatments and attention to general health have been tried with no improvement. Occasionally only, say, six cysts are present, sometimes many more.

**A.**—Cysts of the muciparous glands of the lips are not uncommon. They are retention cysts, and when recurrence occurs, as in the present case, trauma, lip-biting, or incomplete removal should be suspected. The treatment is surgical. Single cysts can be shelled out individually, but when there is a general cystic condition of the glands a flap should be turned back and the mass dissected out.

## INCOME TAX

## Assistant

"X. Y. X." employed an indoor assistant at £450 a year, but he has recently become an outdoor assistant receiving an additional £104, making £554 a year. (a) If he is paid the £104 separately to meet the rent he will have to pay will the £104 be exempt? (b) His new house will be used for professional purposes; what expenses can the assistant claim for this?

\*\* (a) No; the £104 is assessable to income tax and is liable to deduction of tax under "pay as you earn." (b) Assuming that the assistant is required by the conditions of his employment to use his house for professional purposes, he can claim to deduct a reasonable proportion of the general cost of the house, rent, rates, lighting, etc. What a reasonable proportion would be must of course depend on the particular facts.

## LETTERS, NOTES, ETC.

## Sterilization of Syringes

Dr. E. H. ROBERTS (Hythe, Southampton) writes: I have been in the habit of keeping my syringe in its container in 50% "detol." I change the needle when it is blunt and the detol every fortnight. For some years I did not disinfect the skin (I do now with the detol in the container for the patients' benefit and to be on the safe side). I carry out this method for all kinds of injections—mainly T.A.B., T.A.F., A.P.T., whooping-cough vaccine, etc. If I do what I call a "dirty" injection, I then change the needle and soak the syringe in pure detol for half an hour. After using my syringe for a fortnight in this way I had the detol in the container and an injection of sterile saline, which I sucked up in the syringe, cultured (2 of each). These showed growth of *B. subtilis*, no other organisms being found. *B. subtilis*, I understand, is regarded as harmless to man on injection. I have used this method for ten years for several thousand injections with, so far, no ill effect. It is labour-saving and, I hope, is fool-proof.

## Offers of Hospitality for Doctors' Children

The following additional offers have been received from doctors willing to accommodate the children of colleagues practising in dangerous areas. Dr. A., who practises in a village in Lincolnshire, could take two children, preferably girls, for the period of the school holidays, or longer if necessary. He has two daughters aged 15 and 9, who will be returning to school towards the end of September. Alternatively, Dr. A. offers to accommodate a doctor and his wife, or to exchange practices for a fortnight with a doctor in the London area. Dr. B., of Birmingham, offers accommodation for two boys, preferably Scottish. Dr. C., who is in practice near Plymouth, has a daughter of 10 and offers to accommodate a girl between the ages of 9 and 11 for the holiday period. Dr. D., of Sheffield, who has a young daughter, would be glad to accommodate two children, preferably over 10 years of age. Dr. E., practising in Cornwall, offers to take a child over 7, either a boy or a girl; he has three children of his own. Any readers interested in these offers may communicate with the Secretary at B.M.A. House, Tavistock Square, W.C.1.

## The Flying Bomb: Exchange of Duties

A doctor living in the North in "country surroundings that are particularly attractive just now" writes to suggest that "we doctors who live in safe areas should be allowed to take our turn at the casualty services and give our overstrained colleagues in London a much-needed rest by changing places for a few weeks." He asks if it could be arranged for him to do his share during the present flying bomb attacks. He has already been put in touch with a London colleague, but we publish his suggestion as there may be others who would like to follow his example.

## Baby wanted for Adoption

Dr. E. W. DEWEY (214, London Road, Portsmouth) writes: I wonder if any of your readers know of a baby requiring adoption. The child should be a boy, between 2 and 6 months, healthy, and of good stock, and preferably resident somewhere in the South of England. I should be glad if anybody knowing of such a child would communicate with me.

## Correction

Dr. ARTHUR F. COCA (New York), whose letter on vitamin B deficiency in allergic patients appeared last week (p. 128), asks that the following should be substituted for the last sentence of paragraph 2—that is, after the word "prescribed": "The daily dose required for complete relief of the symptoms of B deficiency is from four to seven cakes of Fleischmann's standard yeast." In a covering letter Dr. Coca comments that "the small dose of one and one-half cakes of yeast was satisfactory only with a supplemental small dose of liver extract."

# BRITISH MEDICAL JOURNAL

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## PENICILLIN: A SURVEY\*

By

Sir H. W. FLOREY, M.B., Ph.D., F.R.S.

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The chemiotherapeutic properties of penicillin were discovered in 1940, but before this there was a long history which for convenience can be divided into stages. (1) The discovery of naturally occurring antibacterial substances—or antibiotics, as they are now beginning to be called—and the early attempts to utilize them in medicine. (2) The discovery of the antibacterial substance penicillin by Alexander Fleming. (3) The discovery of its chemiotherapeutic properties at Oxford. (4) The stage of development in which we are at present, which consists of three interrelated lines of research—namely, (i) exploration of methods for mass producing penicillin by the growth of the mould *Penicillium notatum*, (ii) investigation of the chemical nature of penicillin with the hope that it may eventually be synthesized by chemical means, and (iii) the clinical exploitation of the known properties of penicillin.

### Stage 1

We have to go back to 1877 for the first observation of a naturally produced antibacterial substance. In that year Pasteur and Joubert described how when common air bacteria contaminated flasks of broth containing the bacillus of anthrax the growth of the anthrax bacillus was stopped. That phenomenon was probably the first observation that one organism may produce a chemical substance—or antibiotic—which is capable of stopping the growth of another, though Pasteur did not realize its true significance. In the succeeding years many examples were discovered, of which the most interesting was *Bacillus pyocyaneus*. From the medium on which this organism had grown Emmerich and Loew extracted a substance which they called pyocyanase. This was found to be capable of stopping the growth of certain organisms causing disease, notably anthrax and diphtheria. They applied it to the lesions of the skin caused by anthrax with, they claimed, some benefit. Although this product was too safe to Germany as recently as the 1930s its use in medicine never became widespread.

### Stage 2

In 1928 Fleming was studying the staphylococcus. One day he examined and then put aside on his bench a plate on which colonies of the staphylococcus were growing. Several days later there was a colony of mould growing on one side. Fleming noticed that in the neighbourhood of the mould the colonies of staphylococci were disappearing. He recognized this as a phenomenon of interest, and subcultured the mould, which was later identified as *Penicillium notatum*. When grown on nutrient broth it was found to produce some substance which passed into the liquid. By experiments in test-tubes Fleming showed that the liquid had the property of stopping the growth of many bacteria. Fleming called the active liquid penicillin. He carried out experiments on the effect of his broth on numerous organisms in test-tubes and showed that many which can cause disease in man were affected, although disease-producing organisms were quite insensitive. He

also injected some of the broth containing penicillin into rabbits, and found that it was no more toxic than ordinary broth. He found, too, that the broth did not harm the white blood cells. Fleming, who had been working on antiseptics, recognized that penicillin had some very desirable properties as an antiseptic, and proposed that it might be useful for local application to infected surfaces. He did, in fact, so apply it to a few cases, with results indicating, as he said, that "it certainly appeared to be superior to dressings containing potent chemicals." About this time an attempt was made by Clutterbuck, Lovell, and Raistrick to extract the penicillin. They succeeded in growing the mould on a purely synthetic medium and found that the active substance could be extracted into ether when the watery medium containing penicillin was acidified. However, when they tried to concentrate the penicillin by evaporating the ether most of the activity was lost, and they concluded that penicillin was "extremely labile."

We may briefly summarize the position at the end of this phase by saying that Fleming had discovered the existence of an antibiotic produced by *Penicillium notatum*. Some test-tube investigations had been made of the antibacterial power of the crude broth and, as a result, it had been suggested that it might be useful as an antiseptic locally applied to infected lesions. But as the result of both Fleming's and Clutterbuck, Lovell, and Raistrick's work the conclusion had been reached that penicillin was an unstable substance and therefore unlikely to have any practical value in medicine.

### Stage 3

Stage 3 deals with the work done at Oxford. My own interest in the phenomena of bacterial inhibition began in the 1920s. Since 1929, at first alone and later with collaborators, work had been in progress, but it was not till 1938 that Dr. Chain, a biochemist, and I prepared a plan for the systematic study of some of the naturally produced antibacterial substances. After much discussion the choice was narrowed down to three—*Bacillus pyocyaneus*, *Penicillium notatum*, and the subtilis mesentericus group of bacteria. Eventually work was undertaken on the first two. Miss Schoeatal obtained three antibacterial products from *Bacillus pyocyaneus*, which all proved to be very toxic, but fortunately the results with penicillin turned out rather differently.

Both Fleming and Clutterbuck, Lovell, and Raistrick had noticed that under certain conditions the crude broth might retain its activity for at least several weeks. This indicated that in appropriate conditions the substance might not be so unstable as had been pictured. To work on the metabolic products of moulds from biological as well as chemical aspects needs a team of specialized workers, so that the various fields of investigation may be covered, and it was most fortunate that such a team was available in Oxford at that time. I should like to stress that this work could not have been carried through had it not been for the unremitting labours of the following people: Dr. Chain, Dr. Abraham, Prof. Gardner, Dr. Heatley, Dr. Jennings, Dr. Sanders, Dr. Fletcher, and Lady Florey. Nor

\*Abridgment of the Peter Le Neve Foster Lecture delivered before the Royal Society of Arts on June 7, 1944.



could we have got far without the work of our technical assistants, Mr. Glistler and his "penicillin girls," Mr. Kent, and, for the chemical work, Mr. Callow and Mr. Burt.

The body of work done by this team in the next two years produced a single end-result—penicillin as a proved chemotherapeutic drug. The steps cannot be set out chronologically because different aspects of the work were in progress simultaneously, and the accent was first on one thing and then on another until a fairly complete picture was built up. The first step in all work of this type is to grow the mould on a medium into which it will produce the active substance. Here we were able, in the first place, to use the information which had been obtained by Fleming and by Clutterbuck, Lovell, and Raistrick, and we began by growing the mould on the synthetic medium proposed by the latter workers.

In studying an antibiotic its fundamental property of inhibiting bacteria can be made use of as a test method, and we owe to Dr. Heatley the elaboration of a test which has proved invaluable for work not only on penicillin but on many other antibiotics as well. By means of his method it was possible to follow the various fractionating processes. The crucial chemical observation was the demonstration that not only did penicillin, when made acid, pass from a watery into an organic solvent such as ether or amyl acetate, but that it could be recovered from the organic solvent when shaken with water and an appropriate amount of alkali. By repetitions of this process purification and concentration were effected and the first stable products containing penicillin produced.

#### Chemical Properties of Penicillin

The principal chemical properties of penicillin are these: (1) An acid, unstable in the acid form but stable as salts between pH 5 and pH 7. (2) Ba, Ca, and Na salts highly soluble. (3) Destroyed by acids and alkalis and by heating. (4) Inactivated by oxidizing agents, heavy metals, primary alcohols, and ketonic reagents. (5) Inactivated by enzymes produced by some common bacteria.

This last is a very important observation, because it explains why large-scale production has proved to be more than usually difficult. The ubiquitous air bacteria may produce ferments which destroy the penicillin as fast as the mould makes it, so that although the mould may appear to grow well no penicillin is produced. As a consequence, all penicillin has to be manufactured with the exclusion of all air bacteria, and to do this on a large scale is a very difficult technical feat.

The production of a partly purified extract made possible the biological investigations which formed the next stage. It was found that the extract, even when highly diluted, would stop the growth of many organisms causing disease.

#### Bacteria Sensitive to Penicillin

Gram-positive.—*Streptococcus pyogenes*, *Staphylococcus aureus*, *Streptococcus pneumoniae*, *Streptococcus viridans*, *Bacillus anthracis*, *Corynebacterium diphtheriae*, *Actinomyces bovis*, *Clostridium tetani*, *Cl. welchii*, *Cl. septicum*, *Cl. oedematiens*.

Gram-negative.—*Neisseria gonorrhoeae*, *N. meningitidis*.

#### Bacteria not Sensitive to Penicillin

Relatively insensitive.—Gram-negative: *Salmonella typhi*, *S. gaertneri*, *Vibrio El Tor*.

Almost or completely insensitive.—Gram-positive: *Mycobacterium tuberculosis*. Gram-negative: *Pasteurella pestis*, *Vibrio cholerae*, *Bacterium coli*, *Pseudomonas pyocyanea*, *Proteus*, *Brucella abortus*, *Br. melitensis*, *Bacillus of Friedländer*.

This list is substantially the same as Fleming found with his crude broth containing penicillin, with the important addition among the sensitive organisms of the bacilli of gas gangrene and, unhappily, among the insensitive of the tubercle bacillus. Only those diseases caused by sensitive bacteria are susceptible of cure by penicillin. It was shown that penicillin, except possibly in very strong solution, does not kill the bacteria, but is a bacteriostatic. The penicillin preparations which we had at that time were bacteriostatic for sensitive bacteria at the dilution of 1 in 1 million, but we now know that these were very impure products. Pure penicillin will stop the growth of some kinds of bacteria at the astonishing dilution of 1 in 50 million or more.

It was further shown that the activity of the substance was maintained with scarcely any diminution in serum, in pus, and in the presence of autolysed body tissues. During the process of autolysis many breakdown products are formed, but none of them interfere with the action of the penicillin. The properties differentiate penicillin very sharply from the sulphamide group of drugs, which are rendered largely ineffective by pus or tissue breakdown products. Another important finding was that penicillin would act almost equally well when large numbers of bacteria were present as when there were few; in either case it would inhibit the growth of a whole lot. This again is in sharp contrast to the sulphamides, which are rendered less effective if many bacteria are present.

The fact that penicillin is a very powerful antibacterial agent would not by itself differentiate it from a number of other mould products or from some of the familiar chemical antiseptics. But whereas nearly all such substances are quite toxic to body tissues, even concentrated extracts of penicillin had practically no poisonous action on animals. It was further shown that individual body cells, such as the white cells of the blood, were unaffected by concentrations many hundreds of times greater than those necessary to stop the growth of sensitive organisms.

When administered to an infected animal or man in sufficient quantity penicillin stops the growth of the germs, thus giving the white blood cells in particular, and possibly other defence mechanisms, the opportunity effectively to attack and destroy them. It was found, too, that tissue cultures would survive and grow in concentrations very much greater than those necessary to produce bacteriostasis. In animals the active material was rapidly excreted by the kidneys into the urine, and, to a lesser extent, by the liver into the bile. It was readily absorbed after injection under the skin or into the muscles or into the small intestine, but it could not be given by mouth because of the hydrochloric acid in the stomach, which destroys penicillin very rapidly. Neither could it be given by the large bowel, because the bacteria there destroy it.

The position at which we had now arrived was that we had in our hands a substance which combined very low toxicity to animals with a very powerful action against disease-producing bacteria. We knew a good deal about its fundamental behavior in the animal body. The most important step had now been reached—we had still to learn whether it would cure disease in animals and man.

It is worth while to digress for a moment in order to take up the question of antiseptics, so that the real significance of the experiments about to be described may be understood. Everyone is familiar with antiseptics such as mercuric chloride, acriflavine, dettol, lysol, etc. All these are capable, under appropriate conditions, of killing bacteria—mark the word "killing"—but cannot be used for injecting into the animal body because they have a damaging effect on animal cells as well as on bacteria. All the antiseptics in common use destroy the protoplasm quite quickly, and this applies equally to the protoplasm of the bacterium and of the animal. As might be expected, although antiseptics can be used for sterilizing instruments and similar purposes, little success has attended their use in dealing with infected wounds, still less their injection into the body. A chemotherapeutic agent differs from antiseptics in that it selectively attacks the organisms causing the disease without at the same time doing any serious injury to the body. For this reason it can be given internally or by injection. There are several examples of such chemotherapeutic substances. The one which has been known the longest, and is perhaps the most familiar, is quinine, used to combat malaria. Quinine is swallowed by mouth, passes into the blood stream, and exerts its beneficent action in killing the malaria parasite while being carried round to all parts of the body. Another example is salvarsan, the discovery of Ehrlich, produced after many years of work. It is an arsenic compound which has a very profound effect on the spirochaete of syphilis without being too toxic to be borne by the person suffering from the disease. Other substances were discovered which were effective against various tropical diseases, but only one class of substance, the sulphamides, had been found of any use in common diseases.

has sepsis. Their use was for various reasons. Some of them have been mentioned earlier—some what limited. These are all true chemotherapeutic agents, not antiseptics.

The following experiments demonstrated that penicillin belongs to the class of true chemotherapeutic agents. So far as the use of penicillin in medicine is concerned this was the crucial discovery. Such experiments are carried out in the following way. Mice are injected with bacteria such as streptococci and staphylococci so that they will certainly die from the infection within one or at most two days. To show that a substance suspected of having chemotherapeutic properties is active it is necessary to secure survival of a substantial number of mice which would otherwise certainly die. In the case of penicillin this was accomplished by injecting some emulsion under the skins of the infected animals every three hours for several days. The drug was absorbed from beneath the skin into the blood stream, which carried it to the place where the infecting bacteria had previously been placed. Knowing that penicillin was a soluble substance quickly distributed round the body, that it was not toxic to animal tissues, and that it was just as active in the presence of body tissues as in a test tube we were justified in hoping that it would stop the bacteria growing as effectively in the body as it did outside. And this proved to be the case. The groups of treated mice survived almost without exception, while the untreated mice all died. These first experiments indicated without any doubt that penicillin belonged to that rare class of drugs which can be used as chemotherapeutic agents.

From this demonstration it appeared that penicillin was likely to have very great potentialities in the field of human medicine. Penicillin at that time was extremely difficult to produce in substantial quantities, so that some time passed before we were able to show its powers on man. We again have to thank Dr. Heatley and his assistants for unremitting work in producing in the laboratory enough penicillin for the first injections in man. Even after months of work we could treat only six cases of severe infection, but the results were most promising.

The first human patients were treated in the winter and spring of 1940-1, at the time of the worst bombing of England. It seemed improbable that much headway could be made in getting large-scale production started in this country. In these circumstances Dr. Heatley and I went to America, which was not then at war, to ask them whether they could put some of their great resources into the production of penicillin, so that more extensive clinical trials could be carried out. We were extremely fortunate in coming into contact with Dr. Coghill, Director of the Fermentation Division of the Department of Agriculture's excellent research laboratory at Peoria, in Illinois. The work which he and his colleagues have done on the selection of high yielding strains of *Penicillium notatum* and on the modification of culture media, has greatly increased the yield which can be obtained from the mould, and has played an important part in the large scale production of penicillin.

While this work was being initiated in America, enough material was made in Oxford and by Imperial Chemical Industries to enable some eighteen patients with severe infections—most of them caused by the staphylococcus, to be treated. These results were again of such great promise that any effort to produce the drug on a really large scale was clearly worth while. This was more so since certain of the bacteria susceptible to penicillin cause some of the most common and universal infections including those of war wounds.

#### Stage 4

From that time the work branched in three directions. First, it was clear that it would be very desirable to make the substance synthetically by chemical procedures without the intervention of the mould. Work is now proceeding along these lines in Oxford, where Dr. Chain and Dr. Abraham are collaborating with Sir Robert Robinson and his colleagues, and elsewhere, both in this country and in America, hundreds of chemists are engaged on this important problem. Progress in this direction cannot be reported as it is now in the secret category, but the fact has already been published that pure

penicillin has been obtained. This was done in America and in Oxford at about the same time. Every resource has been mobilized to deal with this chemical question, but whether success will attend the effort to produce penicillin by synthesis it is impossible to forecast.

The second, and more immediately practicable line, has been to increase the manufacture by means of the mould to a really large scale. This has involved a large number of intricate technical problems, which have been tackled along different lines by the various commercial firms, both in this country and in America. As a result of their efforts penicillin can now be issued by the kilogramme, although, of course, the supplies still fall lamentably short of the demand.

The third line has been to explore further the use of penicillin as a curative agent. There are two possible ways of using penicillin. First, it can be injected into the muscles or veins so that it is carried around in the circulation to the parts which are being attacked by the infecting bacteria. This method is obligatory in the more serious and widespread diseases such as pneumonia, diseases of the bones, and septicaemia, where the diseased tissues cannot be reached by any other means. Although in many cases this is a very effective method, it has the disadvantage of requiring relatively large amounts of penicillin, since the drug is rapidly excreted by the kidneys. Secondly, penicillin may be used as a local application to the affected part. This can be undertaken only if every portion of the infected tissues can be reached by the penicillin, and a good deal of the success of local application depends upon surgical ingenuity in ensuring that the penicillin, which is rapidly absorbed from a wound, is kept in contact with all the infected tissues long enough to exert its action. At the present time a great deal of thought and study is being given to the problem of war wounds and how best to utilize penicillin, both locally and generally, for their treatment.

The increasing supplies of penicillin now available permit of extensive explorations of its use in many diseases. Perhaps the most striking recent addition to knowledge is that of the Americans, who have discovered that penicillin is apparently effective in treating syphilis. Another excellent development since larger supplies have become available is that penicillin can now be given as a preventive instead of as a last resort. In battle casualties especially, the effort is being made to prevent serious sepsis from developing by giving penicillin at a very early stage.

## TREATMENT OF ACUTE EMPYEMA WITH PENICILLIN

BY

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Treatment of acute empyema has both immediate and ultimate aims—the former to overcome the toxæmia by sterilizing or draining the cavity, the latter to restore the function of the lung and chest wall. This investigation is intended to show how far penicillin can assist in the realization of these aims when it is used in the simplest possible way—repeated emptying of the cavity by aspiration, followed by injection of the drug into it. Penicillin was dissolved in water to give a concentration of 1,000 units per c.cm., and the dosage was adjusted to the size of the cavity. The sensitivity of the infecting organism having been established, the initial injection varied between 10,000 and 40,000 units, 20,000 being usual. As treatment proceeded 10,000 or 5,000 units often sufficed. Tests for the presence of the drug in the pus withdrawn provide essential guidance in this respect. In the cases in which multiple loculi were present each cavity was treated on the same lines. It

was soon found that treatment on alternate days was adequate in the ordinary case, but the presence of a broncho-pleural fistula, associated with the rapid disappearance of the drug from the pleural cavity, may render more frequent injections necessary. Our supply did not permit us to supplement local with systemic therapy, which may be desirable in some, if not all, cases.

So far, 18 cases (Table I) have been treated. They show the variations to be expected in such a series in regard to age,

#### Case 4

The patient, a male omnibus driver aged 53, had a right-sided empyema, the largest aspiration from which was 3 pints of pus. The infecting organism was a haemolytic streptococcus. He developed a cough 25 days before admission, followed in 3 days by pain in the right side of the chest. One week later he was admitted to Oldchurch Hospital, under Dr. W. J. Stokes, in a toxic distressed



FIG. 1.—Case 2; woman aged 60. Right empyema; pneumococcus Type 28. (Oct. 5, 1943.)

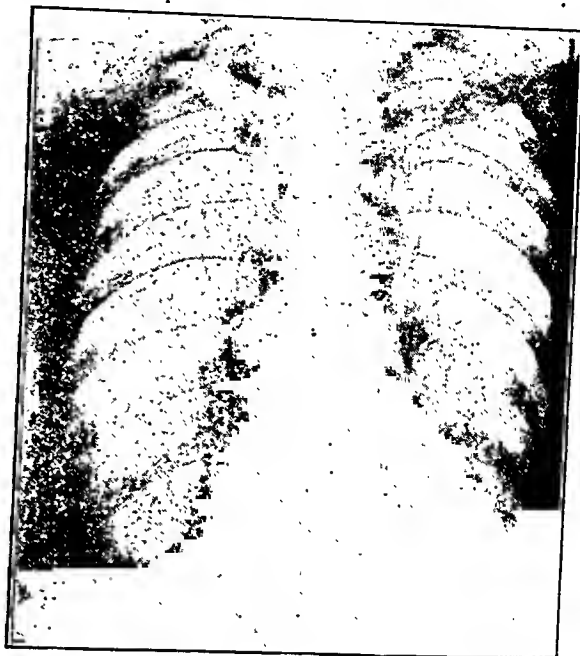


FIG. 2.—Case 2 at May 25, 1944.



FIG. 3.—Case 4; man aged 53. Right empyema after emptying cavity by aspiration. Haemolytic streptococcus. (Jan. 8, 1944.)



FIG. 4.—Case 4 at May 10, 1944.

sex, site of lesion, loculation, infecting organism, underlying lung condition, and broncho-pleural fistula, any of which may be of the greatest importance when considering the individual case. But as treatment proceeds they also tend to show certain common features, such as have been described by workers both in this country and in the United States. To illustrate this, one case (No. 4) is described below in detail, the course of the others being shown in the table and their special features discussed when necessary.

condition with signs of a large right pleural effusion, which on aspiration showed the presence of pus and haemolytic streptococci. He was treated by aspiration and 40 g. of sulphapyridine. He was still in a toxic condition when admitted to Claybury Emergency Hospital on Dec. 9, 1943. There was stony dullness, with absence of breath sounds, over the right side of the chest. This was aspirated, and thin pus was obtained from which haemolytic streptococci were grown.

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Aspiration and injection of penicillin began on the day of admission, and were continued on alternate days until Jan 5, 40,000 units being given on the first day and thereafter 20,000 or 10,000 units. The pus withdrawn remained sterile on culture after the first injection, and steadily thickened until, after 14 days' treatment, the deposit on standing took up the whole volume of fluid. During this period the appearance of the streptococci as stained by Gram's method gradually changed until by the 10th day of treatment all were atypical, showing as minute Gram positive dots, often in clusters. Pus continued to collect at intervals, causing slight fever, but otherwise appearing to be of the cold abscess type, and the minute cocci, sterile on culture, persisted until Feb 24. The last aspiration, however—on April 4—withdrew 40 c cm of clear fluid containing lymphocytes. During this prolonged period radiographs

This brief account will serve to suggest certain problems that arise during the treatment described. The cavity was sterilized, but it was difficult to say when this was finally accomplished. The prolonged pus formation after sterilization of the cavity, maintaining pulmonary collapse, and increasing pleural thickening were, however, a disappointing feature.

#### The Remaining Cases

Table I gives details of all the cases under discussion. They include four cases of infection with haemolytic streptococci, three

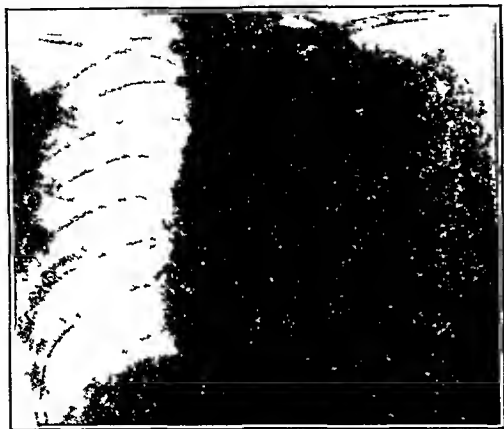


FIG 5—Case 8, boy aged 10. Left empyema, pneumococcus Type 1 (Jan 23, 1944)

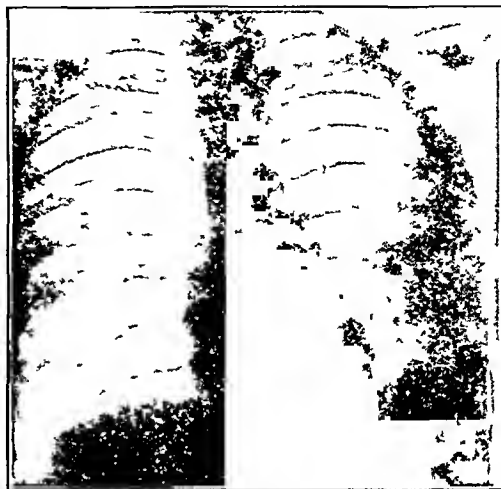


FIG 6—Case 8 at May 5, 1944



FIG 7—Case 10, man aged 49. Right empyema showing postero-lateral and antero-medial pockets, pneumococcus Type 2 (March 20, 1944)



FIG 8—Case 10 at May 26, 1944

taken after aspiration showed a progressively lessening cavity with thickened walls (Figs 3 and 4). At the time of writing the patient is well and back at work, but the chest wall is sunken and immobile over the affected area; however, serial radiographs show that the lung is still re-expanding.

with no haemolytic streptococci, one with a micro-aerophilic streptococcus, and one with an anaerobic streptococcus. There were seven cases of pneumococcal infection and one case from which a haemolytic streptococcus was first isolated, to be followed later by a pneumococcus.

In every case, except No. 17, in which there was a broncho-pleural fistula, the cavity was sterilized with a dosage of penicillin ranging from 40,000 to 200,000 units, but it is not easy to determine the period of injections adequate to ensure permanent sterility. Cultures of the pus are often found to be sterile after one injection.

TABLE I.—*Details of 18 Cases*

No.	Sex	Age	Side	Complicating Disease	Organism in Empyema	Total Units of Penicillin	Weeks Febrile	No. of Aspirations	Most Pus Removed at Single Aspiration	Day of Final Aspiration	Present Condition
1	M	55	Right	Perforated appendix	Non-haemolytic streptococcus	40,000	2	4	18 oz.	23	After reconstruction of abdominal wall: Well. No cough; little pleural thickening. At work.
2	F	60	"	"	Pneumococcus Type 28	80,000	8	11	4 oz.	22	Well. Taking normal exercise. (Figs. 1 and 2)
3	F	71	"	"	" Type 8	40,000	4	7	8½ oz.	21	Well. No pleural thickening. Taking normal exercise.
4	M	53	"	"	Haemolytic streptococcus	270,000	9	21	60 oz.	85	Well and at work. Considerable pleural thickening (Figs. 3 and 4)
5	F	19	Left	"	"	155,000	4	10	20 oz.	18	Well and at work. Pleural thickening.
6	F	28	Right	Tuberculosis R. zones 1 & 2; right artificial pneumothorax; division of adhesions. Haemorrhage; secondarily infected	Anaerobic streptococcus	155,000	12	12	13 oz.	28	Haemoglobin 70%. Blood transfusion. Now afebrile. Small effusion, which is sterile. Sanatorium.
7	M	52	Left	"	Pneumococcus Type 1	80,000	1	8	11½ oz.	20	Well. Some pleural thickening.
8	M	10	Left	"	"	135,000	5	13	13 oz.	49	Well; back at school. No scoliosis; no thickening July. (Figs. 5 and 6)
9	F	31	Right	Very severe rheumatoid arthritis	Haemolytic streptococcus	100,000	4	10	5 oz.	32	Well. Considerable pleural thickening.
10	M	49	"	"	Pneumococcus Type 2	200,000	5	16	12 oz.	46	Well and at work. Developed antero-medial and postero-lateral pockets with marked pleural thickening in each (Figs. 7 and 8)
11	M	41	Left	"	" Type 1	95,000	2	9	24 oz.	20	Became sterile after 55,000 units, but pneumococci reappeared. Little pleural thickening. Back at work.
12	M	2	"	Streptococcal pemphigus; streptococcal bursitis over left elbow	Haemolytic streptococcus; secondarily, pneumococcus Type 19	95,000	8	5	18 oz.	—	Improved from a moribund condition, but developed broncho-pleural fistula, necessitating rib-resection and drainage, 22/4/44. Condition again deteriorated; died 20/5/44. No necropsy.
13	M	59	Right	"	Pneumococcus Type 24	45,000	2	5	15 oz.	17	Became sterile after 25,000 units, but with appearance of broncho-pleural fistula became reinfected. No pleural thickening. Back at work.
14	M	21	"	Traumatic haemothorax from bullet wound	Sterile	30,000	1	6	12 oz.	14	Well. Returned to unit.
15	M	52	Left	"	Non-haemolytic streptococcus	60,000	1	4	23 oz.	37	Well. Some pleural thickening.
16	F	32	Right	Mitral stenosis; pulmonary infarct	"	90,000	1	7	8 oz.	22	Greatly improved.
17	M	52	Left	"	Micro-aerophilic streptococcus	230,000	7	8	44 oz.	—	Condition never satisfactory, as penicillin rapidly disappeared from pleural cavity probably owing to broncho-pleural fistula. 6/5/44: Rib-resection and drainage; condition continued to deteriorate. 23/5/44: Died.
18	F	70	Right	Left radical mastoid operation	Haemolytic streptococcus	60,000	1	4	23 oz.	21	Greatly improved. Some pleural thickening.

f penicillin, but withdrawal of the drug at this stage would invite recurrence. Table II indicates the sequence of events in 12 uncomplicated cases—7 streptococcal and 5 pneumococcal. The table shows the period of continuous administration of penicillin in each case, the day on which the pus gave a sterile culture, and that on which all the cocci in the pus were of the abnormal small type described in the account of Case 4. It will be seen that with pneumococci the change in appearance coincides with, or follows closely, the first sterile culture, but in the case of streptococci there is a longer interval. But even with the latter organism it was found to be unsafe to use this test as an indication for stopping the injections, as the recurrence of infection in Cases 15 and 16 shows. It is noticeable that in five cases in which active infection recurred it was between the 16th and 19th days, but this may well have been due to chance.

Cases 7 and 11 were instances of pneumococcal infection giving thin pus in which the agglutination of the cocci slowed the presence of antibody. These patients had few toxic symptoms. In Case 8 the cocci were present in enormous numbers, unagglutinated and within intact capsules, and the patient was desperately ill. The fact that there was a recurrence in Case 11 suggests that the presence of antibody, beneficial in other respects, may not affect the period necessary for permanent sterilization of the cavity.

Case 10 shows the loculation which often occurs in pneumococcal cases (Figs. 7 and 8). There was an antero-medial pocket, the pus from which became sterile on the 14th day, whereas that from the postero-lateral pocket did not become sterile until the 20th day.

Of special interest was Case 6, that of a young woman aged 28 who developed a tuberculous pyopneumothorax after haemorrhage during the division of adhesions. This became secondarily infected with an anaerobic streptococcus. The organism was killed after administration of 155,000 units of penicillin, and the patient became afebrile and was able to go to a sanatorium.

TABLE II.—*12 Uncomplicated Cases*

Case	Bacteria	Continuous Penicillin Treatment	Sterile	Cocci all Abnormally Small	Recurrence	Antibody
4	Haem. strep.	39 days	2 days	10 days	—	Present
5	"	10 "	2 "	8 "	16th day	
7	Pneumococcus	5 "	1 "	1 "	—	
3	"	8 "	3 "	3 "	17th day	
2	"	28 "	4 "	10 "	—	
6	Anaerobic strep.	22 "	5 "	22 "	—	Absent
9	Haem. strep.	17 "	5 "	4 "	—	
8	Pneumococcus	9 "	5 "	5 "	16th day	
11	"	9 "	9 "	9 "	19th day	
15	Non-haem. strep.	9 "	9 "	4 "	18th day	
16	"	6 "	10 "	12 "	—	
18	Haem. strep.	14 "	10 "	12 "	—	

Case 14 was that of an American military policeman who was shot through the chest and developed a traumatic haemothorax. After as much blood as possible was aspirated he was given three



injections of 10,000 units of penicillin on successive days. He made an uneventful recovery.

### Discussion

The above cases show that, provided the infecting organism is susceptible, an empyema cavity can be sterilized by repeated aspiration of the pus and injection of penicillin, and that the toxic condition is thereby relieved. This confirms the findings of Keefer and his colleagues (1943), Bennett and Parkes (1944), Christie and Garrod (1944), Dawson and Hobby (1944), Herrell (1944), and Bloomfield and his colleagues (1944).

It is too early to assess the final results of the treatment, since further improvement is expected in some cases, while others may yet develop symptoms arising from pulmonary fibrosis. But it already seems probable that the simple methods employed, though sometimes satisfactory, especially in elderly patients such as Cases 2 and 3, are at other times insufficient. The persistence of a purulent effusion is undesirable if pleural thickening and fibrosis of the lung are to be minimized. In our series the period required for final sterilization of the cavity was unpredictable, since Cases 2, 5, 11, and 15 showed recurrence after 8 to 10 days of continuous treatment, whereas Case 3 remained sterile after only 5 days' treatment. Recurrence was found to be easily controlled by a second course of penicillin.

After sterilization there was the tendency for sterile pus to be formed in which minute Gram-positive cocci persisted; and it seems possible that these organisms, although dead, may remain pyogenic. The source of these organisms and of normal cocci in cases of recurrence is probably to be found in the masses of fibrinous exudate lining the walls of the cavity, the removal of which might be expected to hasten sterilization and limit the formation of pus. For this reason Pilcher (1944) advocates washing out the cavity with sterile saline through a rubber catheter until the returned fluid is clear, before injecting penicillin, whereas Tubbs recommends rib-resection and removal of the fibrinous masses lining the cavity as soon as the infection is under control and the patient fit for the operation. There is little hope of avoiding a thickened pleura and rigid chest wall without removal of the fibrinous masses, and it seems reasonable to believe that this can be achieved only after a rib-resection. The removal of this fibrinous material will also help to avoid recurrence of the empyema in such cases at a later date. The presence of grave toxæmia indicates a lack of specific immunity and the probability of underlying pneumonia. General treatment is clearly desirable, but sulphonamides, except in the case of a resistant organism, might usually be found as satisfactory as penicillin. The use of type-specific antipneumococcal serum, if available, might also hasten the restoration of the lung in these cases. Breathing exercises will encourage re-expansion of the lung in the convalescent stage.

In secondarily infected tuberculous pyopneumothorax the ability to remove the invading organism will constitute a great advance and will entirely alter the prognosis of this serious complication of pulmonary tuberculosis.

Tudor Edwards (1943) has shown that the incidence of infection in traumatic hæmothorax caused by penetrating wounds is 21.9%, and by non-penetrating ones it is 11.3%. Our one case was caused by a penetrating wound, and infection did not occur. It seems justifiable to hope that penicillin will play a decisive part in preventing infection in these cases.

### Summary

A report is given on 17 cases of empyema treated with penicillin. In 10 the invading organism was the streptococcus and in 7 the pneumococcus.

Penicillin will normally sterilize the pleural cavity, provided that the infecting organism is penicillin-sensitive. Aspiration alone, however, often leaves a thickened pleura and a rigid chest wall, with the consequent disabilities of reduced vital capacity, fibrosis, and risk of recurrent pulmonary infection. Rib-resection is frequently necessary to remove the masses of fibrin which collect in the cavity and thus avoid these complications.

One case was a secondarily infected tuberculous pyopneumothorax in which the invading streptococcus was killed by penicillin.

One traumatic hæmothorax with a penetrating wound was successfully treated with penicillin to prevent infection.

We are indebted to Prof. R. V. Christie and to the Committee on Clinical Trials of Penicillin of the Medical Research Council for the supplies of penicillin.

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## PENICILLIN IN OPHTHALMOLOGY

BY

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Squad. Ldr., R.A.F.V.R.

This report comprises a series of cases investigated by different observers: Series I, by Squad. Ldr. Sampson, R.A.F.V.R.; Series II, by Squad. Ldr. Burr, R.A.F.V.R. (and others); Series III, by Squad. Ldr. Palin, R.A.F.V.R. (and others); Series IV, by Squad. Ldr. Milner, R.A.F.V.R. In compiling the report I have tabulated the several results separately, with the comments of the various observers. Finally a brief summary of the results as a whole is given. A comprehensive analysis was made possible by ensuring that all observers used the same source of supply of penicillin. Dosage and method of treatment were the same at the different hospitals. The cases were treated between mid-December, 1943, and the end of March, 1944.

### Preliminary

1. *Strength and Dosage.*—The drug was used (1) as drops, 500 Oxford units per c.cm.; (2) as ointment, 100 Oxford units per gramme—made up in lanette wax and vaseline. Dosage was uniform so far as was possible. Three drops were instilled into the conjunctival sac three times a day, making a daily dosage of 250 units. Ointment was used in blepharitis and acute conjunctivitis, the daily dosage being approximately 30 units. The only other treatment employed was a preliminary irrigation with normal saline; 1% atropine drops were also used where indicated.

2. *Local Reaction.*—About 50% of the patients complained of smarting after the application of drops; this soon dispersed. The majority of those having ointment stated that it was more irritant than drops, the effect lasting about 10 minutes.

3. *Activity of Penicillin.*—Some experiments were carried out for me by Squad. Ldr. Leslie, R.A.F.V.R., to determine how long penicillin remained potent in the conjunctival sac. Two assessments were made on the same patient, using the same eye, an interval of several days elapsing between the experiments.

A. Two drops of penicillin (500 units per c.cm.) were instilled into the conjunctival sac at 9 a.m. Specimens of conjunctival secretion were taken at hourly intervals and estimated for their inhibitory effect against constant amounts of a known dilution of an 18-hour broth culture of a penicillin-sensitive staphylococcus. The following technique was used: (i) Specially prepared pipettes calibrated to deliver 10-c.mm. drops. (ii) 1 drop (10 c.mm.) of conjunctival secretion was added to 1 drop (10 c.mm.) of sterile human serum and thoroughly mixed with one loopful (approximately 0.5 c.mm.) of a 1/1000 dilution of an 18-hour broth culture of a standard staphylococcus provided by the Central Laboratory at Halton (Oxford strain 1). The admixture was carried out on a sterile slide and the mixture covered with a sterile cover-slip and sealed with molten paraffin wax. The "cells" thus prepared were incubated at 37° C. for 24 hours. (iii) The control cell was set up. This consisted of 10 c.mm. drops of sterile human serum plus a loopful of the staphylococcus suspension treated in the same way as the other cells. (iv) A second control, consisting of two 10-c.mm. drops of normal conjunctival secretion, was used, to which was added a loopful of staphylococcus suspension treated, as above. This produced a good growth of colonies.

*Result.*—The growth of staphylococci was completely inhibited in the first 4 cells. There was no inhibition in the 5th-hour specimen as compared with the control, which yielded a good growth of discrete colonies.

B. This experiment was conducted in exactly the same way as A, with the following modifications: (i) Penicillin ointment (100 units

per gramme) was used instead of drops. (ii) The same penicillin-sensitive staphylococcus was employed as in A, but a 1/500 dilution of an 18-hour broth culture was substituted for the 1/1000 dilution used in experiment A.

**Result.**—The growth of the staphylococcus was completely inhibited in the first 5 cells—i.e., 5 hours. The 6th-hour cell showed partial inhibition of a fairly high degree (there were 3 colonies in this cell, as compared with 27 in the control cell). A standard loopful of the staphylococcus dilution subcultured on a blood-agar plate and incubated at 37° C. for 24 hours yielded 33 colonies.

From these experiments it is clear that penicillin drops are potent for 4 hours and ointment for 6 hours. Frequency of treatment can be regulated accordingly.

**4. Type of Case Treated.**—Blepharitis, styes, dacryocystitis, conjunctivitis, infective corneal ulceration, and infective chalazions are obvious choices. Besides these, penicillin was tried in episcleritis, trachoma, disciform keratitis, dendritic and marginal ulcer, and mild conjunctival hyperaemia (such as is associated with allergy, reflex irritation, sensitive skin, or seborrhoea, etc.). In my own clinic it is used as a routine in all eye injuries and all cases of facial burns in which the eyes are involved.

**5. Culture.**—A preliminary culture was taken from the conjunctival sac. The culture was repeated after 48 hours and if still positive was again repeated when the case was clinically better. The technique of culturing varies; the one employed in my series was advocated by Squad. Ldr. O'Connor, R.A.F.V.R., who did this part of the work for me. The culture was sown in nutrient broth (24 hours) and then resown on blood agar (24 hours). Too much reliance is not to be placed upon the results of conjunctival culture, and in estimating results the clinical picture was considered more important.

#### Series I. Squad. Ldr. Sampson. Total Cases, 21

**1. Blepharitis.**—3 cases. All chronic, of many years' standing. Two showed *Staph. aureus* on culture; one was sterile at the end of treatment, which lasted 11, 7, and 10 days respectively. No recurrence for 2 months.

**2. Acute Conjunctivitis.**—5 cases (early, uncomplicated). Average duration of treatment, 4½ days. The only organisms isolated were diphtheroids.

**3. Chronic and Recurrent Conjunctivitis.**—6 cases. Two were associated with seborrhoeic dermatitis, one with dacryocystitis. Average length of treatment, 8 days. 1 case unimproved by penicillin after 11 days and growing *Staph. aureus* was cured by sulphacetamide (albicid) in 3 more days.

**4. Phlyctenular Conjunctivitis.**—1 case. Cleared after 4 days. 7 weeks later there was a recurrence, which cleared after 3 days.

**5. Corneal Ulcer.**—3 cases. One showed no improvement after 4 days (no atropine). One cleared in 7 more days with atropine. The second ulcer failed to respond to 4 days of penicillin, but cleared after 5 days of sulphacetamide. (This was a case of rosacea, and recovery was considered not to be due to treatment.) Case 3 failed with sulphacetamide but cleared after 5 days of penicillin.

**6. Conjunctivitis of Socket.**—1 case. Complete cure after 10 days.

**7. Herpes Ophthalmicus.**—1 case. Recovery not accelerated by 5 days of treatment.

**8. Acute Meibomitis.**—1 case. 10 days' treatment, with clinical

**Squad. Ldr. Sampson's Comments.**—(a) Blepharitis: Cases did better than they would with other forms of treatment. (b) Acute conjunctivitis: Penicillin is no improvement upon sulphacetamide. (c) Conjunctivitis of socket: An improvement upon other forms of treatment. (d) Herpes ophthalmicus: No improvement. He considers that the only condition which definitely does better with penicillin than other forms of treatment is blepharitis; otherwise sulphacetamide is as good.

#### Series II. Squad. Ldr. Burr (and Others). Total Cases, 26

##### 1. Blepharoconjunctivitis.—7 Cases, All Bilateral

Culture	Days under Treatment	Result
(1) Sterile .. .. .	8 .. . . .	Nearly normal
(2) Rt., sterile .. .	9 .. . . .	Not improved
Lt., haemophilus ..	.. .. .	.. .. .
(3) Sterile .. .. .	5 .. . . .	Improved
(4) Rt., <i>Staph. albus</i> ..	12 .. . . .	Normal
Lt., sterile .. .	.. .. .	.. .. .
(5) Rt., non-haem. strep. ..	18 .. . . .	Improved
Lt., staphylococcus ..	.. .. .	.. .. .
(6) Rt., streptococcus ..	11 .. . . .	Improved
Lt., .. .. .	.. .. .	.. .. .
(7) Sterile .. .. .	2 .. . . .	No result

**2. Conjunctivitis, Acute.**—5 cases. Three cases with positive culture were treated for 10, 8, and 11 days. The first two were cured; the third (*Staph. albus*) grew worse in spite of treatment. Two other cases were sterile and were treated hourly. They were improved after 4 and 5 days respectively.

**3. Conjunctivitis; Phlyctenular.**—4 cases. Three were cured (11, 7, 9 days); 1 not improved (13 days).

**4. Corneal Ulcer.**—5 cases. Two grew *Staph. albus*; one unimproved in 3 days, the other healed in 7 days. Three other cases were sterile, and healed in 6, 9, and 2 days.

**5. Corneal Abrasion.**—1 case. Still some conjunctivitis after 5 days.

**6. Infected Socket.**—2 cases (sterile). Improved after 5 and 6 days.

Comments upon this series were not obtained, the work having been carried out by different observers owing to hospital changes.

#### Series III. Squad. Ldr. Palin (and Others). Total Cases, 40

Owing to a change over of medical officers a detailed report is not available. The following table is a summary:

Condition	Average Response	Relapse Incidence
1. Conjunctivitis	Acute Very good	Nil
	Chronic Good	Ratio 1:6
2. Blepharitis	Subacute Very good	" 1:6
	Chronic Good	" 1:4
3. Corneal ulcer	Infective Good	" 1:5
	Traumatic Very good	Nil
4. Keratitis ..	Superficial Indefinite	Ratio 1:6
	punctate .. .. .	.. .. .
5. Insetigo of lids	Other forms Poor	?
6. Dacryocystitis	Fair	?
	Good	Nil

**Squad. Ldr. Palin's Comments.**—The majority of cases treated were: (a) acute conjunctivitis; (b) chronic conjunctivitis; (c) chronic blepharitis. Results in Group a were truly dramatic, complete subjective and objective cure being achieved in 6 cases within 24 to 48 hours; in these cases the organisms were pneumococcus and/or *Staph. aureus*. In Group c some of the "chronics" were themselves amazed at finding a degree of improvement they had not experienced in years of different treatments. One case of dacryocystitis demands special mention. After dacryocystorhinostomy the wound did not heal, and 10 days after operation was still gaping and discharging pus (with fistula formation). Treatment with penicillin was instituted, and within 72 hours the wound edges were completely and cleanly united and the fistula closed.

#### Series IV. Squad. Ldr. Milner. Total Cases, 57

##### A. Blepharitis. 16 Cases. Approximate Dosage, 280 Units a Day

Type	Culture	Culture Sterile (Clinically Clear in Days)	Total Dose (Units)
1. Recurrent ulcerative .. .. .	<i>S. aureus</i>	5	1,400
2. Unilateral ulcerative .. .. .	"	7	1,960
3. Recurrent ulcerative with stye ..	"	5	1,400
4. Associated with syphilis barbae ..	"	4	1,120
5. Ulcerative: right eye .. .. .	"	3	840
" left eye .. .. .	"	7	Treated with albucid 10%
6. Ulcerative .. .. .	<i>S. aureus</i>	7	1,960
7. Ulcerative, associated with C.S.O.M. ..	<i>S. albus</i>	10	2,800
" " " right eye .. .. .	Sterile	15	Treated with albucid 10%
" " " left eye .. .. .	"	..	..
8. Mild ulcerative .. .. .	<i>S. aureus</i>	2	560
9. Squamous associated with rhinitis ..	<i>S. albus</i>	7	1,960
10. Squamous associated with eczema of pinna and running ear .. .. .	<i>S. aureus</i>	3	840
11. Squamous associated with seborrhoea capitis .. .. .	<i>S. albus</i>	8	2,240
12. Ulcerative (very chronic and present for years) .. .. .	<i>S. aureus</i>	7	1,960
13. Ulcerative (very chronic and present for years; no treatment ever of benefit) .. .. .	B. Morax-Axenfeld	10	2,800
14. Chronic ulcerative .. .. .	<i>S. albus</i>	10	2,800
15. Ulcerative. Recurrence of Case 5. This eye had been treated with albucid 10% .. .. .	"	6	1,680
16. Squamous .. .. .	<i>S. albus</i>	6	1,680

## 3 Conjunctivitis Acute 8 cases, Subacute and Chronic 16 Cases

Type	Culture	Sterile or Clinically Clear	Total Dose (Units)
Acute Approximate Dose 250 Units a Day			
1 Catarrhal	S aureus	7	1960
2 Traumatic mucopurulent	Sterile	2	560
3 Catarrhal	Sterile	Not improved	1960
4 Traumat with ectropion		6	1960
5 Mucopurulent	Non haem strep	6	1680
6 Catarrhal	S aureus	4	1120
7 Mucopurulent	S aureus	4	1120
8 Mucopurulent (Burns with cicatricial ectropion)		Dose not recorded (see below)	
Subacute and Chronic Approximate Dose 250 Units a Day			
9 Catarrhal	Sterile	1 (after other treatment for 4 days had failed)	250
10 Chronic socket		Not improved in 7 days	1750
11 Chronic recurrent allergic		Not improved in 7 days	1750
12 Catarrhal associated with sinusitis		Not improved in 7 days	1750
13 Catarrhal		2	500
14 Hyperaemia		Not improved in 2 days	500
15		Not improved in 2 days	500
16 Mild (some weeks duration)		2	500
17 Catarrhal subacute	S aureus	2	500
18	Non haem strep	6	1680
19		6	1680
20	Sterile	3	750
21 Mild rt eye with Rt eye chalazion lt eye / Lt eye	S aureus	2	500
22 Mild palpebral (allergic)	Sterile	4	1000
23 Mild palpebral		Not improved in 3 days	750
24 Chronic	S aureus	8	2000

## C Keratitis and Corneal Ulcers 10 Cases Approximate Dose 250 Units a Day

Type	Culture	Sterile or Clinically Clear	Dose
1 Pterygoid	Sterile	Not improved after 10 days	2500
2 Dendritic		Not improved after 7 days	1750
3 Marginal with conjunctivitis	S aureus	3	750
4 Exposure keratitis (burns)	S aureus	Dose not recorded in inflammation and ulceration kept in check until plastic operation possible	
5 Roseacea keratitis with ulceration		Not improved after 7 days	1750
6 Marginal	Sterile	Not improved after 3 days	750
7		Not improved after 3 days	750
8 Dendritic		Not improved after 5 days	1250
9 Marginal		Some improvement after 4 days	1000
10 Disciform keratitis		Not improved after 4 days	1000

**Comment on Group A**—All cases showed great improvement after treatment with penicillin. Cases 12 and 13 had had chronic blepharitis for years. Case 13 was particularly bad, with brittle misplaced lashes (though no trichiasis). After three days both these patients were emphatic that their eyes had not been so comfortable for years.

**Comment on Group B**—Acute conjunctivitis has been uncommon in my Service experience of four years, when it occurs it is usually of the catarrhal variety, and purulent or mucopurulent conjunctivitis is very uncommon. Thus I have not had the opportunity of using penicillin in bad cases. In catarrhal or mildly mucopurulent cases with a positive culture it undoubtedly is effective. Where the culture is sterile I doubt if it is more effective than other methods of treatment. The advantage of its use in such cases would be to maintain the sterility of the conjunctival sac while healing and recovery were taking place. In chronic conjunctivitis, unless definitely due to a low grade infection, I doubt the efficacy of penicillin. So many chronic conjunctivitis cases have a very obscure aetiology. I associate many of them with reflex irritation, allergy, metabolic derangements, skin disorders, etc.—in which the condition is more a hyperaemia than an inflammation—and in these cases there was no response to penicillin, as would be expected. In cases of burns penicillin is of very great value. Conjunctivitis occurs in facial burns, and as the lids begin to

contract into ectropion the conjunctivitis gets worse in spite of treatment and exposure keratitis is almost a certainty. The eye is usually too irritable for a contact lens and the lid margins too friable (or the pull of the ectropion too great) for a tarsorrhaphy to be successful. By keeping the conjunctival sac sterile with penicillin the eye can be protected from infective sloughing ulcers until the case is ready for plastic repair. Case B 8 and Case C 4 are examples. I am quite sure that but for penicillin one eye would have been lost or so severely damaged by corneal involvement as to be useless in each of these cases. All burns which even remotely involve the eye now have routine penicillin treatment—250 units a day in each eye.

**Comment on Group C**—The only infective type of ulcer in this series was Case 4, which has been referred to above (NB—I have seen only 4 cases of severe corneal ulceration during 4 years at an R.A.F. hospital). Penicillin would seem to be of little value in herpetic keratitis or marginal ulceration.

**D Dacryocystitis (Chronic)**—One case profuse growth of *Staph. aureus* and Koch-Wheeler bacillus. Sterile in 8 days. Approximate dose 2000 units. In this case penicillin was injected into the sac, which was afterwards successfully operated upon.

**E Trachoma (Old)**—One case *Staph. aureus*—4 days—1000 units. This was a case of old trachoma, and it seemed to be a secondary infection with no active disease. This contention proved correct as the eye cleared up rapidly under penicillin.

**F Episcleeritis**—One case Sterile—4 days—1000 units. This case had recurrent episcleeritis in one eye and had already been treated by me twice for severe recurrences. On the third occasion penicillin was tried for experimental purposes, and the nodules disappeared very rapidly. This has happened on a second occasion. It seems here again by keeping the conjunctival sac sterile, penicillin aids the eye to heal more rapidly.

**G Folliculosis**—One case Sterile—no improvement in three days—750 units.

**H Injuries**—Penicillin is used as a routine in all cases of corneal foreign bodies and abrasions. Three perforating injuries have been seen during the period covered by this report, but in all cases the damage was extensive and the eye had to be removed. I have not yet had the opportunity of using the drug in conjunction with an intraocular operation or penetrating injury where the eye could be saved.

## Summary

**I Dosage**—In the strength used by us (drops, 500 units per c.c.m., ointment, 100 units per gramme) penicillin would appear to retain its potency for 4 hours (drops) and 6 hours (ointment). Frequency of treatment can thus be regulated according to the requirements of the case. Very frequent applications of penicillin would seem unnecessary.

**2 Indications for Use**—All observers are agreed that penicillin affords the best results in blepharitis, most of us would add acute conjunctivitis, but I have already indicated the small number of cases of acute infective conjunctivitis that occur under Service conditions—at least, in my experience. I do believe that in civilian practice, particularly in the hospital out-patient departments, penicillin will be the treatment of choice in these cases. The same remarks apply to corneal ulcers (infective). In chronic dacryocystitis I believe also it will become habitual to use penicillin preliminary to operation, but the cases seen have been too few for further comment. Recurrent styes and infected chalazions seem to be limited by applying penicillin, particularly in the intervals between recurrences.

As certain indications for penicillin I would add to the above (1) all cases of serious injury to the eye, whether penetrating or not (2) all cases of facial burns involving the eye, (3) routine post-operative treatment.

It is impossible to assess the value of the drug in cases of injury, because there is no control for comparison. I have not yet had sufficient cases of penetrating injury to conclude whether the incidence of sepsis is less than before penicillin was employed. This is a matter requiring further investigation. Nor have I any evidence that non-infected cases heal more quickly with penicillin. Nevertheless I would advocate its use.

There remain a large assortment of cases in which penicillin has been used with doubtful or confusing results. Chronic conjunctivitis seems to respond slightly, and the consensus of opinion is, I think, that penicillin is not of much value. Here I would repeat what I have mentioned above—that where a secondary infection with a penicillin sensitive organism is also present, by inhibiting the growth of such an organism the drug may indirectly aid and accelerate healing. This statement applies to many inflammations which are, *per se*, unaffected by penicillin—such as episcleeritis, trachoma, phlyctenular keratitis, marginal ulceration, herpetic keratitis, and many others.

Two observers in this series have been struck by the benefit obtained with penicillin in cases of infected socket. I have been impressed, in a series of 6 cases (seen outside the date range of the report), by the inefficacy of the drug. I found after some experimentation that 2½% red protosil was much more effective. There are therefore some types of ocular inflammation which require much more extensive investigation before we can be sure how much to expect from the use of penicillin.

With regard to recurrence of inflammation I can say little yet. Because cases of one's own have not returned does not mean that there have been no recurrences; the patients may have gone to another part of the country. My opinion is that penicillin, being bacteriostatic and not bactericidal, will have little power to prevent recurrences unless it can be used, more or less as a routine, in intervals between exacerbations.

Finally, it must be remembered that many ocular inflammations are secondary to, or at least run parallel with, other affections—e.g., blepharitis and seborrhoeic dermatitis, conjunctivitis and rosacea, etc. The treatment of the underlying condition must not be lost sight of in the enthusiasm of employing a new method.

#### Synopsis of Indications

Definite	(a) Blepharitis	Acute and chronic Infective
	(b) Acute conjunctivitis	
	(c) Corneal ulcer	Recurrent Prophylaxis
	(d) Dacryocystitis	
	(e) Styes, chalazion	
	(f) All ocular injuries	
	(g) Facial burns	
Doubtful	(h) Immediate post-operative	
	(a) Chronic conjunctivitis	
	(b) Infected socket	
	(c) Other external inflammations, with a possible secondary infection	

I believe penicillin to be quite useless in cases of deep keratitis, iritis, or cyclitis.

In conclusion I should like to emphasize the desirability of those concerned ensuring that all cases of facial burns with ocular involvement be given penicillin from the very beginning of treatment. In such a way I believe a number of ulcers from exposure keratitis can be avoided.

My thanks are due to Air Cdre. P. C. Livingston for making possible the supply of penicillin; to Squad. Ldrs. Sampson, Burr, and Palin for their co-operation, and for supplying me with their reports; to Squad. Ldr. R. J. O'Connor for the bacteriological culture work; to Squad. Ldr. W. I. Leslie for conducting experiments upon the time potency of penicillin; and to Sister M. C. E. Lodge for carrying out exact lines of treatment in my series of cases, thus ensuring uniformity of results.

## PENICILLIN AND SULPHONAMIDES IN INFANTILE GASTRO-ENTERITIS

BY

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AND

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The high incidence of acute gastro-enteritis in infants (familiarily known as D. and V.) continues to give cause for anxiety, showing a definite upward trend on the evidence of the figures of deaths from enteritis and diarrhoeal diseases in those under 2 years, which in England and Wales for 1939 to 1943 were: 2,812, 2,891, 2,985, 3,415, and 3,518 respectively. A disease predominantly of the hot months (hence the name summer diarrhoea) in the period before the first world war, it now shows no particular seasonal predilection except a tendency to increased severity and perhaps also increased prevalence during the period when catarrhal colds are rife, in the late winter and early spring months. In the absence of general notification (which should be made compulsory and be limited to the first year of life) estimates of the real incidence can only be conjectural, while mortality figures tend to be vitiated by inaccurate or incomplete certification, as exact diagnosis is not always easy in the absence of definite knowledge of the essential aetiology. Despite arguments to the contrary, there are no valid grounds for considering this disease to be different from so-called neo-

natal diarrhoea, except for such differences as are attributable to the physiological characteristics of young babies. Workers in this field have recently inclined to the view that invasion of the upper respiratory tract, due most probably to a virus or group of viruses, is the primary cause, and the damage to the mucous membranes thereby sustained renders them more vulnerable to the ordinary bacterial flora of that region; whether the virulence of organisms harboured before attack may be enhanced in the process has not been definitely established. A somewhat similar process may occur in respect of the normal intestinal bacteria, notably coliforms and enterococci; nor should it be forgotten that the same primary organism (causing identical disease processes so far as can be determined clinically) may gain entry by either the gastrointestinal or the upper respiratory tract, as has been proved in poliomyelitis.

The five recent cases described here, though representative, naturally belong to the severer form of the disease, which may range from the mildest grades, in which evidence of toxic-infective processes may be minimal or absent, to fulminating attacks. It is a matter of experience that the latter may sometimes respond to treatment more swiftly and completely than certain intermediate grades, the crucial difference apparently being the presence or absence of an infective focus and the success or failure of the measures employed to eradicate or neutralize it. All five cases were treated in single-bedded rooms (technically termed cells and often erroneously referred to as cubicles) in the same isolation unit and attended by the same medical and nursing staffs, with strict observance of aseptic nursing technique, including the wearing of "Cestra" type masks.

#### Management of Cases

To avoid unnecessary repetition, an outline of the management of the cases is given at this stage. A complete history of the patient from birth and the recent history of immediate contacts are followed by weighing of the patient and restoration measures such as warmth and fluids by mouth; if dehydration is present an intravenous infusion of Hartmann's solution is given supplemented by 5% glucose at once or after a few hours, and by 4 parts solution to 1 part serum or plasma (the latter occasionally causes febrile reactions which may mislead) according to severity of symptoms and duration of disease, until metabolism is restored to normal as checked by level of plasma bicarbonate, proteins, urea, and chlorides, and by blood transfusion as shown by haematocrit readings and blood-count determinations. With experience these examinations may often be dispensed with, but avoidance of anaemia and oedema is best secured by periodic tests. The duration of the drip may vary from 1 to 5 days—average 3 days. Swabs of throat, nose, and nasopharynx (the most important site of the three) and specimens of faeces and urine are taken on admission and repeated as considered necessary. If vomiting persists only sips of Hartmann's solution or boiled water are given; but if it has ceased, increasing quantities are taken orally, deducting the amount from the drip intake. In 24 to 72 hours feeding is resumed, starting usually with a 1 in 4 dilution of a feed suitable for the age, rapidly reaching full strength according to appetite and tolerance: some infants can take only a 1 in 8 solution, while others can stand a 1 in 2 or even full-strength mixture from the outset, the remainder of fluid being given between feeds if the prescribed volume based on body weight is refused at the usual feeding-times. If there is no contra-indication the food given before attack is chosen; if it was thought to disagree with the patient humanized national dried milk is the food of choice, and rarely requires modification such as citrated, peptonized, or acidified milk. Occasionally "Secway" may be needed to bridge the period between fluids and feeds. Difficulty at this stage is nearly always attributable to an infective focus, usually in the middle ear, occasionally in the renal pelves; and a sulphonamide, commonly sulphamezathine or sulphathiazole, is given either in the drip or orally with a view to preventing or even to securing resolution of the inflammatory process. Success is conditioned by the susceptibility of the causative organism, the natural resistance of the patient (specific immunity may likewise be a factor), and the nature and timing of such operative procedures as are adopted. Proper timing is considered of vital importance, as

harm may be caused by premature operation as positively as by inadequate or tardy intervention.

The essential data, with critical comments, are given for each case in chronological order.

#### Case I

W. G.; 5/12 M., weight 15 lb. 4 oz., artificially fed. May 21, 1944: Onset—stools relaxed and green. Admitted 4th day; T. 100.6° F. Moderate dehydration present; intravenous Hartmann's solution on following day with plasma later, and next day bilateral myringotomy, revealing sero-sanguineous exudate; bilateral cortical mastoidectomy 12 hours later; mucous membrane of the mastoid cells was inflamed and bone soft and red; no definite pus found. Wounds were stitched, leaving fine drainage-tube at lowest part for introduction of dilute penicillin (400 units per c.cm.) every 6 hours for 5 days; complete healing followed in 9 days. Throat and nasopharynx—*Staph. aureus*, *M. catarrhalis*, and coliforms; nose—*Staph. aureus*; right ear—*M. catarrhalis*, *Staph. albus*; left ear—no growth; mastoid bone—no growth.

**Treatment.**—Sulphathiazole 6 g. in 4 days on admission, and sulphamezathine 12 g. in 7 days, starting 5 days later. The patient did not improve—fever, diarrhoea, and loss of weight persisting despite four drips (three intravenous, one tibial marrow) and one blood transfusion (raising haemoglobin from 62 to 84%). A trace of protein, some pus cells and red cells, and *Staph. aureus* and enterococci appeared in the urine at this stage (catheter specimen). Reopening the mastoids was considered unwarranted. Blood culture taken shortly before death on the 27th day of the disease revealed numerous *Staph. aureus*, partially sensitive to sulphonamides.

**Necropsy.**—Left mastoid—mucoid material; right—frank pus present, bone soft; from both, *Staph. aureus* and coliforms were isolated. Right middle cerebral vein thrombosed with purulent exudate along course.

**Comment.**—Both myringotomy and mastoidectomy were probably undertaken too early; a more generous and longer course of sulphonamides advisable; mastoids might have been reopened with benefit. Coexisting renal damage may mislead, but appearance of pathogens in urine should suggest taking a blood culture.

#### Case II

B. W.; 6/12 M., weight 14 lb. 15 oz., artificially fed. May 24, 1944: Onset with fever, loose green stools, and bronchitis, for which sulphamezathine 9 g. in 4 days was given. A week later vomiting and continued diarrhoea led to dehydration; corrected by intravenous Hartmann's solution with glucose and plasma for 5 days and a second course of sulphamezathine 15 g. in 5 days, of which 6 g. was by the intravenous route; protein (a trace), scanty pus cells, and coliforms appeared in urine in the course of this treatment. Three weeks after onset bilateral myringotomy revealed muco-pus on both sides, containing *Staph. aureus*. No improvement followed, and cortical mastoidectomy was performed next day; the bone was softened and muco-pus was present in the mastoid cells, but cultures taken at operation proved negative. Fever continued, and blood culture taken 4 days after operation was found to grow penicillin-sensitive *Staph. aureus* scantily. Penicillin 40,000 units every 24 hours was given by intravenous drip for 6 days and 5,000 units 3-hourly for an additional 2 days, when fever had just gradually subsided to normal. Blood culture was sterile on the day after starting penicillin therapy, which was continued to prevent relapse. As the penicillin-tube opening was still patent 13 days after operation and discharged mucopurulent material, reopening of the right mastoid was considered, but was deferred until rise of temperature or other sign of inflammation indicated; but subsequent recovery was rapid and uneventful.

**Comment.**—The negative bacteriological findings are possibly due to sulphonamide present in the swab material, para-aminobenzoic acid not being added to the culture media. The presence of renal complications did not seem to influence the course of the disease. Timely blood culture and use of penicillin saved the patient.

#### Case III

M. P.; 5/12 F., weight 11 lb. 11 oz., artificially fed. May 24, 1944: Admitted with history of watery, green, offensive stools for 6 days, preceded by cough and nasal discharge; mild dehydration; T. 98.6° F. The upper respiratory tract revealed nothing noteworthy apart from *Str. viridans* in the nasopharynx; urine normal. Some improvement followed a course of sulphamezathine, but 10 days later fever recurred with diarrhoea and pronounced dehydration, requiring an intravenous drip with plasma. Bilateral myringotomy 2 days afterwards yielded watery exudate containing *Staph. albus* and coliforms on the right side and blood only (sterile) on the left side. No improvement ensued, and a plasma drip followed by blood transfusion (haemoglobin raised from 75 to 95%) was needed to sustain life. A second bilateral myringotomy gave a dry result, but mastoidectomy 4 days later revealed frank pus and necrosed bone (left) and soft readily bleeding bone (right), both

sterile on culture. The blood was also sterile. With local penicillin healing of the wounds took place in 10 days. Some fever continued for 5 days after operation, but thereafter gain of weight and general progress were satisfactory.

**Comment.**—The negative bacteriological findings may have been due to sulphonamide either in the tissues killing the organism or on the swab inhibiting growth. Efficacy of mastoidectomy difficult to assess in such cases, although subsidence of fever is suggestive.

#### Case IV

P. L.; 8/12 F., weight 11 lb. 11½ oz., artificially fed. June 10, 1944: Onset sudden, with copious vomiting and loose, yellow, offensive stools; moderate dehydration; temperature 99.6° F. On admission bilateral myringotomy: left, sero-pus; right, blood only; both yielding *Staph. albus*. Upper respiratory tract revealed nothing of note apart from pneumococci in nasopharynx. Fever subsided for 3 days, when it recurred, necessitating an intravenous drip with plasma and 3 days later 100 c.cm. blood, raising haemoglobin from 73 to 98%. The urine was found to contain protein, numerous epithelial and pus cells, and scanty red cells; *B. coli* and *proteus* were found on culture. Blood culture was sterile. Fever and symptoms subsided in 3 days on a course of sulphathiazole, 10 g. in 6 days, and remained settled. A month later the urine still contained *B. coli* on culture, and a trace of albumin; otherwise recovery appeared to be complete.

**Comment.**—Pyelitis seemed to be the sole cause of the gastro-enteritis, responding rapidly to sulphonamide, but it may be merely a complication.

#### Case V

R. B.; 2/12 M., weight 6 lb. 9 oz., breast-fed for first 3 weeks. June 23, 1944: Cough and diarrhoea; general condition satisfactory. Admitted a week later with vomiting and frequent green, watery motions but without gross dehydration. Next day condition worse, requiring an intravenous drip. Throat and nose yielded *Str. viridans*, *M. catarrhalis*, and coliforms; nasopharynx—*Staph. aureus* and pneumococci; urine—trace protein, epithelial cells, *B. coli*, and *proteus*. Two days later myringotomy revealed a small amount of mucooid pus (right) and serous fluid (left), both containing *Staph. aureus* and *albus*, pneumococci, and coliforms. As high fever continued sulphamezathine 9 g. in 4 days was given, and re-myringotomy was done 5 days later, again yielding small amounts of muco-pus and the same bacteria as before. Blood culture next day gave pneumococci Type 8 in uncountable numbers, sensitive completely to penicillin and partially to sulphonamide. Penicillin therapy, 5,000 units 3-hourly intramuscularly, was started, giving a level next day of  $\pm 1.8$  after 3 hours, and the dosage was reduced to 4-hourly intervals. The patient seemed better and took feeds readily, but 2 days later a generalized convulsion and meningitic signs appeared; lumbar puncture showed purulent fluid containing numerous pneumococci on culture. No response followed 3 injections of 5,000 units of penicillin given intrathecally at 8-hour intervals, and the patient died 24 hours later.

**Necropsy.**—Inflamed pus in both middle ears and mastoid cells. Greenish-yellow pus over entire surface of the brain, with subarachnoid haemorrhage over the base.

**Comment.**—Sulphonamide was given too late in the disease to be effective; blood culture and lumbar puncture undertaken too late; penicillin probably sterilized the blood (a second culture was not taken, as the physical state was poor) but failed to prevent spread to the meninges, which very likely had taken place some hours or days before the convulsion which led to lumbar puncture.

#### Discussion

The cases recorded above illustrate well the difficulties encountered in locating the infective focus as well as in deciding the measures best calculated to eradicate it and the appropriate time to apply them. Although a history of cough or other symptom of respiratory infection was present in three cases the clinical evidence of such infection was negligible. While pyelitis occasionally appears to be solely responsible for gastro-enteritis, renal infection indistinguishable from mild pyelitis may occur at any stage of an attack, due primarily to upper respiratory infection, and should suggest the existence of bacteraemia or septicaemia originating in mastoid suppuration. All three mastoidectomies were carried out under local anaesthesia, using 1% novocain preceded by 1/4 gr. seconal. With careful infiltration pain is absent or minimal; usually the patients suck their bottles contentedly during the operation. It seems warranted to conclude that, provided other possible causes are excluded, no patient suffering from gastro-enteritis should be permitted to die without operation; if properly prepared for it with intravenous fluids, preferably including human serum or plasma, untoward effects are rare, and benefit some-



times appears to accrue in cases in which evidence of mastoiditis was equivocal at the time of operation. The necessity for operation is governed by persistence of fever, diarrhoea, and/or vomiting and loss of weight despite every effort at resuscitation; the appearance under observation of enlarged posterior cervical glands gives support to the diagnosis, but neither their presence nor their absence should influence the final decision to operate.

There is general agreement that sulphonamides often fail to prevent the onset of mastoiditis and may actually be dangerous in masking the disease. Whether penicillin will succeed where sulphonamides have failed has not been adequately explored, but the present limited experience furnishes grounds for the hope that timely use of the drug will reduce appreciably the high case-fatality of infantile gastro-enteritis.

### Summary

Five cases of severe acute gastro-enteritis in infancy, with two deaths, are described; in three patients mastoidectomy was performed, resulting in (a) rapid resolution of suppurative processes found to be sterile at operation; (b) recovery from staphylococcal septicaemia cured by penicillin; (c) death from staphylococcal septicaemia uninfluenced by sulphonamides. Of the remaining two cases one patient with *B. coli* pyelitis improved rapidly with sulphathiazole while the other died from pneumococcal meningitis and septicaemia, not responding to sulphonamide or penicillin therapy.

Our grateful thanks are due to Dr. R. Cruickshank, who carried out the bacteriological examinations, and to Miss Winifred Hall, who undertook the otological work.

## A SEVERE HAEMOLYTIC TRANSFUSION REACTION DUE TO THE Rh FACTOR

BY

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The demonstration of the Rh factor in human blood cells (Landsteiner and Wiener, 1940) has led to the elucidation of many previously unexplained haemolytic reactions following the transfusion of apparently compatible blood. Later workers (Levine *et al.*, 1941; Boorman *et al.*, 1942; Race *et al.*, 1943) have shown that the antibody responsible for the haemolysis may develop in an Rh-negative person either as a result of previous transfusions with Rh-positive blood or, in the case of women, as a result of bearing an Rh-positive foetus. In the latter case the infant usually suffers from haemolytic disease of the newborn. In the present case a severe haemolytic reaction followed the transfusion of Rh-positive blood in a woman who had previously been transfused (probably with Rh-positive blood) and also had borne several Rh-positive children. It is not known which of these two factors was responsible for the production of the antibody.

### Case Record

Mrs. A., aged 38, had a history as follows:—1929: Forceps delivery; normal baby, Group A, Rh-positive. 1932: Normal delivery, but retained placenta; baby healthy at birth but died at 5 months; cause unknown. 1936: Normal delivery followed by post-partum haemorrhage. Was given blood transfusion (group not known). Baby healthy; Group O Rh-negative. 1940: Normal delivery. This child, who is Group A, Rh-positive, was said to have been jaundiced for four weeks after birth. 1942: Twins. First infant stillborn owing to hydrocephalus; second infant healthy, Group A, Rh-negative. Labour followed by severe haemorrhage. Two transfusions of Group A blood were given, with an interval of 14 days; both were followed by severe rigors.

In 1944 she was seen when 22 weeks pregnant. Urine and blood pressure were normal. In view of a moderate anaemia (Hb 55%, R.B.C. 3,600,000) it was decided to give her a blood transfusion. One pint of Group A blood was administered. One hour later she started to vomit, her pulse became weak, and she complained of

lumbar pain. Anuria set in and alkali therapy was begun immediately. The following morning she was jaundiced. The daily urinary output for the next six days varied between 1 and 4 oz. The urine was dark red in colour and was loaded with albumin. On the fifth day she complained of severe headache, and the next day some oedema of the legs was noticed. On the eighth day normal diuresis set in and her condition gradually improved. On the thirteenth day she left hospital against advice, but had apparently recovered from her haemolytic reaction. The following day she returned with an incomplete abortion. The placenta had to be removed under general anaesthesia. She collapsed before the operation, but rallied sufficiently for it to be completed. She died four hours later, apparently from shock.

A necropsy was performed 24 hours after death. Apart from signs of shock, the significant findings were those related to the haemolytic transfusion reaction. The liver showed signs of fatty change. The kidneys were enlarged to twice their normal size and showed a pale-grey colour with an indistinct cortical pattern. The spleen was greatly enlarged (580 g.) and firm. The abdominal lymph glands were also enlarged.

Microscopical examination of the kidneys revealed the characteristic lesions of "transfusion kidney" as described by previous workers (De Gown *et al.*, 1938; De Navasquez, 1940). The organ differed from that in average cases in having numerous focal collections of lymphocytes, macrophages, and eosinophils in both cortex and medulla. Similar changes have, however, been described by Goldring and Graef (1936) and by Ayer and Gauld (1942). The liver showed fatty change and slight degeneration towards the centres of the lobules. The spleen, in addition to siderosis, showed marked proliferation of the histiocytic cells of both the pulp and the Malpighian bodies. The abdominal lymph glands presented a similar picture.

### Comment

The patient's blood was examined on the 2nd and 12th days after transfusion. The donor was Group A Rh-positive. The patient was Group A Rh-negative, and on the first examination, two days after transfusion, no agglutinable Rh-positive cells were found, indicating that all the transfused cells had been destroyed. On this occasion Rh antibody was demonstrable in the undiluted serum. On the 12th day the Rh antibody titre had risen from 1/1 to 1/8. The husband was found to be Group A, Rh-positive; the blood groups of the children have already been given.

An interesting problem in this case is which of the various possible factors was responsible for the production of Rh antibody. Of the patient's four surviving children two are known to be Rh-positive. It is stated that one of these—the third—was jaundiced for four weeks after birth, and it is probable that this was due to haemolytic disease of the newborn; the absence of signs of haemolytic disease in the case of the fourth child would be due to its being Rh-negative. It is therefore at least possible that the production of Rh antibody may have been due to repeated pregnancies. The Rh group of the blood given in the earlier three transfusions is not known, but on probabilities it is likely that most, if not all, were Rh-positive. Also, the fact that the second and third were followed by reactions is suggestive. The other interesting feature is the remarkable size and reaction of the spleen. There was no evidence of leukaemia in a blood count done shortly before the last transfusion, and neither the necropsy findings nor the histology indicate reticulosis.

We believe that the reticulo-endothelial hyperplasia in the spleen was the result of stimulation by incompatible transfusions; probably two transfusions in 1942 and certainly one a fortnight before death.

### Summary

A case is described of a severe haemolytic reaction following the transfusion of Rh-positive blood into an Rh-negative woman who had borne two Rh-positive children and had previously had three transfusions. It is not known which of these two possible factors gave rise to the Rh antibody.

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## Medical Memoranda

### Treatment of Cerebral Malaria

During recent months certain contributions on malaria have appeared in the *Journal* which have apparently been written by authors with limited experience of this disease. Although these contributions have added little or nothing to existing knowledge, they have in the main been helpful to those who are encountering malaria for the first time. This cannot be said of the article by Surg. Lieut. Sneddon (*Journal*, 1943, 2, 814), reporting a fatal case of cerebral malaria, in which the commentary on treatment is seriously misleading.

#### DOSE OF QUININE

The author records the administration of intravenous quinine at a dosage of 10 gr. daily, and comments that this dosage was higher than the 5 to 7 gr. daily advocated by Manson-Bahr (1932), leaving the impression with the reader that 10 gr. daily should be adequate for the treatment of cerebral malaria. It may be useful to present in tabular form the recommendations of various authorities on the optimum dosage of quinine in that disease.

Authority	Preparation	Initial Dose		Subsequent Dosage Indicated	
		gr.	Route	Amount (gr.)	Route
Field (1935)	Quinine dihydrochlor.	7½	I.V.	10½; up to total of 30	I.V.
Manson-Bahr (1932)	"	10	I.V.	" in 24 hours	"
Manson-Bahr (1940b)	"	15	I.V.	" Free and frequent administration of quinine"	Not stated
Manson-Bahr (1942)	"	5-7	I.V.	5-7 daily	I.V.
Napier (1943)	Quinine dihydrobrom.	10	I.V.	Repeat 10 gr. a few hours later, intravenous therapy may be needed for 2 days	I.V.
Nocht and Mayer (1937)	Quinine dihydrochlor.	7½-15	I.V.	Not stated	—
Rogers and Megaw (1942)	Quinine dihydrochlor.*	7½	I.V.	"	—
Sutt (1942)	Quinine bismarate	10	I.V.	Not more than 30 in 24 hours	I.V.

\* Rogers advocates dihydrobromide.

It will be noted that the recommendations above are far from consistent. Though they may each have given satisfactory results in the particular conditions in which they were used, their diversity makes it difficult for the novice to decide on the correct line of treatment. In general it may be stated that the amount of treatment required will vary in inverse ratio to the amount of immunity possessed by the patient. Thus considerably larger doses of quinine may be required for the majority of Europeans and Americans, who usually possess little or no acquired immunity, than for patients living in endemic areas, who may possess partial immunity.

#### RECENT RECOMMENDATIONS

Since the outbreak of the present war large numbers of Allied troops with attendant medical services have been deployed in highly malarious areas, providing an unprecedented opportunity for the study of malaria in general and of its neurological complications in particular. The following simple directions have been compiled from the most recent recommendations of the Allied Forces on the treatment of cerebral malaria, and are founded on the experience gained before and during the present war. They are applicable to any case occurring in the adult male.

Drug of choice, Quinine dihydrochloride.

Route, Intravenous.

Rate of injection. Very slow. Maximum speed 1 minute per grain; optimum speed, 2 to 4 minutes per grain.

Initial dose, 6 to 10 gr.

Dilution. Maximum, 6 gr. in 10 ccm.

Diluent. Distilled water or normal saline if 10 ccm is used. Neutral or glucose saline for larger quantities.

Subsequent dosage, 6 gr. 4-6 hourly, not exceeding a total of 30 gr. in 24 hours, or 10 gr. 8-hourly, until recovery from coma occurs and satisfactory oral administration is possible.

Intramuscular mepacrine as an adjuvant to intravenous quinine may give good results in the hands of those familiar with its use. I wish to emphasize the necessity for persevering with intravenous quinine in comatose cases even though the prognosis appears hopeless. This is well illustrated in a case reported by Whitehill (1937). Whitehill's patient was in coma for approximately 34 days, excluding a lucid interval of 13 days, and, although the coma was complicated by an acute malarial nephritis, recovery ensued after a total dosage of 75 gr. of intravenous quinine had been given.

#### POINTS FOR COMMENT

There are two other points in Surg. Lieut. Sneddon's article which are worthy of comment:

1. *Use of Intravenous Saline.*—A not infrequent terminal event in cerebral malaria is pulmonary oedema, and caution should always be exercised not to give more intravenous saline than is necessary, and to give it slowly. The administration of fluids through a Ryle's tube passed into the stomach and connected to a drip apparatus has

been recommended by Lieut.-Col. G. A. Ransome, I.A.M.C. (personal communication). It is advisable to nurse patients in a semi-recumbent position rather than dead flat, in order to prevent hypostatic congestion.

2. *Lumbar Puncture.*—This should be carried out as a routine in coma. A certain proportion of cases of cerebral malaria suffer from cerebral oedema with a raised C.S.F. pressure, and, in these, improvement may follow the judicious removal of C.S.F. Further, in malarious areas cases of cerebrospinal meningitis may suffer simultaneously from malaria. The dual pathology may here easily be missed unless a lumbar puncture is expressed out.

In conclusion I would like to express my emphatic concurrence in Surg. Lieut. Sneddon's statement that if treatment is to be successful it must be prompt. More than any other factor in the management of the case, the prognosis in cerebral malaria depends upon the speed with which the diagnosis is made and treatment instituted.

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### Two Cases of Snake-bite

The following cases are recorded for the reason that snake-bite is an uncommon accident in this country and that it must be still more unusual for two patients to be bitten by the same snake. The great difficulty experienced in obtaining antivenene is also a matter for consideration.

#### CASE HISTORIES

On May 18, 1944, two healthy boys—A. T., aged 12, and J. O., aged 14—were playing on an open heath when A. T. saw and caught hold of what proved to be an English viper (*V. berus*), commonly known as an adder, 24 in. long. The snake bit him and he dropped it, whereupon his companion gave chase and, having grabbed the snake, was also bitten a few minutes later. A. T., who received the first bite at 3.30 p.m., vomited immediately and felt so ill that he lay down on the grass, where he was found 20 minutes later by his schoolmaster, who stated that the boy was very pale and drowsy, was unable to walk, and complained of sore throat, pain in his abdomen and feet, and great thirst. He was vomiting. The bite was on the dorsum of his right hand, which was much swollen, with a dark-blue area surrounding the bite. The master seized the bite with a penknife sterilized in dettol, but very little blood flowed and it clotied immediately.

The boy was admitted to the West Suffolk Hospital, Bury St. Edmunds, at 5.30 p.m., in a condition of extreme shock. His colour was grey-blue, and he was cold, limp, and semi-conscious. Respiration was very shallow and the radial pulse was not palpable. Temperature was subnormal. He complained of thirst and sore throat. His right hand was swollen, shiny, and grey-blue in colour; there was no lymphangitis, but the axillary lymph glands were enlarged and very tender.

Nikethamide (coramine) and adrenaline were administered, and the usual measures for treatment of shock were taken. By 7.45 p.m. his general condition had considerably improved and he was complaining of pain in his hand and abdomen and of sore throat. Examination showed no haemorrhages in his skin or mucous membranes. Pulse 120 and of good volume; heart and lungs normal; abdomen somewhat distended, and tympanitic and tender; deep reflexes present. A puzzling sign was wide dilatation of both pupils with loss of light and accommodation reflexes. It was discovered subsequently that during the morning atropine had been instilled by an ophthalmic surgeon by whom he had been examined.

He was given 12 minims of neperthe, and had a fairly comfortable night. On the 19th his general condition was much improved. The right arm, however, was swollen up to and beyond the elbow and was extremely tender. In the afternoon of that day a supply of antivenene was obtained through the Ministry of Health, but the boy was so much better that administration was withheld. On the 20th he complained more of sore throat and dysphagia, and a hot, red, and very tender oedema involved the whole of his right arm and shoulder and upper part of chest, back and front. 10 ccm. antivenene was given intramuscularly at midday. On the 21st his general condition was much improved and there was no increase of the oedema. On this and the next day he developed extensive ecchymoses in the skin of his right arm and chest. There were no haemorrhages elsewhere, and his urine showed no red blood corpuscles. Recovery was subsequently uneventful, and he was discharged on May 30. His temperature had never risen above 100°.

The other patient (J. O.) was bitten on the outer side of the little finger of his right hand. Another boy promptly sucked the wound and tied a ligature round his arm. He developed no symptoms until 14 hours later, when he vomited and complained of sore throat and difficulty in speaking. His right hand became swollen and painful.

He was admitted to hospital at 8 p.m. There were no signs of shock, but tender swelling and redness of his right hand, with marked lymphangitis and axillary lymphadenitis. The site was incised under gas anaesthesia and bled freely; a potassium permanganate dressing was applied. No other symptoms developed, and except for slight swelling of his finger he was well on May 22.

## COMMENT

It is interesting to note that in this instance the viper did not discharge all its venom at the first bite.

The condition of the boy A. T. on admission was most alarming, and it is clear that antivenene as a life-saving measure would need to be administered within a few hours of the bite. Whether the dose given in this case prevented further oedema and lymphangitis is a matter for speculation. It proved impossible to procure antivenene through the usual channels, and the supply obtained through the good offices of the Ministry of Health was received only after nearly 24 hours' delay. It was prepared by the Pasteur Institute, Algiers, against the venom of the horned viper of Africa (*Cerastes cornutus*). Barrett (Lancet, 1934, 2, 60) says: "As the minimum lethal dose of the adder venom for an adult is probably 50 mg. and the amount injected by a British adder is between 5 and 10 mg., the results are seldom grave, but in small children and invalids energetic measures are called for." Apart from first aid, these measures should be directed to the treatment of vasomotor shock and relief of pain.

Nevertheless, in the first of the two cases here described it would have been a great comfort to be in a position to give intravenous antivenene on admission, for the boy seemed likely to die.

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### Spontaneous Expulsion through the Rectum of a Kocher Forceps left in the Abdomen 14 Months

I could not find, in the literature in my hands, a case similar to the one recorded below, so I thought it might be interesting enough to merit publication.

## CASE HISTORY

A woman aged 40 was admitted to the county hospital on Dec. 30, 1943, complaining of the existence of a piece of scissors in her anus. 14 months previously she had been operated upon for a tumour of the uterus in a maternity hospital elsewhere. She was told that she had a large tumour of the uterus, which was removed. Except for a mild swelling on the left lower extremity no complication had occurred and the wound healed completely. The patient was discharged from the hospital 45 days after operation. At home she was quite well for about 8 months, then she began from time to time to feel pains in the left lower quadrant of the abdomen. Shortly after the onset of these pains she developed intermittent diarrhoea and vomiting. Some 20 days before attending hospital she felt a hard substance in her anus and was unable to crouch and sit. Finally, 17 days later, she touched a part of a pair of scissors which came to the mouth of the anus, and after working hard for two days succeeded in expelling it. She failed to extract the other part. The extracted piece proved to be a branch of a Kocher forceps.

Examination revealed a poorly nourished woman, semi-ambulant and appearing ill, with a temperature of 99.8° F. The pulse was 104. There was an operation scar in the midline between the umbilicus and the symphysis pubis. Vaginal examination revealed a freely movable cervix but no corpus luteum. The fornices were free of masses or infiltration; the patient's menses had ceased since operation. There was some slight tenderness and redness on the left side of the anus. On deep palpation rectally the other branch of the Kocher forceps could be felt; this was in an inclined position, so that the pointed end had plunged into the left ischio-rectal fossa. Under general anaesthesia the anus was dilated and the remaining branch of the forceps was extracted. After intervention the patient improved steadily and made a complete recovery.

The extracted piece was 14 cm. long, and formed a complete Kocher forceps with the part removed by the patient. Both pieces of this forceps were discoloured. After remaining 13 days under observation she was discharged home in excellent health.

## COMMENT

A Kocher forceps left in the abdomen during a gynaecological laparotomy began to give rise to symptoms after nearly 8 months and travelled from the peritoneal cavity into the large intestine. The mechanism of this remarkable (and fortunate) migration is hard to explain. However, one may say with Jalaguier and Maclaure (1893) that first the foreign body encysted and some adhesion occurred with the intestine; this was accomplished in 8 months. Then under the protection of these adhesions the perforation of the intestine took place and the migration started: this phase lasted 6 months.

Manisa, Turkey.

ILHAM AKCAKÖYÜNÜ, M.D.

## REFERENCE

Jalaguier and Maclaure (1893). *Bull. Mém. Soc. Anat. Paris*, 68, 184.

## Reviews

### CLINICAL SYPHILIS

*A Synopsis of Clinical Syphilis.* By James Kirby Howles, M.D., M.A.S. (Pp. 671; illustrated, 30s.) London: Henry Kimpton.

The appearance of this book is most opportune, partly because it is good on the whole, and partly because up-to-date monographs on syphilis are few. It is divided into three main sections: general considerations, systemic and regional syphilis, and familial and public health aspects. The first includes primary, secondary, latent, and tertiary syphilis, clinical and pathological diagnosis, treatment, and prognosis; the second, syphilis of the various organs and systems of the body, the treatment of each stage, organ, or system being given in the appropriate chapter. Section 3 is devoted mainly to congenital syphilis and syphilis in pregnancy; it includes the epidemiology of the disease and the organization of the syphilis clinic. In an appendix is a brief account of the history of the disease, and there is a long list of references.

The book is somewhat artificially arranged, but, as the author points out in his preface, the gain in clarity and the saving of space more than outweigh the obvious disadvantages. It can be said at once that, speaking broadly, this is a book which will be of great value to the syphilologist; it sets out the subject-matter with commendable clarity, experts are frequently quoted on debatable subjects, and there are numerous illustrations. Most of these are first-class, but some are hardly up to standard—e.g., Figs. 5, 6, and 9. Fig. 18, labelled "Pipestem lymphadenopathy [sic] of Dorsum of penis," shows what looks like a rather prominent dorsal vein, and Fig. 58 hardly represents what spirochaetes really look like under the dark-ground microscope; incidentally, it might have been useful if a more detailed account of how to set up and examine a dark-ground specimen had been included.

Here and there we find what seem to be rather important errors, such as (p. 152): "serologic test is of the greatest value from two weeks after the infection has occurred." Surely this should read, "after the appearance of the primary lesion." And on page 154, "report results as . . . doubtful (complete haemolysis)," should read, "incomplete haemolysis." In general the average reader would have been glad of a rather fuller section on false positive serum reactions. On page 256 occurs the word "seroprimary," which conveys to us no meaning at all; while on page 473 is the statement, "Organism (*Spiröchaeta pallida*) . . . does not remain active, even under the most propitious conditions, for more than 48 hours"; this has been disproved by specimens which have crossed the Atlantic by ship several times and still retained their motility. These are a few shortcomings in an otherwise excellent account; it is the treatment described which lends itself most to criticism. Few modern syphilologists would agree with Plan A for early syphilis: why wait to start treatment till the first visit after the diagnosis; why not start at once, and why not start with an arsenical? On page 243 bismuth subsalicylate is described as oil-soluble, whereas on page 222 it is called a suspension, and the average weekly dose is 1 c.cm.—surely a very small one. The introduction of mercury rubs for early syphilis seems unconventional, and would hardly be necessary if the dosage of bismuth had been larger. No particular preference is shown for mapharsen over neoarsphenamine, but it is at least questionable if 0.01 g. of the former is equal to 0.1 g. of the latter in therapeutic effect; in the massive 5-day therapy it took 1.2 g. of mapharsen to produce as good results as 4.5 g. neoarsphenamine. It is of interest to note that for certain types of neurosyphilis Howles favours the Swift-Ellis treatment, one which many regard as *démodé*; and for non-specific protein therapy he gives his typhoid vaccine subcutaneously (p. 453); most people find the intravenous route more effective.

Taken as a whole this book gives an excellent account of the clinical picture, but the treatment recommended will not appeal to everyone; errors and omissions will, it is hoped, be corrected in a future edition. Nowadays, with syphilis so rife, what is wanted is an authoritative guide for the practitioner, and one which can be relied upon as correct in every detail.

## AN ATLAS OF HUMAN ANATOMY

*An Atlas of Anatomy* By J. C. Boileau Grant, M.B., Ch.B., F.R.C.S. Ed. in two volumes. Vol. I. Upper limb, abdomen, perineum, pelvis, lower limb. Vol. II. Vertebrae and vertebral column, thorax, head and neck. (Pp. 390, illustrated 55s. set of two volumes.) London: Baillière, Tindall and Cox, 1943.

This work in two volumes, and comprising a large number of original plates, has been produced by J. C. Boileau Grant, professor of anatomy in the University of Toronto, who, with the co-operation of a fine staff of dissectors, photographers, and artists, has provided an excellent pictorial record of human anatomy, which will be of great value to students, teachers, and practitioners, and will serve as a sure guide towards the acquisition of a clear mental picture of the chief anatomical features of the human body. Special methods have been employed for the sake of accuracy; these have involved the use of photographic films, and the making of tracings and enlargements of these, which have served as a basis for the "line" and "half-tone" drawings. Moreover, in many of the plates colours have been introduced, all important parts have been clearly labelled, and special observations noted in the form of captions.

Where many have taken part in the production of a composite work it is difficult to pick out anyone for particular commendation, but we would like to draw attention to the excellent half-tone drawings of Mrs. D. Chubb as being specially worthy of mention and as imparting a high artistic character to the work as a whole. The method which has been adopted of a uniform representation of parts drawn from the right half of the body only, so that successive figures may be easily compared, has the advantage which is claimed for it by the author. In practice, however, the surgeon has to deal with the left side as often as with the right, and the effort needed to recognize the change in the relative position of the parts on the two sides of the body is perhaps repaid by the equal familiarity which is gained from a visual knowledge, obtained by the haphazard (or, better, the systematic) study of both the right and left sides of the body. Thus a beginner, when examined on a part belonging to the opposite side of the body to that which he has dissected and fixed his attention on, is often at a loss when confronted for the first time with a "looking-glass transposition" of the parts he is required to identify, and the same difficulty has to be overcome in the study of illustrations which are confined to one side.

Owing to careful revision there are very few errors which have escaped detection, and perhaps only one of these need be noted—namely, in Fig. 346 the adjectives "major" and "minor," with reference to the posterior rectus muscles of the occipital region have become transposed. The atlas as a whole is thoroughly reliable, and the author and his collaborators may be congratulated on the production of an anatomical work of very high standard and great utility.

## A DOCTOR IN BURMA

*Burma Surgeon* By Gordon S. Seagrave (Pp. 159, illustrated 9s.) London: Victor Gollancz, 1944.

On the cover of this book there are quotations from two American reviews, saying—this is "one of the great stories of the war" and "a book filled with great deeds." Neither of these is an overstatement.

Dr. Seagrave was born and bred in Lower Burma and went to America for his medical education. While at Johns Hopkins he decided to become a medical missionary. He was of a very practical and resourceful nature, and one day, before he left the hospital, he noticed the operation-room attendant throwing away a basketful of broken-down surgical instruments, beyond repair. He asked if he might be given these castaways, and, as he says, "With them all my surgical work in Burma was done, for five years, in spite of the fact that they were broken and not mated—many of the haemostats would not remain clamped but would spring apart and permit large haemorrhages in the most embarrassing part of the operation." On arriving in Burma he was ordered to Nankham in Southern Burma. With his wife to help him he decided to build a hospital there, and with the aid of an old broken theodolite to survey the site of the hospital, which was to be built on a hill top, and the help of a missionary from Moulmein, and no previous experience in house construction, he produced his 100-bed hospital. As soon as the building was finished it filled

up rapidly, and continued to run to capacity. He says the most common diseases in the Shan States are, in sequence, malaria, goitre, amoebic dysentery, gonorrhoea, and syphilis. He trained a staff of Burmese girls as nurses, and developed a large jungle practice, performing many major surgical operations.

The first half of the book is the story of an independent, self-reliant, and successful missionary doctor. Then came the war—the Battle of Burma—into which, with his staff of nurses and his equipment, he threw himself whole-heartedly. The Allied authorities at Rangoon gave him a number of trucks with which to carry on his medical work among the British, American, and Chinese troops in their retreat before the Japanese invasion. Then ensued months of peril and extreme hardship for them all. His loyal Burmese nurses were splendid all through. The cheery optimism of Dr. Seagrave was a constant encouragement to everyone. That his work was much appreciated is shown by the fact that he was promoted to the rank of lieutenant-colonel and awarded the Military Cross.

This book tells of almost incredible "deeds of derring-do," written in a modest matter-of-fact way. It contains much information about conditions in peace and war, of deep interest to medical men and the general public.

## Notes on Books

It was in 1904 that Sir ROBERT HUTCHINSON published in book form his *Lectures on Diseases of Children*, originally given to students of the London Hospital and those of us whose memories go back 40 years can well recall their eager first reading of this introduction to a subject which they knew to be important but which was sadly neglected in most general teaching hospitals. The book went through seven editions and eleven reprints in 32 years as the single-handed work of its author. For the eighth edition (1941) he entrusted the duty of revision to Dr. ALAN MONCREIFF, who is responsible also for the ninth (Edward Arnold, 21s.). There was out-of-date matter to be pruned away and new work waiting to be grafted in. Dr. Moncreiff has handled the task with discretion and piety, leaving as much as possible of the original text while bringing it into line with recent advances in diagnosis and treatment. The principal changes are indicated in his preface. The result does him credit and assures this famous book a further period of useful life.

*Treatment by Manipulation* (H. K. Lewis and Co., 16s.) is the fourth edition of Mr. A. G. TIVRELL FISHER'S book originally published in 1925 under the title *Manipulative Surgery*. Notwithstanding the short interval since the third edition many changes have been made and some sections largely rewritten in the light of further experience and as the result of helpful criticisms, there are also a number of new illustrations of manipulative technique. In time of war manipulation acquires added importance because it so often enables disabled Service men or women, or the factory worker, to return to duty in the shortest possible time. It will also play a most important part in the treatment of many orthopaedic disabilities which, in spite of the great advances in treatment of wounds and injuries, will become a heavy charge upon the nation after the war.

"An international institution like the Red Cross at Geneva may receive from abroad an urgent request for antityphus vaccine and may hesitate whether to send the vaccine employed against enteric or that used against typhus fever." Typhoid fever has the Latin equivalent "typhus abdominalis," often shortened to "typhus" in Germany and some other countries. Because of such confusion in nomenclature the Joint Relief Committee of the International Red Cross asked at the end of 1942 for lists of terms denoting the various communicable diseases in different European languages, and Dr. YVES BIRAUD, whose experience in connexion with the League of Nations and the International Conference for the fifth revision of the Causes of Death fitted him admirably for the task, has prepared a *Polyglot Glossary of Communicable Diseases* to meet this need. After an introduction and an explanatory section, the disease names included in each successive international number 1 to 44 (infective and parasitic diseases), and communicable diseases occurring in other parts of the International List, are set out in columns comprising the 24 principal European languages, including Russian, Turkish, and Icelandic. Slav languages, using symbols derived from the Cyrillic alphabet, have been transposed phonetically (according to French pronunciation) into Latin characters, as indicated in a table. Many who use the *Glossary* will be grateful for this transliteration. An alphabetical index follows, referring each name to the international number in which it will be found and to the appropriate language column. For all who are interested in international medicine this work will be invaluable. It is published in London by Allen and Unwin at 4s.

## BRITISH MEDICAL JOURNAL

LONDON

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LOCALIZATION IN THE CEREBRUM  
AND CEREBELLUM

Understanding of the nature of the representation of function in the cerebral cortex was improved in the war of 1914-18 by a study of gunshot wounds in man. This study was mainly based upon careful clinical observation, unaided by the electrical tools which are available to-day. Between the two wars the study of the cortex was greatly helped, as Prof. E. D. Adrian points out in his Abrahams Lecture, printed in last week's *Journal*, by the development of electronics and by the production of barbiturate anaesthetics. The research which these advances have made possible led to a great increase in knowledge of the functions of the cortex of lower animals, and to an application of that knowledge to the understanding of functional representation in man described by Head, Holmes, Foerster, and others.<sup>1</sup> Experiments on man, carried out since by Foerster<sup>2</sup> and by Penfield,<sup>3</sup> were largely confined to observing the results of stimulation of the motor and sensory areas of the cortex, and mapping out the areas of cortex which gave rise to characteristic responses. Animal experiments followed the same course—that of stimulation of small areas of cortex, which were carefully charted, and of observing the resulting peripheral activity, which might be the twitch of a limb, an apparently purposive movement, the response to a sensation, or an electrical discharge in a peripheral effector. An elaboration of this technique led to the long series of important experiments by Dusser de Barenne, who applied strychnine to minute areas of cortex. Before long the brain became mapped into an elaborate mosaic of functional areas, which often seemed to have an encouraging similarity to the cytoarchitectonic areas which had been described after histological studies by Brodmann<sup>4</sup> and the Vogts.<sup>5</sup>

About a decade ago a most important change in experimental method occurred. People began to observe what happened in the cortex when peripheral end organs were stimulated. This was the result, of course, of the phenomenal development of thermionic-valve amplifiers, which were not available to earlier workers. It was encouraged, too, by the observation of the slow electrical changes which can so easily be recorded from the cortex, and which go to make up the electro-encephalogram. In 1933 Gerard, Marshall, and Saul<sup>6</sup> found that displacement of a few hairs on the body surface caused a minute and sharply localized electrical change in the opposite cerebral

hemisphere. They pursued this observation and made a systematic study of the cortical changes which resulted from tiny stimuli in different parts of the body. The full results of observation of the cortical electrical potentials caused by lightly touching different parts of the monkey were published by Woolsey, Marshall, and Bard<sup>7</sup> in 1942. In this paper they gave detailed maps of the cortical representation of touch. At the same time as this work was taking place in America Adrian was engaged in a similar investigation over here.<sup>8</sup> He, also, found it possible to map out with great accuracy the cortical points where electrical potentials arose when different areas of skin were lightly stimulated. He drew up charts of the representation of touch in different animals. Some of the species differences are fascinating and throw light upon the way that the cortex deals with skin sensation. For instance, Adrian found that in the goat and the sheep most of the sensory cortex is concerned with messages received from the lips, the feet having a small cortical area, and the body hardly any at all, while the pig's snout has an enormous representation, area for area greater than that of the human hand, although the pig's body has no evident cortical representation at all. At the same time the spatial relationship of the cortical points subserving different areas of the body surface is constant, and, as Woolsey, Marshall, and Bard showed, is in general outline similar to that described from observation of human subjects. Nevertheless, although the excitable areas can be mapped with such accuracy, the representation of touch is as much functional as anatomical, since those areas of skin having the greatest application to the animal's mode of life had the greatest corresponding areas in the cortex.

The cortical representation of sensation does not take the form of an immutable, flat mosaic, where each nerve cell receives impulses from a single receptor or group of receptors. There is overlap between the skin areas represented, and there is electrical evidence of variations in the degree of response of single points from time to time. There is in fact the same kind of functional representation in the sensory cortex as Walshe<sup>9</sup> has urged for the motor—a vital process of representation, in which the behaviour of each point is modified by its near or distant neighbouring points, according to the demands of the moment. Bard and his colleagues have shown that, although the dermatomes of the body can be charted in the sensory cortex by means of the electrical discharges which result from stimulation, they overlap greatly, rather in the same way as the tiles of a house. Although stimulation of a given area of skin may evoke with great readiness a response from a fixed and minute area of cortex, it can also evoke responses from a wider area. Both function and structure are represented together, for they are inseparable; but the anatomical representation is based not on the size but on the relative functional values of the skin areas concerned—or, in other words, on their innervation density. Similar investigations have been made upon the excitable cortex which subserves vision (Bartley and

<sup>1</sup> Head, H., *Studies in Neurology*, 1920, London.<sup>2</sup> *Lancet*, 1931, 2, 309.<sup>3</sup> Penfield, W. G., and Boldrey, E., *Brain*, 1937, 60, 382.<sup>4</sup> *Vergleichende Lokalisationslehre der Grosshirnrinde*, Leipzig, 1909.<sup>5</sup> *J. Psychol. Neurol.*, Leipzig, 1919, 25, 279.<sup>6</sup> *Proc. Soc. exp. Biol.*, N.Y., 1933, 30, 1123.<sup>7</sup> *Johns Hosp. Bull.*, 1942, 70, 399.<sup>8</sup> *J. Physiol.*, 1941, 100, 159; *Brain*, 1943, 66, 89; *Lancet*, 1943, 2, 131; *J. Neurophysiol.*, 1943, 6, 239.<sup>9</sup> *Brain*, 1942, 65, 409.



Bishop<sup>10</sup>; Talbot and Marshall<sup>11</sup>) and hearing (Bremer<sup>12</sup>; Galambos and Davis<sup>13</sup>), and, in general, similar results have been obtained, for specific stimuli cause nerve discharges in characteristically arranged points in the cortex. A sound of a given pitch affects one fibre; but if its intensity is increased it will affect another, and when the impulse, which is an ordinary nerve discharge, reaches the appropriate points in the cortex it gives rise to an electrical discharge which looks the same as those in the visual or somatic sensory areas. How the association areas of the brain change these similar impulses into different modes of sensation is another problem altogether. Prof. Adrian's fundamental work on the electrical activity and representation of function in the cortex of the cerebrum and cerebellum is rapidly falling into line with similar work from several laboratories in America, some of which has been quoted. It is forming a basis for such a great advance in knowledge that, in his own words, "it is difficult to foresee how far it may not go."

## EPIDEMIOLOGY AND EVACUATION

After the outbreak of war large numbers of children were evacuated from areas exposed to bombing; although many returned within a few months there was another outward movement when, in 1940-1, bombing began on a large scale. From May, 1941, until 1944 the danger was not acute in the great cities; it has only become so since flying bombs began to be launched, and mainly affects London and other built-up areas in the south of England. The scale of the new exodus is large, and it is of interest to summarize the epidemiological results of the earlier movement. On general principles it was to be expected that the movement of town children into the country or smaller towns, associated as it was with the complete or partial closure of schools in the target area, would lower the incidence of the infectious diseases of children in the target areas and raise the incidence upon children in the reception areas. To test this hypothesis required a mass of detailed information not accessible to private students, but fortunately Dr. Percy Stocks of the General Register Office was permitted to publish in the *Journal of the Royal Statistical Society*<sup>14</sup> two papers giving a complete view of the facts; these papers, supplemented to some extent by contributions to the discussions from various experts, are the most important contribution to pure epidemiology in England and Wales the war has produced. It may be said at once that expectation was justified. To take a single illustration: in the administrative county of London the incidence rate of diphtheria in the fourth quarter of 1939 was a third less than that of the second quarter; in great towns which were reception areas the estimated increase of the incidence rate varied from a rise of 9% to one of 122%, with an average of 73%. A point of interest was that, if reception areas were classified by the ratio of immigrant children to resident children,

the increased incidence on the latter did not increase *pari passu* with the ratio. A possible explanation, partly supported by evidence given in the discussion, would be that the intimacy of commingling of the visiting and resident children did not increase as the number of the former; for example, there might be separate use of schools when the numbers justified this. One has a parallel in experimental epidemiology in which the problem was studied, as it were, in reverse, susceptibles being added to an infective population. It was found that regular small accessions had on the whole a greater effect in keeping up mortality than sudden large accessions.

What was true of diphtheria and scarlet fever was, in a general way, true of measles and whooping-cough. In measles there was evidence that epidemics which had been expected in evacuation areas were delayed; the epidemic expected in London was three or four quarters late, and there was a lesser delay in Liverpool, Sheffield, and Manchester. In view of the fact that in New York an expected epidemic in 1940 was also three quarters late, although there was no evacuation, there was some discussion whether the obvious explanation—viz., that a reduction in the proportion of susceptibles in the population had broken the periodicity—could be accepted, and the hypothesis of Brownlee which gave weight to a possible mutation of the *materies morbi* was canvassed. On the whole speakers favoured the view that evacuation was the prime cause, and that school closure in the target areas was an important link in the chain of factors making for reduction of means of transferring infection. During the months of heavy night bombing there was great congestion in some places of safety, but the unfavourable effect of this was more than offset by the outward movement of juvenile population.

We have mentioned only a few general results. The two papers contain detailed analyses which should be studied and data which enable other students to investigate matters not discussed. Under our new calamity, outward movement began approximately a month sooner than in 1939; how long it will continue and its ultimate volume are not within our powers of reasonable conjecture. Assuming a similarity of conditions, we should, however, expect that the epidemiological results will conform to those of 1939-40.

## THE QUESTIONARY

The answers to the Questionary on the White Paper, prepared at the request of the B.M.A. by the British Institute of Public Opinion, have now been sifted and analysed by the Institute, and the results are published in this week's *Supplement*. No doubt they will be interpreted variously by different people according to their predilections. Clearly there are limitations to this method of inquiry, which, according to a well-known Public Relations Officer, Mr. E. Rawdon Smith, is "rather like taking the patient's temperature and relying only upon that for a diagnosis."<sup>15</sup> But, within its limitations, the analysis affords a guide to trends of opinion within the profession, and within different groups of the profession. Some critics have committed themselves in advance. Prof. Major Greenwood has thrown doubts on the fitness of the Questionary to

<sup>10</sup> *Amer. J. Physiol.*, 1933, 103, 159.

<sup>11</sup> *Amer. J. Otol.*, 1941, 24, 1255.

<sup>12</sup> *C. r. Soc. Biol.*, Paris, 1938, 130, 257.

<sup>13</sup> *J. Neurophysiol.*, 1943, 6, 39.

<sup>14</sup> *J. roy. Statist. Soc.*, 1941, 104, 311; 1942, 105, 259.

<sup>15</sup> *Supplement to the British Medical Journal*, July 29 p. 21.

obtain objective answers to questions on the White Paper, stating: "On the assumption that an unbiased opinion given by persons who had read the White Paper was desired, the Questionary is bad."<sup>2</sup> Dr. D. G. Leys and Dr. Horace Joules challenged the validity of the Questionary thus: "Unfortunately the B.M.A., in obtaining the services of the British Institute of Public Opinion, casts a cloak of impartiality over what is in fact a tendentious document. To many doctors some of the questions as put will be unanswerable, since they are framed neither upon general principles nor Government policy, but upon the policy of a section of the profession only, and, moreover, a policy which represents a considerable retreat from the relatively forward-looking programme established by the Planning Commission set up by the B.M.A. itself in 1942."<sup>3</sup> For the most part the Questionary was answered and sent in within a few weeks of publication of the White Paper. The small return of answers from men in the Services is to be noted.

The Questionary was sent to 53,728 medical men and women, and replies have been received from 25,435, this apparently constituting a "world record" for an inquiry of this nature. Answering the general question "Are your reactions to the White Paper favourable?" 53% said "No"; and, although 40% assessed their reactions to the White Paper as favourable, only 32% believed that the introduction of a National Health Service would enhance "the quality of the country's medical service." On what is called the "100% issue," 60% of all groups supported the White Paper proposal that the National Health Service should include everyone: it is worthy of note that 54% of the consultants and 54% of the general practitioners voted in this way. Fifty-five per cent. agreed that the general practitioner should be under contract with a Central Medical Board, and 68% approved the principle of health centres: of the general practitioners 59% approved and 32% disapproved of health centres; but 63% of G.P.s disagreed with the proposal that doctors working from health centres should have a joint contract with the C.M.B. and the local authority owning the health centre. Question 17 asked: "Bearing in mind that 'the doctor practising in a centre will not be debarred from private practice outside it,' what method of remuneration would you like to see adopted for doctors working in health centres?" Twenty-eight per cent. of all answering were for payment by salary; 34% favoured a small basic salary plus capitation fees; 23% voted for payment by capitation fees; and 6% wanted to have capitation fees pooled. For payment in separate practices a still smaller percentage wanted payment by salary, and the majority preferred capitation fee.

Some points of interest arise in the replies to questions on administration. For example, 91% believe that the Central Health Services Council should have the right to publish an annual report, and also the right to publish advice at its own discretion; 76% regard the proposed composition of the Joint Boards as unsatisfactory, and 80% would like to see doctors and other health workers directly represented on the Joint Boards. The B.M.A.'s Principle D stated: "The profession rejects any proposal for the control of the future medical service by local authorities as at present constituted": 80% of all groups considered that the White Paper infringes this principle. The proposed power of the C.M.B. to prevent doctors starting public practice in an over-doctored area was viewed favourably by 57%; but 66% objected to the power of the C.M.B. "to require the young doctor during the early years of his career to give his full time to the

public service where the needs of the service require this." The answers to the question (9a) on central administration showed, according to the B.I.P.O., that many doctors feared that the medical profession would come under political control.

These are just some of the points; for the rest readers should turn to this week's *Supplement*.

### PENICILLIN PRODUCTION

Until recently penicillin was available in so small an amount as to be for most people a medical curiosity; only a few isolated patients were able to benefit by it. Another series of papers in this week's *Journal* provides further evidence of the tremendous strides made by the pharmaceutical industry, which is now putting penicillin at the disposal of medical men working in widely varying fields. For these supplies we are largely indebted to our American friends, who have won the third victory in the penicillin field. The first was Fleming's discovery; the second was the victory of Florey and his colleagues, who showed how to obtain penicillin in relatively pure form, and who demonstrated its clinical use. There remained a third problem—to produce it on a large scale. It is this problem which the Americans have solved, and we owe much to their foresight, energy, and correct estimation of the magnitude of the effort required. The credit for the supplies of penicillin is chiefly due to Dr. A. N. Richards, the chairman of the Committee for Medical Research, one section of the Office of Emergency Management in which President Roosevelt develops his measures for prosecuting the war. Dr. Richards, formerly professor of pharmacology at the University of Pennsylvania, is well known to workers on renal physiology. He devised the method of withdrawing fluid for examination from the renal tubule. As chairman of the Committee for Medical Research his main concern was with research and not with production, and he might well have taken the view that the question of the supply of penicillin was no affair of his. Nevertheless he seems to have realized, when Florey took the news of his findings to Washington late in 1941, that here was a question on which the pharmaceutical manufacturers required guidance and encouragement. Dr. Richards must have taken a heavy load of responsibility on his shoulders in recommending the enormous outlay on plant necessary to make the present supply of penicillin possible. Yet he took this responsibility in face of the chance that at any moment a synthetic process would render obsolete the plant for growing the mould. The synthesis of penicillin by a method practicable on a large scale has not yet been achieved, and so Dr. Richards has the reward of knowing that as a result of his effort the lives of very many American and British wounded are being saved every day. We can acknowledge this debt to the U.S.A. without in any way disparaging the efforts which have been made to the same end in this country. British manufacturers, although hampered by a far greater shortage of material and labour, furnished most of the penicillin which has been used by Army casualties in the Mediterranean theatre of war, and for research purposes in this country, and are now contributing to available stocks on an increasing scale.

### RESEARCH IN OPHTHALMOLOGY

We announce elsewhere in this issue the decision of the Council of the Royal Eye Hospital to establish an Institute of Ophthalmology—a decision that will, we hope, bear fruit in an advance of knowledge in this important branch of medicine. It is substantially true that medical research

<sup>2</sup> *Lancet*, April 1, 1944, p. 451.

<sup>3</sup> *Ibid.*, April 8, 1944, p. 486.

in this country is still very largely a matter of individual effort. Research "soci" rather than research "centres" have tended to develop. By good fortune it has happened that occasionally a tradition for research has centred at a particular hospital for more than one generation, but more often the passing of an outstanding figure has also meant the decline of the particular focus from prominence. In recent articles in this *Journal* stress has been laid upon the man rather than the organization. This thesis was eloquently stated by Dr F M R Waishe,<sup>1</sup> and has been elaborated in relation to ophthalmology by Sir John Parsons,<sup>2</sup> Dr C G Kay Sharp,<sup>3</sup> pointing out that 'planning for research' and "planning of research" are not synonymous, has stressed the need for organized facilities through which the individual worker can express himself. The distinction made by Dr Kay Sharp is not unimportant, and it is mainly owing to his initiative that the planning for ophthalmic research has become a reality. Some six years ago in a letter in these columns<sup>4</sup> he stressed the need for national planning in the prevention of eye disease, and advocated that in the first place the local authorities, who jointly spend over £2,000,000 annually for the welfare of the blind, should set aside 1% of this expenditure to establish a central research fund, and, secondly, that some four research centres be set up in closest co operation with existing ophthalmic centres—one in the North of England, one in the Midlands, and two in London.

It is gratifying to record that a move in this direction is now being made. The County Councils Association and the Association of Municipal Corporations have agreed on the recommendation of their Joint Blind Welfare Committee, that a sum at present estimated at about £20,000 ought to be provided annually by the county and county borough councils to subsidize planned and co-ordinated research. The associations also foresee the establishment of a National Ophthalmic Research Council to administer the proposed funds, and it is contemplated that in the first instance five research centres should receive subsidies according to their need. This scheme is to be submitted to the Ministry of Health, and, later, the necessary concurrence of the individual county and county borough councils will be sought. Two research centres have come into existence since Dr Kay Sharp's letter of 1938—one at Oxford and the other the research unit at the Royal Eye Hospital. The pioneer efforts of both these centres amply justify support

# MALARIA CONTROL IN NORTH-EASTERN INDIA

The report of the Committee of Control of the Indian Branch of the Ross Institute of Tropical Hygiene for the year ending June 31, 1942, was reviewed some little time ago in this *Journal*. Regarding the general tenor of the report for 1943 little need be added to what was said in our review of its predecessor. But one important feature should be mentioned—viz., that with the report for 1943 is incorporated a summary of the principles underlying malaria control in India, with special reference to the North-Eastern Frontier. This was drawn up by Dr G C Ramsay and incorporated in the report to meet requests by several military medical officers for copies of Dr Ramsay's publications. Since Dr Ramsay's experience of antimalarial work in North Eastern India must be unique, this brief but excellently condensed conspectus of possible methods of malaria control has additional interest now that the part of India to which it refers has come

so prominently into the war picture. Starting with a brief account of the breeding-places of *A. murinus*, the chief carrier in North-East India, Dr Ramsay deals seriatim with stream training, oiling, paris green, cuprous cyanide as a larvicide, water pollution as an antilarval measure, and control of breeding in kutchha wells. These are all classed as temporary measures. The permanent measures, which should replace temporary ones whenever possible, are site selection, provision or preservation of dense shade over water channels, flushing, drainage, flooding, subsoil methods, fascine drainage, concrete inverts, vertical drainage, flooding, control of irrigation, filling, and zooprophyllaxis. Notes on *A. sin laicus* and *A. philippinensis*, which are important under certain conditions, and on biological methods are also added. Under these heads are given in a few words the relevant and salient points about each, altogether an excellently informed review of measures adapted to this region of India. In appendices to the report the long list of firms and other subscribers to the Indian Branch testifies to the success of this co-operative scheme for improvement of health on estates and other labour employing concerns which has been initiated and ably carried out under the Ross Institute.

## MINERS' DISEASES IN THE PAST

Thousands of years ago men were delving into the earth to find the raw materials on which ancient civilization depended for its existence. After the stage of primitive surface mining had passed, underground mining produced a surplus of materials which exceeded the needs of the few who owned the mines. So mines became a source of great wealth, while the miners, who were slaves or prisoners or criminals sent underground to expiate crime, toiled in the stifling stench and produced the wealth desired by society. The almost complete disregard of the miner and his diseases by ancient medical authors expresses the social indifference to the industrial worker of those times. Later studies by physicians of the Middle Ages, particularly Agricola and Paracelsus, and the periods which followed up to the end of the nineteenth century showed the increasing interest taken by the medical profession in industrial diseases. But while physicians proposed various preventive measures they were in no position to make them effective. Any improvements made in mining conditions came as a result of technical advances in engineering and of Acts of Parliament, which were the products of public opinion and nineteenth-century trade unionism rather than the fruits of medical research. These Acts were designed primarily to prevent the catastrophic explosions which inflicted great loss of life and the exploitation of women and children underground. Nevertheless they did exert a salutary effect on the health of mine workers. In his recent monograph<sup>1</sup> Dr George Rosen has given a historical analysis of one industry which shows clearly the factors that retard or accelerate the development of an industrial society. Those who are interested in the application of medical science to social problems should read it, because from the past there are lessons to be learnt for the future. It is probably the first document of its kind to show so clearly that the prevention of disease among workpeople must be the collective responsibility of society, and that our profession acting alone can achieve very little even with special knowledge of the relation between work and health. The author finishes his story at the end of the nineteenth century. May he fulfil his hope to tell the more recent history of diseases among miners in a companion work.

<sup>2</sup> For *wh* Meas. cal J. *arr.* 1944 1 175

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<sup>1</sup>*The History of Miners Diseases: A Medical and Social Interpretation*  
By George Rosen M.D. With an introduction by Henry E. Senger M.D.  
New York: Schuman's (\$5.00)

## REGISTRATION OF SPECIALISTS

## THE G.M.C. ASKS FOR LEGISLATION

The General Medical Council, sitting *in camera* at its recent May session, approved a report with recommendations from a special committee which has been considering the registration of specialists. This committee, under the chairmanship of Prof. Sydney Smith, and with Dr. H. Guy Dain as one of its members, was appointed in November, 1943, to report on the steps which should be taken by the Council concerning the admission of specialists to a statutory register. It was asked to consider the conditions of admission both during and after an interim period, the conditions under which postgraduate qualifications might be held to deserve recognition, and the postgraduate experience which might be regarded as enabling a practitioner to be registered as a specialist.

## The History of the Matter

Proposals for a register of specialists had already been made. One such appears in the draft interim report of the Medical Planning Commission, which calls for an authoritative committee to determine the standards conferring consultant status. The White Paper spoke of the need for more consultants and a better distribution of them, adding that one of the aims of the proposed National Health Service would be to encourage more doctors of the right type to enter this branch of medicine or surgery and to provide the means for their training. The White Paper, however, stopped short of proposing in detail a form of consultant service,<sup>1</sup> and stated that the Government was awaiting the report of Sir William Goodenough's Committee on Medical Schools. That report was published a fortnight ago (*Journal*, July 22, p. 121).

In the House of Commons in February last the Minister of Health announced that local lists of practitioners who fulfilled certain conditions of admission to a specialists' register were being compiled by Area Committees under the supervision of the Central Medical Academic Council. This Council is a body set up by the Royal College of Physicians of London, the Royal College of Surgeons of England, and the Royal College of Obstetricians and Gynaecologists, and in addition to representatives of the Colleges includes representatives of the British Medical Association and of the eleven universities in England and Wales which are licensing bodies. The Area Committees cover England and Wales in eleven regions, of each of which a university is the centre, and the membership includes the vice-chancellor, the dean of the faculty of medicine, and representatives of consultants and general practitioners. Local lists in Scotland have also been compiled, but by a different method.

The criterion for inclusion in the specialists' list during the interim period, for immediate administration purposes, is that the practitioner has acted as a specialist in the past and is generally recognized as a specialist by other practitioners in the area where he practises. No doubt after the interim period some more closely determined conditions will be laid down for admission, as, for example, training at an approved hospital, a minimum period of experience, the possession of a higher degree or diploma, the holding of a recognized appointment, and an undertaking not to engage in general practice. The General Medical Council committee, however, has not yet determined what it calls the "future consultant (or specialist) status," and has so far dealt only with the interim status. In February last, while its committee was still engaged on this work, the Council reaffirmed its view that in the public interest it was desirable that a statutory register of specialists should be formed and maintained by the Council and that the conditions of admission to such a register during the interim period should be those just stated—namely, that the practitioner had acted as a specialist and was recognized as such by other practitioners in his area.

The immediate or interim purpose of such a register of specialists would be to provide the Government and the municipal and participating voluntary hospitals—i.e., the

authorities responsible for organizing a service of specialists as part of the National Health Service—with an authoritative and convenient means of ascertaining whether a particular practitioner is eligible to hold such an appointment. It follows that the register must be available at a date not later than that on which a service of specialists may be inaugurated as part of the National Health Service outlined in the White Paper.

On the recommendation, therefore, of its special committee the General Medical Council has resolved to represent forthwith to the Privy Council that legislation be introduced empowering the Council to make and maintain a register of specialists, such register to be available not later than the date of commencement of the service.

## The Form of the Register

The next question to which the committee of the G.M.C. addressed itself was the form which such a register should take. Should it be a book separate from the *Medical Register*, or an appended list forming part of the *Medical Register* itself; or should there be a separate column in the *Medical Register* to denote a specialist, or use be made of the fourth column—the one headed "Qualifications"—for this purpose? All these methods have their advantages and disadvantages. One disadvantage of a separate book—although, to be sure, it applies in some degree to the other methods, for the *Medical Register* is in many public libraries—is that it would be accessible to lay people who believed themselves competent to choose specialists.

In the end the committee decided that the procedure should be to insert the word "Specialty" or "Specialties" opposite the name of the practitioner in the column headed "Qualifications" in the existing *Medical Register*, and to add the subject or subjects in which he had been recognized by the Council as a specialist, with the year of his recognition. Further, for facility of reference, it was decided that the *Medical Register* should contain an alphabetical list of specialties with, underneath each heading, the registered names of the recognized practitioners, again given alphabetically. From this it would be possible to refer to the full particulars of the practitioner given in the main body of the *Medical Register*.

When the Minister of Health, as mentioned above, informed the House of Commons that local lists were being compiled, he made a clear distinction between the restrictions to be placed on the use of the local lists so long as provision is not made by legislation for the establishment of a register of specialists and the freedom of Parliament to determine the manner in which a statutory register should eventually be set up. His words are worthy of quotation:

"I am, therefore, glad of this opportunity of assuring the profession, and especially its members who are on war service at home or abroad, that such lists will be treated as strictly confidential and will not be used as a test of eligibility for appointment as consultant or specialist in any comprehensive post-war hospital service. If, at a later date, it were thought desirable that consultant and specialist appointments should be restricted to persons qualified in some particular manner and enrolled on a list for the purpose, it would be necessary to provide for the establishment of a register on a statutory basis in a manner approved by Parliament."

The sense of the General Medical Council's discussions on this point is that it is neither necessary nor desirable for the Council to repeat or to revise the work of the Central Medical Academic Council (set up by the Royal Colleges) or of its Area Committees in preparing the local lists for England and Wales, and no doubt the same view would be taken concerning the local lists in Scotland. It is assumed that these local lists are based upon the knowledge of competent authorities of the subject or subjects in which each registered medical practitioner included in the lists is accepted as a specialist.

The recommendation of the committee, accepted by the G.M.C., is that the legislation to empower the Council to form and maintain a register should confer the right of admission to the register upon (1) practitioners on war service abroad whose names are included in any list of specialists, compiled before an appointed day, which appears to the Council to deserve recognition in the register, and (2) practitioners whose names are included in any such list on the ground that they

<sup>1</sup> In the White Paper the terms "consultant" and "specialist" are used as alternatives or as complementary to each other. In the General Medical Council report the word "specialist" is generally used.

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have acted as specialists in the past and are generally recognized as such by other practitioners in their areas. The same legislation should confer the right upon any other practitioner to make an application for admission, and should empower the G.M.C. to make regulations prescribing the way in which applications are to be made and determined.

### Future Registration

When, therefore, the service of specialists comes into operation the Government and the hospitals will have available an interim statutory register, first in the form of a series of entries in the *Medical Register* indicating that the practitioners have been recognized by the General Medical Council as specialists in a stated subject or subjects, and also a separate list of specialties with the names of practitioners following. This, however, leaves much to be considered. In the view of the committee the object of a statutory register of specialists kept by the G.M.C. would be to establish and maintain a standard of postgraduate medical qualification and experience such as would guarantee that practitioners who had attained that standard could properly be recognized in the register as specialists. Many, of course, by any standard will be recognized as possessing consultant (or specialist) status, which is valid not only for the interim but for the future period. But questions of some difficulty will arise. It is generally agreed for example, that specialist status should in future imply the possession not only of postgraduate qualifications but of postgraduate experience, but are such qualifications to be regarded as indispensable for the practice of all registrable specialties, and, so far as they are indispensable, what is the value in relation to specialist status of postgraduate qualifications in medicine, surgery, and midwifery and the postgraduate qualifications in specialties now granted by the licensing bodies? What should be the nature and the duration of the postgraduate experience demanded in each registrable specialty? How far should the powers of the Council to register postgraduate qualifications be extended by legislation? Should provision be made for the Council to consult appropriate professional bodies about the conditions of admission to the register after its initial formation?

This G.M.C. report was issued before the Goodenough Committee's report appeared, and it is expected that the further work of the G.M.C. committee will be much facilitated by perusal of the Goodenough report, especially the section on postgraduate training and experience for intending specialists. It is intended to make a further report to the Council in the light of the Goodenough recommendations as soon as possible.

### BEIT MEMORIAL FELLOWSHIPS

The Trustees of the Beit Memorial Fellowships for Medical Research in their annual report for the year 1943-4 state that they accepted with great regret the resignation of Prof. T. R. Elliott, F.R.S., who had been secretary to the advisory board since 1930 and whose experience and wisdom had been of inestimable value. His place on the board had been taken by Sir Thomas Lewis, M.D., F.R.S., and Dr. A. N. Drury, F.R.S., had been appointed acting secretary.

The following elections were made with permission for each Fellow to be seconded at any time for war duties.

**Fourth year Fellowships (£500 a year)**—W. Holmes, M.A., D.Phil. to continue the study of the regeneration of nerve fibres after injury, at the Department of Zoology and Comparative Anatomy, University Museum, Oxford. Mary F. Lockie, M.D., M.R.C.P. to continue the study of renal pressor substances responsible for experimentally high blood pressure, at the Pharmacology Laboratory, Cambridge.

**Junior Fellowships (£400 a year)**—J. C. Boursnell, Ph.D. to study the fate and functions of trace and some other elements in the animal body using radio-active isotopes, at the Department of Biochemistry and Chemistry, the Medical College of St. Bartholomew's Hospital. G. A. Levey, Ph.D., D.Sc. to study the adaptive enzymes in the animal body, with special reference to the role of glucuronidase in the metabolism of steroid hormones and related substances, at the Department of Medical Chemistry, University of Edinburgh. H. J. Rogers, Ph.D. to study the biochemistry of

hyaluronidase obtained from various sources, and the role of enzymes such as hyaluronidase and leathinase and other bacterial antigens in infection, at the Lister Institute, Elstree, Herts. G. J. Romanes, Ph.D., M.B., B.Ch. to study the relationship between the developing mesoderm and the motor apparatus of the spinal cord supplying it, at the Department of Anatomy, University of Cambridge. F. Sanger, B.A., Ph.D. to study the chemical structure of proteins, with special reference to insulin, at the Sir William Dunn Institute of Biochemistry, Cambridge. S. P. V. Sherlock, M.B., Ch.B., M.R.C.P. to study the hepatic function in disease by biopsy methods, at the Department of Medicine, British Postgraduate Medical School, C. Weymouth. Ph.D. to study the factors influencing tissue growth *in vitro*, at the Physiology Department, University of Aberdeen. E. C. Webb, B.A. to study the ultimate mode of action of drugs and poisons in living tissues, at the Sir William Dunn Institute of Biochemistry, Cambridge.

### SCIENCE FELLOWSHIPS FOR BRITISH UNIVERSITIES

The Directors of Imperial Chemical Industries have offered to provide at nine British universities a total of 80 Fellowships to be held by senior workers in certain branches of science—namely, physics, chemistry, and the sciences dependent thereon, including chemotherapy. The Fellowships will be of the average value of £600 per annum and the scheme will operate for an initial period of seven years. The Directors of I.C.I. have described on broad lines the subjects in which the Fellowships are to be held, but the administration of the scheme rests wholly with the universities and no conditions are attached by the directors to their tenure. The Fellows will be members of the university staffs and will be concerned only with the duties laid upon them by the universities. Their primary work will be in research, but they will also, it is hoped, take some part in university teaching. Oxford, Cambridge, and London have each been offered 12 Fellowships, Glasgow, Edinburgh, Liverpool, Manchester, and Birmingham, 8 each, and Durham 4. It is hoped that by this policy there will emerge a body of men capable of taking high academic or industrial positions thereby advancing academic research and industrial research, which in the view of I.C.I. are indivisible and interdependent.

### INSTITUTE FOR RESEARCH AND TEACHING IN OPHTHALMOLOGY

The Council of the Royal Eye Hospital has decided to establish an Institute of Ophthalmology where teaching and research can be carried out systematically and co-ordinated with the work of laboratories and of other ophthalmic and of general hospitals. The Institute, with an independent board of governors, will work under the patronage of the Archbishop of Canterbury, the Archbishop of Westminster, the Very Rev. Cyril Golding Bird, General Sir Bernard Montgomery, and Sir Philip Henriques, and under the presidency of Admiral Sir Edward Evans. A board of governors is being constituted with Mr. James Cadman as treasurer and chairman of the Finance Committee. To ensure that the Institute is broadly based, panels of advisers have been set up to help in the planning and carrying out of the work.

## Reports of Societies

### PNEUMOPERITONEUM

At a meeting of the Section of Medicine of the Royal Academy of Medicine in Ireland in May, with the president, Dr. P. T. O'Farrell in the chair, Dr. M. I. Drury showed one of a series of cases of pulmonary tuberculosis treated by artificial pneumoperitoneum. The patient, 32 years old, had bilateral pulmonary tuberculosis, maximal on the right side, when admitted to Rialto Hospital in June 1941. Up to May, 1943 he had been treated by rest in bed, after which date he was given two courses of sanocrysin totalling 4.35 g., with continuation of strict bed rest. In February, 1944, right phrenic crush, done by Mr. T. C. J. O'Connell, caused elevation of the right dome of the diaphragm by 1½ in. Pneumoperitoneum induced shortly afterwards raised this cupola by a further 2 in., as well as raising the left cupola 1½ in. The patient's general condition had improved, sputum had fallen from 4 to 1½ oz. a day, blood sedimentation rate was almost normal, and once for the first time in three years his sputum had been negative for tubercle bacilli. Dr. Drury also showed x-ray films of a case of bilateral pulmonary tuberculosis in which both hemidiaphragms were raised by 2½ in. by artificial pneumoperitoneum, although no phrenic interruption had been carried out. Dr. E. T. Freeman considered the indication for pneumoperitoneum was adhesions between the lung and the diaphragm.

A number of postgraduate qualifications are already registrable in the *Medical Register*, including the M.D. and M.S. or its equivalent of all universities, the higher diplomas in medicine and surgery granted by the licensing corporations, and the diplomas and degrees in public health. Diplomas in branches or subdivisions of medicine and surgery granted by universities or corporations are not registrable.

## Correspondence

### Air Disinfection

SIR.—The paper by Prof. Mudd of the University of Pennsylvania and your leader on the subject of air disinfection (July 15, pp. 67 and 82) contain much of interest to us, but in the section dealing with the progress made in the use of germicidal aerosols there are notable omissions of relatively early work. Portslade laboratories has been occupied almost exclusively with the study of this question since 1937, but it would appear that many observations emanating from other laboratories as well as our own are comparatively unknown.

Rightly or wrongly we have been in the habit of considering Bechhold (1935) as the originator of the aerosol theory, although he did not, to our knowledge, coin the word "aerosol." "Exhaustive experiments unexpectedly show that the action is not caused by gaseous state, but principally by the action of finely distributed material as mist or smoke."

For some 40 years Trillat has been publishing results of his work on the behaviour of air-borne bacteria in various environmental conditions. These studies culminated in his infecting animals with air-borne influenza virus and various bacteria, and preventing infection by means of atomized germicides (1939). We came to the same conclusion as Trillat, a conclusion expressed in Bechhold's own words: "Exceptional effects may be obtained with extremely small quantities, mainly due to their low vapour pressure, the vapour concentration being insufficient to act."

Investigations during the last few years by others and ourselves have led us to conclude that we were wrong in viewing the action of lowly volatile substances as being substantially due to direct contact of the germicide and bacterial particle—a view which was always unacceptable on mathematical grounds to our colleagues Finn and Powell, unless accessory factors were involved. We accept, provisionally, the vapour theory as an explanation for the mechanism of action of lowly as well as highly volatile germicides. It was assumed, and subsequently demonstrated experimentally in the early days of our work, that the latter acted in the vapour phase, being, of necessity, non-existent as mists unless used in amounts sufficient to saturate.

It may be pointed out that considerable work has been done by Trillat, and at Portslade (1940a), on the action of hypochlorites on salivary organisms, and the great importance of relative humidity on the activity of these and other types of germicides formed for us a special study (1941). Trillat also has for years consistently emphasized the relative insusceptibility to aerial germicides of desiccated bacteria, which, however, he considered of less danger than those freshly emitted from an infected individual. Again, the observation that propylene glycol is active on air-borne bacteria was, to the best of our knowledge, first made in these laboratories (1940b) and not in America. We felt, however, at the time, that the amount required in order to attain the arbitrary standard of kill we had set ourselves was likely to be prohibitive. The glycol was found to have an activity of the order of 1000:1 on phenol, and this, in the main, has been confirmed in several excellent papers by Robertson and his colleagues.

As regards vapour pressure in relation to bactericidal activity, propylene, diethylene, and probably the other glycols, in our experience, fall into line with the phenols (1944). The results are superior with the highly volatile if the percentage saturation be high, but with the lowly volatile if the percentage saturation be low. At intermediate degrees of saturation results tend to be similar—i.e., an equal bactericidal activity when the amount of germicide atomized is proportional to the amount required to saturate at 20° C. (our working temperature). For instance, as regards the amount of propylene glycol and hexyl resorcinol required to saturate, the ratio is about 500:1, while the proportions in our original mixture were only 9:1. When a large amount of the mixture is used, as was presumably done by Robertson, one would not expect the results obtained with the glycol alone to be improved upon, while when a small amount was used, in our case mostly 10 nig./m.<sup>3</sup>, the presence

of H.R. made a negative result into a strong positive. Even in the latter example there is more than sufficient H.R. to saturate, but only about 1/40th that of the glycol—too low a degree of saturation of any glycol or phenol tested here to give an appreciable kill of salivary organisms.

Thus it appears that, as in the test-tube so in the air, the solubility of the germicide in the medium in which it is operating has an important bearing on bactericidal capacity. Among 20 phenols tested here no member very soluble in water has a high degree of activity in the test-tube, and no member very soluble in the air has a high activity as an aerosol. A low solubility, however, in either medium does not in every instance correspond to a high bactericidal activity in the particular medium. The possible reasons for this cannot be entered into here; they are both numerous and complex. Among other aspects, molecular potency, rate of generation and decay of the germicide mists and vapours, absorption in relation to adsorption, and the competition of the living organism compared with the "dead" surround, etc., for the germicide are, perhaps, not the least important.

The concluding remarks in your leader prompt us to state that certainly, so far as we are concerned, disinfection with avoidance of sterilization has been and is the main objective, and we believe that the same applies to most workers in this field. Furthermore, our ideal is attenuation and not killing of the pathogenic organisms. Already Trillat (1932) had shown that vaccination of his experimental animals could be accomplished by inhalation of organisms treated with germicidal aerosols. In connexion with proposed therapeutic or prophylactic measures, the wise advocate never neglects the fundamental biological law that the depriving of an organ of facilities for performing its natural function may ultimately lead to its inability to perform this function efficiently when occasion arises for it to do so.

It remains for future experiments to show whether attenuation will be attained more satisfactorily by utilizing suitable amounts of a slow "killer" (H.R.) than by utilizing a fast "killer" (P. glycol).—We are, etc.,

C. C. TWORT.  
A. H. BAKER.  
L. J. WHITE.

Portslade Research Laboratories.

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### Fulminating Diphtheria

SIR.—Under this heading (July 15, p. 78) Dr. Strong records a fatal case of hypertoxic diphtheria in a fully inoculated child. Although the combination of factors in this case was unusual, similar cases of hypertoxic or malignant diphtheria are unfortunately not rare in areas which are heavily infected by *C. diphtheriae gravis*. It is not yet generally realized that this organism may sometimes elaborate a lethal dose of toxin within a matter of hours after the onset of symptoms, and that because of this a fatal issue may occur in spite of antitoxin therapy at an apparently early clinical stage.

The presence of "bull neck" with tonsillar enlargement and nasal discharge suggests that the patient suffered a severe nasopharyngeal attack. The fauces then would also show the peculiar translucent oedema which precedes the formation of membrane and which is often accompanied by post-nasal obstruction. Fetor oris and absence of pain are also usual. In Gateshead, after eight years' experience of this type of invasive diphtheria in epidemic form, the presence of "bull neck" is regarded as an indication for massive dosage of antitoxin by the quickest possible route. Even so, doses of 100,000 units given on the second day of the illness have not always saved the patients. In these cases, too, further spread of membrane may be observed over a day or two after treatment by antitoxin, and the subsequent disintegration of the membrane takes a period of a week, or even longer. In Dr. Strong's abbreviated clinical report there is no indication of a spread of membrane to the larynx, and one wonders if tracheotomy was performed for that reason.

Such the nasal contact carrier, who had recovered from a previous attack of diphtheria and was harmless for six months, must be acquitted of the charge of originating the disease. The swab results quoted do not include visitors, whom I would impugn as being much more likely to introduce the organisms, not only to the two cases, but also to the nasal carrier. In these days diphtheria patients are retained in isolation until successive "freedom" swabs have been obtained, and chronic nasal carriers are rare.

Even with fully inoculated patients, clinical phenomena should be the guide to therapy, for there are some individuals unable to maintain immunity against the gravis strains of diphtheria bacilli. If there is relatively painless oedema of the fauces and neck glands with the presence of membrane, large doses of diphtheria antitoxin should be given at once—I am, etc.

JAMES GRANT  
Medical Officer of Health Gateshead

### The Surgeon and the Anaesthetic

SIR—I have followed with great interest the discussion on anaesthesia and anaesthetics which has followed the letter from Dr. Elam (Feb. 19, p. 263) on the advisability of publication of all deaths under anaesthesia, which at present are far too high. He says "it does not at present seem that a noticeable drift away from inhalation anaesthesia and the adoption of other methods are leading to improved results, rather the reverse. A false sense of security will arise, and 'modern anaesthesia' will become (if it has not already done so) far more dangerous than chloroform anaesthesia at its worst." A letter from Dr. Parry Price in the same issue takes the ultra modern view of many of the younger generation—that chloroform should be entirely discarded in favour of other methods, such as intravenous injection of pentothal. Chloroform inhalation still has some advocates especially perhaps among the older generation. There are two reasons why chloroform is less in favour, especially among professional anaesthetists, than ether, gas and oxygen, and intravenous injections of a new and relatively untried drug, such as pentothal. First, there is a widespread idea, which I believe to be entirely without justification, that light chloroform anaesthesia is especially dangerous, and that sudden death from vagus inhibition may accompany even a trivial operation unless the patient is fully under the anaesthetic. This seems to be a tradition handed on by some physiologists who have had no surgical experience, and I am quite sure it is entirely wrong. The first effect of light chloroform anaesthesia is upon lower sensory centres, producing analgesia, before there is any interference with spinal centres or the slightest mental confusion. In fact, the sense of hearing becomes if anything more acute. The patient can answer questions, and open his mouth while sitting up in bed and minor operations can be performed, such as tooth extraction, opening a superficial abscess, or removal of a packing in a wound, while the patient knows what is being done but feels no pain, and there is no sign of nausea or disturbance of any kind.

Another reason for the unpopularity of chloroform is that a death during the administration of chloroform is in the vast majority of cases the fault of the anaesthetist and due to an overdose of the anaesthetic paralyzing the respiratory and vasomotor centres in the medulla. It occurs on the operating table, entailing an inquest, while a death from ether, when it does take place, more often occurs later and there is no inquest.

The surgeon should choose the anaesthetist who will give the anaesthetic he prefers in the manner required and not continue the inhalation unduly. It too often happens that the patient is still deeply under the anaesthetic when the operation is over, and may not recover consciousness for perhaps an hour after returning to the ward. Unless he is carefully watched by an efficient nurse a catastrophe may occur, such as the sudden pulling out of a tube in the intestine draining the bowel, with fatal results. The patient should be recovering consciousness when the operation is nearly over, and be fully conscious when returned to the ward. The post-operative nausea and vomiting will be much less prolonged. Chloroform is more agreeable to the patient than ether even when both are given by an

open method, and a comfortable and quiet night before the operation may be obtained by a small injection of morphine and atropine or a drug such as omnopon.

Pentothal, which seems to be so popular at the present time, is by no means free from danger, and the dose cannot be as accurately judged and fitted to the requirement of the operation. When once injected into the blood it cannot be removed until its time is up. In your issue for July 15 (p. 93) there is a letter on pentothal anaesthesia in which the writer claims to have used pentothal extensively since it came on the market, and attributes the fact that he has never yet had a fatality to a very lively respect for this powerful anaesthetic agent. To avoid fatalities he would insist on the following: It should be administered by experienced anaesthetists only, no rank-and-file medical officer should be allowed to use this powerful—dangerous if you like—drug, he gives a list of the cases in which it should never be used if anxiety is to be avoided; the following should always be at hand: oxygen, picrotoxin, ephedrine, and coramine, and the doctor conducting the anaesthetic should know how and when to use them. "Even the most experienced anaesthetist," he writes, "exercising the greatest care and vigilance, will get when he least expects it a reminder that pentothal anaesthesia is not always 'child's play'." What an extraordinary advertisement from an ardent "fan"! However, he used it to extract four teeth! Surely a whiff of the despised chloroform would be quite sufficient, as I have proved on many occasions, and quite free from any danger—I am, etc.

Worthing

HERBERT H. BROWN,

### Chloroform in India

SIR—In recent correspondence in the *B.M.J.* about the merits and particularly, the demerits of chloroform a few important points were not mentioned. This agent has long been used in many parts of the world, including outlying small free hospitals in India, where modern expensive gases and apparatus are not yet available.

While fully aware of the dangers of chloroform and the undesirability of its use certain factors make chloroform less toxic and relatively safer in a healthy Indian than in a European. This is due to the Indian diet, which is principally carbohydrate and starch, in contrast to the predominantly nitrogenous diet of the West. The population in India is mainly vegetarian. The cereals, pulses and grams, and fruits contain a high percentage of carbohydrates. For instance, the carbohydrate content of the foods in common use is: rice 79%, wheat 74%, maize 66%, bajra 67%, cholam 74%, pulses and grams all above 55%, bananas 36%, plantains 24%, dates 67%, figs 17%, grapes 10%, etc. In addition mangoes, jack-fruits, water melons, oranges, etc., abound in India; and those concerned in growing sugar-canes and making molasses eat both. Buffaloes' milk and various sweetmeats made of milk and sugar are abundantly taken. The selling of freshly extracted sugar cane juice and sweetmeats is a common sight in the streets of Indian towns and cities.

Under these dietetic conditions the livers of Indians are well replenished with glycogen, which would hardly be the case with Western people with their almost wholly nitrogenous diet. Sugar tolerance is usually higher in Indians than in Europeans. It has also been recently shown that glucose strengthens the cardiac muscle, and that if an adequate amount of vitamin B<sub>2</sub> is taken in the pre-operative diet respiratory enzymes are well produced in the system, and so breathing troubles, other than obstructive, are to some extent prevented. Wheat, pulses etc., which abound in Northern India, contain vitamin B<sub>2</sub>, and these and other carbohydrates, and milk products, account for the health and great bodily strength of the people there. Chloroform does not produce any serious hepatotoxic effect in these healthy people, whose livers contain adequate glycogen; also there is hardly any respiratory trouble, owing to sufficient respiratory enzymes—viz., flavo-protein, and coenzymes I and II—from the use of wheat, bajra flour, or maize, and also of toddy, which contains yeast.

From my long experience I am convinced that in strong, healthy, and active Indians living on rich carbohydrate diet the careful use of chloroform merely for inducing anaesthesia produces scarcely any hepatotoxic effect or depression of

respiration and circulation. Any temporary reaction on the liver can be safeguarded by pre-operative use of glucose and post-operative infusions of glucose with insulin.

In certain places where chloroform-ether mixtures were used no serious toxic effects were observed; relaxation was easily obtained and maintained, and no convulsions were seen even in very hot weather. The mixture seems to prevent ether spasms and convulsions, as less ether is needed. Certain medicines containing chloroform are drunk for long periods as carminatives, etc.—e.g., spiritus chloroformi (5%), emulsio chloroformi (5%), chlorodyne, cremocarbonates—with no toxic results. Hepatotoxic effects are marked in habitual alcoholics, in whom chloroform must be avoided. As no other cheap anaesthetic agent may be readily available in outlying dispensaries and small hospitals or to general practitioners, the teaching to students of the correct methods of chloroform administration cannot yet be dispensed with. It would be a blessing if some method or drug were found which completely counteracted or prevented the toxic effects of chloroform. Sodium xanthine is said to protect against liver damage. In places where gas and intravenous barbiturates, or even ethyl chloride, are not yet easily available for all cases, the trouble and unpleasantness of induction with pure ether and the large quantity of this agent needed with the open method in the great heat of summer, with consequent danger of convulsions, are all obviated by careful induction with chloroform, and its judicious use.—I am, etc.,

K. E. MADAN, M.D., D.A.,  
Lecturer in Anaesthesia,  
King Edward Medical College

Lahore

### The So-called Meigs's Syndrome

SIR,—I read with interest the report by A. C. Clay *et al.* on two cases of fibroma of the ovary associated with hydrothorax and ascites (July 22, p. 113), but would like to protest against the name of Meigs, who only wrote of the condition in 1934, being associated with the syndrome. The description of this syndrome is by no means of recent origin, as I was told about it when I was a student 30 years ago, and have personally taught it to my students, as a rare possibility, for over 20 years. It is definitely recorded in Eden and Lockyer's *New System of Gynaecology*, published in 1917. If any name is to be associated with this syndrome, surely it should be that of the man who first described it, and, therefore, the name of either Cullingworth or Lawson Tait should be substituted.

The syndrome is certainly an uncommon occurrence, but I do not think nearly so rare as the recent literature on the subject would suggest. This is probably because, in this country at any rate, such cases are not commonly recorded in the medical journals, though most gynaecologists have encountered at least one case.—I am, etc.,

W. F. THEODORE HAULTAIN, F.R.C.S.Ed., F.R.C.O.G.

Edinburgh

### Problem of the Small Bladder

SIR,—I have given particular attention to the type of case with chronic frequency that Mr. Sheppard mentions in your issue of July 22 (p. 124), and I have been able to benefit many of them after investigating the posterior urethra; for urethroscopy often shows that there is a chronic inflammatory process in the locality mentioned. This is so in spite of a sterile urine and absence of any indication on rectal examination that there is any pathological process present in this region.

In the male the common findings are small granulomata or polypi on the verumontanum or in one or other prostatic sinus, or small nodular projections (hillocks) on the lateral walls or roof of the posterior urethra. In many females with chronic frequency and in many children with enuresis—many of whom also have frequency—hillocks and polypi are also found in the posterior urethra. There seems good reason to believe that many of these lesions are the result of simple infections which occur insidiously in childhood.

The best urethroscope that I have found for these investigations in adults is the Joly examining (Charrière 24). It is important to avoid a large instrument. A good local anaesthetic should be used. In children I use a Gekeringer type

urethroscope (Charrière 16); a general anaesthetic is necessary for these.

In those cases in which the polypi, etc., are firm and fleshy destruction by fulguration with a weak current (1 unit on G-U machine) is necessary. In other cases gentle and intermittent dilatation of the posterior urethra regularly has a beneficial effect on the symptoms. For adult males well-softened gum-elastic bougies should be used at first after a good local anaesthetic; for adult females straight metal bougies; for children special curved metal bougies, under a general anaesthetic of course. Great care must be taken to see that the increase in size of the successive instruments used is finely graded. It is my custom with male adults not to take the dilatation above 26 Charrière (15 Eng.), except in special cases. Meatotomy is sometimes necessary before the patient can get the benefit of the larger sizes. In female adults I aim at 32 Charrière as the top size. The treatment of children is too complex to be dealt with here (see *Proc. roy. Soc. Med.*, 1944, 37, 345). The benefit from dilatation is apparently in the promotion of drainage from the chronic inflammatory foci.

It is a most interesting study to examine some of these cases with the urethroscope after several dilatations and to note the improvement which has occurred. This often applies to gland orifices in the anterior urethra. Routine urethroscopy is most simply done in women. In adults the intervals between the dilatations should be gradually increased; my routine in an individual case is to give the dilatations at the following intervals: 3, 4, 6, 8, 12, 16, and 32 weeks. Over-frequent dilatation is certainly harmful.

I have come in contact with a number of patients who were discharged from the Services because of frequency or enuresis, whom I was able to help because of the urethroscopic findings.—I am, etc.,

London, W 1.

H. P. WINSBURY-WHITE.

### Site for Intramuscular Injection

SIR,—I have read with interest the letters of Prof. Grey Turner, Mr. Sydney Boyd, and Dr. Laughton Scott. Without entering into the controversy as to whether the buttock or the lateral aspect of the thigh is the better site, I think that three important points arise from their letters.

First, if the correct part of the buttock is used there should be no danger of injuring the sciatic nerve. The right site for an injection into the buttock is in the upper anterior quadrant an inch or two below the iliac crest. If this area is used the point of the needle will be at least as far from the sciatic nerve as it would be in the vastus externus. Secondly, wherever, an intramuscular injection is given the needle must be long enough to pierce the overlying fat and reach the muscle. Thirdly, when it is intended that an injection should be intramuscular, before the plunger is pressed home it should be withdrawn to make sure that the injection is not going to be intravenous, no matter what the site of choice.

If these three points are granted then it would appear that these three writers are really criticizing technique rather than the site of injection, and therefore are pointing to the bad teaching of technique in this matter to students and nurses.—I am, etc.,

Hartford, Cheshire.

EVAN C. WYNNE-EDWARDS.

### Symptoms of Hiatus Hernia

SIR,—With reference to the excellent leading article on hiatus hernia (July 15, p. 83) may I mention an additional symptom which is quite amusing if somewhat unusual.

A very wealthy lady complained for years of substernal pain and heartburn. This was accentuated by the emotional stress of having to attend official dinners, to which function she was compelled by the social position of her husband. She also knew that she would experience a most distressing fullness and epigastric pain immediately at the beginning of the meal. Her medical advisers came to the conclusion that her complaint was a form of hysterical escapism from a loathsome duty. This view seemed confirmed by the story of the husband that the condition could be prevented and relief obtained if the patient had several glasses of champagne while dressing for the dinner.

Eventually, however, the diagnosis of a hiatus hernia was made by careful x-ray examination. The explanation of the effect of



champagne was that the carbon dioxide formed a gas bubble and the small herniated portion of the stomach was drawn back into the abdomen. I have seen the same effect achieved by giving soda-water.

The above story was told to me by my teacher and former chief, Dr Julius Bauer, now professor of clinical medicine, Los Angeles, California—I am, etc.,

London S.W. 3

V. C. MEDVEI

### Chemotherapy in Otitis Media

SIR—I am inclined to agree with Mr G. H. Steele that general practitioners have had quite a lot of experience with sulphonamides in these cases—by which I mean acute otitis media—and when I say acute otitis media I do not mean "acute ears," acute otitis externa, acute catarrhal otitis media, external haemorrhagic bullous otitis, herpes oticus, or even "tympanitis mastoidea." I mean acute otitis media. Moreover, the experience of some general practitioners in the use of sulphonamides has been sufficiently extensive under all conditions to enable them to speak with what Mr Steele calls—not unreasonably—real authority. In my experience an otologist who has had no more than as Mr Dingley puts it, "at least a year or otoscopic experience" has still a long way to travel before he could be considered competent to diagnose all the different varieties of acute otitis via the speculum, even with the added advantage of personal tuition and a selected series of cases. I would certainly not accept the opinion of such a gentleman without verification. It should be realized that since the introduction of the electric auroscope the general practitioner has become much more familiar with abnormalities of the drum, especially if he has the patience to carry out the toilet of the meatus. Failure to do this may lead him into errors of which he may later feel, as I have felt, heartily ashamed. The important thing is for him to be able to recognize a normal drum.

If sulphonamides properly administered bring about a subsidence of symptoms and resolution, surely it is an indication that they have been properly used and have effected their purpose. I absolutely deny that they can "mask symptoms" if they are given adequately in cases in which experience has proved them to be effective. The inept and pointless complimentary gesture which Mr Dingley makes to the general practitioner by stating that his "valuable contribution" is in his "knowledge of his patient and the constitutional aspect of his illness" is of no more value than the knowledge of his patient and the constitutional nature of his illness are likely to be in the type of cases under notice—which is precisely nil—I am, etc.

Brookwood (Surrey)

H. M. STANLEY TURNER.

SIR—Wood has been extremely interested in the correspondence on this subject, and especially in the excellent article by Mr A. R. Dingley (June 3, p. 747). The following case may be of interest in this connexion.

A few weeks ago I was asked to see a doctor's child aged 5, who had the following history. Five weeks previously the child had had an attack of tonsillitis followed seven days later by earache in the right and left ears. Sulphathiazole 0.25 g. four hourly was given for two and a half days, but was discontinued owing to difficulty in getting the child to take the drug. There was slight otorrhoea from the left ear for three or four days and this cleared up. The right ear also discharged at this time—i.e., seven days after the onset of tonsillitis—and this appeared to clear up, but recurred several times and then appeared to clear up. One morning five weeks after the onset of tonsillitis the child complained of pain on lying on the right side, and it was noticed that the right ear was protruding outwards. I was then asked to see the child, and found a protruding right ear, and swelling and tenderness over the right mastoid. The right external meatus was full of thick creamy pus—a typical acute suppurative mastoiditis. The left ear was normal. Cortical mastoidectomy was performed. Very extensive suppuration was found, the whole of the mastoid cells were full of thick creamy pus. The tympanic membrane was thickened and oedematous and was incised at the same time. Recovery has been complete.

While this case did not have the requisite amount of sulphonamide therapy what it had was given very early. I feel, however, that an early myringotomy may well have prevented the unfortunate sequel—i.e., suppurative mastoiditis. It is my experience that early myringotomy followed by sulphonamide

therapy gives the best results in otitis media, and I am in complete agreement with all that Mr Dingley has so admirably explained—I am, etc.,

Poole Dorset

A. MACKENZIE ROSS

### Septic Tonsils in the Soldier

SIR—Major Gen. Philip Mitchiner (July 8, p. 37) writes "Tonsillectomies and operations on the nasal septum undoubtedly constitute scalpels for the operating surgeons, but how often do they make the patient any more fit for full duty in the rough and tumble of Service life?" The statement made here is a gratuitous insult to ENT surgeons. Most of us will not think very highly of a surgeon, however distinguished, who looks on his operations as "scalpels." But the question raised is more important, and one aspect of it is of immediate interest. As an ENT surgeon I have been disagreeably surprised to find soldiers evacuated from France for tonsillitis, a preventable disease and others with various rheumatic conditions associated with septic tonsils. Are we to do nothing for them?—I am, etc.,

E. S. BLUNT HAMILTON

### Episiotomy

SIR—As a mere GP I hesitate to challenge Dr Josephine Barnes's criticism (July 1, p. 23) of my memorandum of June 17 (p. 813). This article was written from the standpoint of domiciliary midwifery, and I am sure Dr Barnes will admit that conditions of work are often very different from those obtaining in hospital.

The method illustrated was developed primarily to secure accurate apposition of the wound edges, and not necessarily to avoid anaesthesia after the birth. Personally (and here I would welcome the views of other general practitioners) I have long given up using catgut in the perineum, owing to the risk of sepsis, but such stitches, if considered necessary, could, of course, be inserted after the birth.

I am aware of the dangers attending the use of chloroform in the third stage, and never employ a general anaesthetic other than nitrous oxide. Finally, I am glad to have it confirmed on such good authority that there is a wider scope for episiotomy—I am, etc.,

Barnoldswick (Lancashire)

G. S. NEILSON DOW

### Riboflavin and Allied Deficiencies

SIR—The very mass of writing on the vitamins, of which the lecture by Dr Stannus (July 22, p. 103) is an impressive example, can be confusing to the practitioner. The difficulty is to apportion on the appropriate role to each of the vitamins essential for the release of energy from carbohydrate. There are observations which suggest that riboflavin is its own cytochrome and acts as such when the usual cytochrome (haemin) is not available, as in avascular structures. A very early sign of ariboflavinosis is vascularization of the cornea; the oxygen-carrying haemin has to be brought in to maintain the life of the cornea, and it is withdrawn as soon as riboflavin is supplied in sufficient quantity.

The main purpose of carbohydrate metabolism, however, is the production of the form of energy known as muscular work, for this haemin is the cytochrome and ascorbic acid the main vitamin essential for each of the six steps of hexose breakdown. B<sub>2</sub> is a specific catalyst in degradation of pyruvic acid, a by-product of this reaction, and nicotinic acid is necessary for the utilization and elimination of lactic acid. Riboflavin also aids oxidation of carbohydrate, lactic acid, amino acids, and aldehyde, but there is little evidence that it is concerned with the production of muscular work. This possibly is reflected in the relative daily requirements of riboflavin (1.5 mg.) and ascorbic acid (50 mg.—).

The particular role of riboflavin in carbohydrate metabolism is probably concerned with maintaining structure as contrasted with function, for all the manifestations of ariboflavinosis quoted by Stannus are dissolutions of structure. If we compare this with the Crandon experiment we note that muscular weakness was apparent long before there was any structural damage, and that muscular strength returned immediately ascorbic acid was added to the diet.

The conclusion therefore is that riboflavin is necessary for that part of carbohydrate metabolism concerned with structure, but that it is only indirectly concerned with the conversion of glucose into muscular work.—I am, etc.,

Cacnarvon.

GRIFFITH EVANS.

### Epidemiology of Infective Hepatitis

SIR,—In Prof. L. J. Witts's interesting discussion of some problems of infective hepatitis in your issue of June 3 it was stressed that no animal is known which can be experimentally infected with the disease and that the discovery of such an animal would very greatly facilitate the epidemiological study of the condition. The following observation, which was made during the last war, may therefore be of interest. At Abbeville I saw a nursing sister who was convalescent from "catarrhal jaundice," and also, seated upon her shoulder, a small pet monkey. The animal at that time was undoubtedly jaundiced, and it had been in contact with the nurse during the acute phase of her illness. Unfortunately I am unable to name the species of monkey concerned, and the conjunction of the two cases may, of course, have been a mere coincidence; on the other hand the incident may possibly afford a clue to the discovery of the animal which would be so helpful in elucidating the aetiology of a disease which is causing much temporary disablement at the present time.—I am, etc.,

Southwell, Nottinghamshire.

C. H. WARNER.

### Self-medication and Patent Medicines

SIR,—The article on self-medication and patent medicines (July 15, p. 87) is certainly timely, but it would have carried more weight had the number of persons questioned been greater, and if it could have been demonstrated conclusively that the medicine addicts were more unhealthy than the abstainers, or that the educated were more abstemious in the matter of drugs than the ignorant. I was thankful to find that the inquirer was tactful enough to limit his questioning to the consumers of medicine *not* taken under medical direction, otherwise the results would have been rather embarrassing.

I wonder, out of all the millions who imbibe purgatives, lubricants, anodynes, stomach medicines, etc., how many are really harmed, except financially. Compared with the pleasure derived the harm done must be negligible. Has it ever been proved, for instance, that the achlorhydria encouraged by prolonged ingestion of paraffin and alkalis has anything to do with the incidence of gastric cancer?

I can't see how, in a democracy, one can do much by legislation to curb the advertiser's flights of fancy, and why should one want to? Life is drab enough anyway. Why should the advertisers be limited to the truth any more than politicians or doctors?

In spite of the findings of Edwards and Kinsie, and the fact that believers on the whole are happier, fatter, and psychologically sounder than sceptics, education surely should be some little help in assisting us to discriminate between the fantastic and the possible. But how to set about this education? It is no good trying to enlist the aid of the Press, for they are hardly likely to bite the hand that feeds them. Fiction had a good shot at it in Wells's *Tono Bungay*, which, by the way, should make an admirable film. What about the B.B.C.? Unlike other radio systems, it at least has the advantage (we hope) that it doesn't suffer from vested interests. I should say this is broadcasting's big chance.—I am, etc.,

Thame, Oxford.

E. GRANGER.

### Varicella and Herpes Zoster

SIR,—The cases of Drs. F. M. B. Allen and J. J. Manning (July 22, p. 115) have reminded me of a case of my own which had one or two additional points of interest.

The patient was a man aged 81. In 1934, when he was 73 years of age, he developed exfoliative dermatitis, which appeared to be intractable to any form of treatment and involved the whole of his skin surface. In 1935, without any preliminary symptoms, he had an acute retention of urine; his prostate proved to be grossly enlarged. He was considered to be a particularly bad operative risk on account of his skin condition, but, apart from it, he was extremely vigorous, both mentally and physically. His temperament was such that a catheter life would have been an intolerable burden, and

accordingly the risks of operative treatment were faced. After a preliminary suprapubic drainage the prostate was removed, and, following a stormy passage of a week or so, he made a complete recovery with excellent control and a clean bladder. A few weeks after his operation the exfoliative dermatitis cleared up.

On April 9, 1942, the patient's 81st birthday, I was called in to see him and found that he had a typical band of herpes zoster of about the sixth or seventh right dorsal distribution with the usual burning sensation and pain. He was kept in bed and exactly a week later a chickenpox eruption of moderate severity appeared. The distribution of the vesicles was in no way unusual and the scalp had quite a number. On April 25 his grandson aged 8, who lived in the same house, developed chickenpox, and about ten days later his granddaughter, aged 4, followed suit. The boy had a mild attack which ran a normal course. The little girl's attack was rather more severe with a comparatively large number of vesicles on the face. My original patient recovered from his herpes zoster, and, though he suffered from recurring pain in the area for several months, he was able to resume his bowls, his club, and other activities.—I am, etc.,

Preston.

F. M. ROSE.

SIR,—With reference to the two cases reported by Dr. Allen and Dr. Manning may I add yet another within my own experience.

On Dec. 11, 1942, I saw a normally very healthy man aged 40 with a profuse herpetiform eruption involving the right side of the neck and shoulder. By Dec. 22 a typical varicella was established. The noticeable point of difference in these three cases is the sequence. According to Dr. Allen's record the herpes followed the varicella after an interval of about three weeks. In Dr. Manning's case the two conditions were strictly concurrent, while in my own the varicella followed hard upon the heels of the herpes.—I am, etc.,

Yeovil.

NORMAN FLOWER.

### Adoption of Children (Regulation) Act, 1939

SIR,—This Act provides that, if arrangements are being made for a child under 9 years of age to be placed in the care and possession of a person who is not the child's parent or guardian or near relation, any third party participating in such arrangement must give seven days' notice to the Welfare Authority before the child is transferred to the adopter.

Recently a doctor attended a patient on the birth of her illegitimate child, and also attended a married woman who had been disappointed by the birth of a stillborn child. He introduced the two women with a view to the adoption of the illegitimate child by the married woman. Subsequently the practitioner's attention was drawn by the Welfare Authority to his failure to give the notice required by the regulations; happily, through the intervention of the Medical Defence Union, the matter was brought to a satisfactory conclusion.

The purpose of this letter is to bring to the notice of doctors, nurses, and midwives an obligation of which many may be unaware.—I am, etc.,

London, W.C.1.

JAMES FENTON,  
President, Medical Defence Union, Ltd.

### Character and Personality in the Medical Student

SIR,—Dr. R. John Gourlay (July 15, p. 96), for some obscure reason, appears to think I advocate a classless society. Let me assure him that this is far from being so and that I heartily agree with the greater part of his letter. Also I would like to join with him in praising ability, but not only as manifest in "our men of ability" but also in all its many other forms.

All that I ask is that ability is given a fair chance. If the dustman's son wishes to become a doctor, and is able, let him be given every facility to succeed. At the same time if the doctor's son wishes to become a doctor, and is unable, let him find an occupation more suited to his ability. The laws of heredity and the theory of evolution remain unchallenged and irrelevant. Let ability, not wealth, be the key to success and social distinction. Hitherto wealth has been the key and ability has merely turned it in the lock. Ability by itself has been all but impotent. It would be impertinent to ask how many doctors would be in their present eminent positions if they had not had the money to provide for their education; their ability, inherited or not, by itself would have availed them as little as does that of millions of the other members of the community. If ability is given every chance in its own right,

it is immaterial whether or not it results from inheritance or environment.

So long as ability is subordinate to wealth on the road to success and eminence just so long will our standards of eminence remain mere shadows of what they might be. And wealth will remain the source of wealth, making real progress impossible.

Finally let me assure Dr Gourlay that far from putting the clock back 2,000 years I am attempting to push it round a little faster than, regretably, many would have it go—I am, etc.,

Park Prewett Hospital

H E VICKERS

### Ophthalmologist and Optician

SIR.—As a general practitioner who also derived in income, before medical qualification, as a retractorist I should like to add a suggestion to the contribution of your correspondent Dr Geoffrey Ebbage. I have always found that opticians have great difficulty in *not* prescribing lenses, and only the few conscientious retractorists refer their patients to the medical practitioner. I suggest that (a) the training and examinations in retraction and orthoptics should be intensified, and the recognition of organic disease minimized, and (b) that opticians should treat only those patients who have been seen and examined by their medical adviser and referred to the optician—I am, etc.,

Salford

BERNARD WILKINS M.B.

## Obituary

### B J BRANDSON M.D., F.R.C.S.(C)

Dr Brandur Jonsson Brandson, professor emeritus of surgery, died at his home in Winnipeg on June 20. Few doctors in Western Canada have been more widely known and deeply loved or have exercised a greater influence among their own people in the field of medicine.

Born in Iceland on June 1, 1874, he came with his parents to Minnesota at the age of 4. He graduated in arts from Gustavus Adolphus College at St. Peters, Minn., and in medicine from Manitoba Medical College in 1900. For five years, interrupted by a year in Great Britain, he practised at Edinburg, N.D. With his life long friend, Dr O. Bjornson, he returned to Winnipeg in 1905. For a time they practised in partnership, but later each took the line of work for which he was specially fitted. Dr Bjornson became professor, then emeritus professor, of obstetrics, while Dr Brandson rose by successive steps to be lecturer in surgery, associate professor, professor, head of the department of surgery 1927-34, and, on his retirement, emeritus professor. At the convocation last May the University of Manitoba conferred on him the degree of Doctor of Laws *honoris causa*. This is not the first honorary degree granted him. In 1930 he was appointed a representative from Canada to attend the millennium of the Althing, the Icelandic parliament. At Reykjavik the University of Iceland conferred the honorary degree of Doctor of Medicine. Five years later the Icelandic Government made him a Grand Knight Commander of the Royal Icelandic Order of the Falcon. At the 98th Annual Meeting of the British Medical Association, held in Winnipeg in 1930, Dr Brandson was one of the vice-presidents in the Section of Surgery. The Winnipeg Medical Society granted him life membership in 1943. He was a Fellow of the American College of Surgeons, and a Charter Fellow of the College of Physicians and Surgeons of Canada. In his arts college Dr Brandson had as his friend and classmate the late Thomas H. Johnson, who also went to live in Winnipeg and became Attorney General of Manitoba. Though Brandson took a keen interest in politics and was repeatedly urged to contest an electoral district, he never allowed his name to go for nomination. At the time of his death he was honorary president of the First Lutheran Church, Winnipeg. An institution very dear to his heart was the Icelandic Old Folks' Home at Gimli, the "Home of the Happy Sunset." He is survived by his widow, two daughters, and a son. One daughter is the wife of Major John A. Hillsman, R.C.A.M.C. overseas. The son, Lieut. Thomas L. Brandson, is believed to have been serving as paymaster on H.M.C.S. *Athabaskan*, sunk recently in conflict with German destroyers in the English Channel.

In addition to his early postgraduate year in Great Britain and the Rotunda, Dublin, he also studied in London and Vienna. He was a foremost surgeon possessing that greatest of surgical qualities—sound judgment. His enduring fame, however, will be his gifts as a teacher. Wise, prudent, humane, and above all kindly, he will be long remembered.

R. M.

Dr JOHN MURDOCH died on July 7 at his home in Chesham Place, Brighton, aged 62 after a long illness. He graduated M.B., Ch.B. Gls in 1904 and took the F.R.C.S. Ed in 1909. Leaving his practice in Kinross in 1914 he went to France, where he served with great gallantry, gaining the Military Cross as a combatant officer in the Argyll and Sutherland Highlanders. He was wounded and invalided out of the Army in 1916. He resumed the practice of medicine by joining the Red Cross in 1917, which he served until 1939, most of which time in the office of Commandant of the Red Cross Hospital for Officers, Brighton. In this capacity he devoted the whole of his energies to the well-being of the ex-officers under his care, and will long be remembered for his integrity and devotion to duty. He leaves a widow and two sons, both of whom are serving in the Army overseas.—G. W. B.

We regret to announce the death on July 22 of Mr ERNEST WARE, emeritus surgeon to the Hospital of St. John and St. Elizabeth in St. John's Wood, and to the Hampstead Hospital for Children. Ernest Edwin Ware had his medical training at St. Thomas's Hospital, and after qualifying in 1889 was house surgeon there. He graduated M.B., B.S. Lond in 1891, and took the M.D. in 1893. Before settling down in surgical practice in North-West London Ernest Ware was for a time medical officer at St. Mary's Hospital for Children at Plaistow, and resident medical officer at the East London Hospital for Children, Shadwell. He was a past chairman of the Hampstead Division of the British Medical Association, and the Hampstead Medical Society, in whose work he had taken an active part for many years, made him an honorary member. He was elected F.R.C.S. Eng in 1930 and the National University of Ireland gave him the honorary degree of M.Ch. in 1938. Another distinction, but not a medical one, which he prized was admission to the Order of Knights of St. Gregory. The Hospital of St. John and St. Elizabeth, where he had given such long and faithful service as visiting surgeon, held a requiem for him in the chapel on July 26.

Dr J. W. Hyslop, who died on July 13 in his 75th year, was the son of the Rev. J. S. Hyslop and was born in Leven, Fifeshire. He studied medicine at Edinburgh University, where he graduated M.B., C.M. in 1893. He was in general practice in Menston, near Leeds, for some 50 years. His interest in village life was always great and varied. He was the founder and for many years president of the Menston Amateur Operatic Society, and his keenness and organizing ability did much to make this a most successful venture with far more than a local reputation. He was also a founder of the Menston Sick Nursing Society and its secretary for many years. He held the post of superintendent of the Menston Isolation Hospital for 37 years, and only retired in June of this year. His work there was perhaps his crowning achievement, for I have never known a happier hospital. Many of the children under his care were loath to leave when their time was up, and I have heard several children ask to be taken back on the slightest pretext. The results of treatment at the hospital were excellent bearing comparison with any in the country. In 1921 Dr Hyslop was appointed a Justice of the Peace, and in recognition of his scrupulously fair dealings as a magistrate at Otley court he was recently appointed chairman of the Juvenile Panel. As a general practitioner he gained the confidence of his patients by his untiring devotion and care. Menston was indeed fortunate to have Dr Hyslop as its family doctor.—R. J. G.

We regret to announce the death on July 19 at St. Asaph of Dr HENRY LLOYD, who had been a member of the B.M.A. since 1892, served on the Welsh Committee for one term, and twice represented his Division at Annual Meetings. He studied medicine at Liverpool and University College Hospital, qualifying in 1884 and taking the M.D. degree of Durham University in 1900. When at the end of 1937 he resigned his position as district medical officer, public vaccinator, and medical officer of the St. Asaph Public Assistance Institution, he was the doyen of the medical profession in the Vale of Clwyd, and his resignation was received with much regret by the Flintshire County Council.

Dr Arthur F. Pengal writes from Hatfield: "May I be permitted to add my humble appreciation of Sir WILLIAM LISTER, whom I knew well in 1898, when he was with Marcus Gunn and I a clinical assistant at Moorfields with him. Handsome, debonair, and kind, he was ever ready to explain and help, and was indeed a conscientious and accurate worker in spite of fatigue after some 4 or 5 hours in the vitiated atmosphere of that out-patient department. Later he was most charming and considerate to private patients sent to him, whatever their status, the memory of his friendship is most happy."

# Medical News

No. 23

The Conjoint Committee of Epsom College will in November award an annuity of £35 per annum to a spinster daughter of a medical man. Candidates must be Protestants and fully 65 years of age. Forms of application may be had from the Secretary's Office, Epsom College, Epsom, Surrey, and must be returned by the morning of Oct. 25.

The Mental After-Care Association (Eagle House, 110, Jermyn Street, S.W.1) will broadcast in the "Week's Good Cause" on Sunday next, Aug. 6, at 8.25 p.m.

The address of the Drugs Branch, Home Office, is now 52, Prince's Gate, South Kensington, S.W.7.

Dr. Sidney Osborn, medical officer in charge of First Aid Post, Civil Defence Casualty Service, Ipswich, has been commended for brave conduct in Civil Defence.

A notice issued by the Pharmacopoeia Commission states that potassium sulphate *British Pharmacopoeia*, 1914, may be used in place of lactose in making pulvis ipecacuanhae et opii, and that sucrose may be used, also in place of lactose, as diluent in making pepsinum and pancreatinum.

British Medical Association House, including the Library, will be closed on Saturdays during the month of August.

## EPIDEMIOLOGICAL NOTES

### Discussion of Table

In *England and Wales* during the week there was very little change in the trend of infectious diseases. Notifications of diphtheria and dysentery were respectively 66 and 22 higher than last week. Pneumonia notifications fell by 102, and measles by 35. In Durham diphtheria notifications went up from 43 to 70, the cases being widely distributed throughout the county.

The chief local returns of dysentery were: Glamorganshire 19 (Cardiff C.B. 15); Sussex, Hailsham R.D. 17; Southampton 14 (Hartley Witney R.D. 12); Lancashire 12; Essex 10.

In *Scotland* 20 more cases of dysentery were reported than last week, but there were 61 fewer cases of acute primary pneumonia. The incidence of diphtheria remained at the same low level as last week. The rise in dysentery was due to Lanark County, where the cases rose from 5 to 13. Edinburgh reported 14 cases and Glasgow 10.

In *Eire* measles notifications dropped to almost half the high level of the previous fortnight. Over half the reported cases were in Co. Clare, Ennis U.D.

### Tuberculosis in London

On July 27 Mr. Willink announced the figures for tuberculosis mortality in the administrative county of London for the past nine years. The rates were:

Death Rates from Tuberculosis (All Forms) per 1,000 Population, 1935-43 (excluding Non-civilians from Sept. 3, 1939)

	Rate per 1,000	
1935	0.746	
1936	0.755	Based on total deaths and total population
1937	0.771	
1938	0.704	
1939	0.760	Excluding non-civilians from Sept. 3, 1939
1940	0.974	
1941	1.248	Based on civilian deaths and civilian population
1942	1.017	
1943	0.934	

Mr. Willink said that these figures represented the deaths of both sexes and at all ages from tuberculosis per 1,000 total population up to Sept., 1939, and per 1,000 of the civilian population after that date. They did not indicate the trend of tuberculosis mortality in London, because (1) great changes had occurred since 1939 in the sex and age proportions of London's population; and (2) medical selection for the Services left behind the bulk of tuberculous persons in the civilian population. Death rates for separate sex-age groups, which alone could indicate the real trend of mortality, could not be calculated for local areas for years since 1939, because the requisite populations were not known in detail of sex and age.

### Week Ending July 22

The returns of infectious diseases in England and Wales during the week included: scarlet fever 1,461, whooping-cough 2,157, diphtheria 471, measles 2,401, acute pneumonia 374, cerebrospinal fever 46, dysentery 151, paratyphoid 4, typhoid 21.

## INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended July 15.

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year, for: (a) England and Wales (London included), (b) London (administrative county), (c) Scotland, (d) Eire, (e) Northern Ireland.

Figures of Births and Deaths, and of Deaths recorded under each infectious disease, are for: (a) The 126 great towns in England and Wales (including London), (b) London (administrative county), (c) The 16 principal towns in Scotland, (d) The 13 principal towns in Eire, (e) The 10 principal towns in Northern Ireland.

A dash — denotes no cases; a blank space denotes disease not notifiable or no return available.

Disease	1944					1943 (Corresponding Week)				
	(a)	(b)	(c)	(d)	(e)	(a)	(b)	(c)	(d)	(e)
Cerebrospinal fever	59	4	20	5	1	51	5	20	2	3
Deaths	—	—	—	—	—	—	—	—	—	—
Diphtheria	491	24	89	74	8	571	37	131	76	26
Deaths	3	2	—	—	1	8	—	—	2	—
Dysentery	156	9	68	1	—	160	7	125	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Encephalitis lethargica, acute	4	—	—	—	—	1	—	—	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Erysipelas	—	1	25	5	1	—	—	29	11	1
Deaths	—	—	—	—	—	—	—	—	—	—
Infective enteritis or diarrhoea under 2 years	41	3	13	14	—	45	10	9	8	4
Deaths	—	—	—	—	—	—	—	—	—	—
Measles*	2,516	130	61	130	35	3,054	155	49	29	6
Deaths	2	1	—	—	—	—	—	—	—	1
Orbital neonatorum	65	3	11	—	—	89	2	28	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Paratyphoid fever	7	—	3(B)	—	—	11	1	2	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Pneumonia, influenza†	437	25	4	—	2	457	30	10	1	3
Deaths (from influenza)	11	1	—	—	1	4	—	—	—	—
Pneumonia, primary	—	20	118	19	5	—	17	145	10	4
Deaths	—	—	—	—	—	—	—	—	—	—
Poli-encephalitis, acute	3	—	—	—	—	2	—	—	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Poliomyelitis, acute	16	1	4	—	—	7	1	—	1	—
Deaths	—	—	—	—	—	—	—	—	—	—
Puerperal fever	—	—	11	—	—	—	1	17	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Puerperal pyrexia‡	141	6	6	1	1	154	9	10	1	—
Deaths	—	—	—	—	—	—	—	—	—	—
Relapsing fever	—	—	—	—	—	—	—	—	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Scarlet fever	1,394	56	167	22	58	2,032	196	191	57	31
Deaths	1	1	—	—	—	1	—	—	—	—
Smallpox	—	—	—	—	—	—	—	—	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Typhoid fever	8	—	2	10	—	11	1	1	3	—
Deaths	—	—	—	—	—	—	—	—	—	—
Typhus fever	—	—	—	—	—	—	—	—	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Whooping-cough*	2,323	181	56	25	11	2,110	117	74	32	34
Deaths	4	1	3	—	1	7	2	3	1	—
Deaths (0-1 year)	254	35	63	31	11	286	42	45	30	25
Infant mortality rate (per 1,000 live births)	—	—	—	—	—	—	—	—	—	—
Deaths (excluding still-births)	4,163	830	542	165	95	3,790	492	517	164	130
Annual death rate (per 1,000 persons living)	—	12.5	10.7	5	—	—	11.7	10.8	5	—
Live births	7,389	838	958	366	242	6,502	782	938	398	272
Annual rate per 1,000 persons living	—	19.5	23.7	5	—	—	19.1	26.2	5	—
Stillbirths	205	10	30	—	—	207	27	26	—	—
Rate per 1,000 total births (including stillborn)	—	—	30	—	—	—	27	—	—	—

\* Measles and whooping-cough are not notifiable diseases in Scotland, and the returns are therefore an approximation only.

† Includes primary form for England and Wales, London (administrative county), and Northern Ireland.

‡ Includes puerperal fever for England and Wales and Eire.

§ Owing to evacuation schemes and other movements of population, birth and death rates for Northern Ireland are no longer available.

## Universities and Colleges

### UNIVERSITY OF CAMBRIDGE

The following candidates have been approved at the examinations indicated:

**FINAL M.B.—Part I** (Surgery, Midwifery, and Gynaecology): P. Allebone, J. D. Andrew, T. C. Beard, M. F. Bethell, D. G. Bratherton, G. N. Cooke, G. S. Crockett, J. M. Davis, C. H. de Boer, H. J. Dismorr, E. J. Dowling, J. A. Dudgeon, M. A. Epslein, G. L. Evans, T. P. S. Frew, J. S. R. Golding, B. A. J. C. Gregory, P. F. Haggart, D. W. Hall, F. G. J. Hayhoe, P. R. Headley, E. W. Heining, A. Hill, S. M. Hilton, J. G. Holmes, W. R. Horsfall, E. G. Jenner, E. D. Jones, J. D. S. Knight, W. Kwantes, K. W. Leech, J. R. May, E. T. G. Meade-Waldo, D. J. Morton, J. P. D. Mounsey, E. W. Natioa, G. A. Newsholme, M. Newton, M. B. Paul, G. F. Roberts, J. M. Roberts, P. K. Robinson, F. S. Sinker, C. A. Storr, J. M. Stowers, J. M. Thomas, K. Till, B. H. Vawdrey, M. H. D. Veale, P. R. Westall, D. Wilkes, R. J. Williams, L. Wolman, M. F. T. Yealland, G. Yerbury. **Women:** E. M. Davies, M. H. Jordan.

**Part II** (Principles and Practice of Physic, Pathology and Pharmacology): T. S. L. Beswick, R. H. Boardman, D. G. Bratherton, D. Brazier, A. Comfort, G. S. Crockett, P. D. B. Davies, P. J. De Vescovi, J. A. Dudgeon, D. A. W. Edwards, M. A. Floyer, P. H. Friedlander, J. W. Fullerton, C. R. H. Green, J. A. Harrington, C. E. Hartley, S. M. Hilton, R. F. Hollick, N. S. Hooton, W. R. Horsfall, G. I. C. Ingram, R. E. Irvine, J. Lorber, M. B. Matthews, J. R. May, J. M. Morgan, M. Newton, K. N. V. Palmer, P. B. Philip-Smith, D. A. Pond, P. D. G. Pugh, G. F. Roberts, I. Roche, B. Schofield, J. A. Shiers, J. F. N. Sidebotham, C. A. Storr, J. M. Stowers, M. Symons, R. G. Turner, D. R. D. Vanstone, B. H. Vawdrey, D. G. Veale, P. Venables, S. M. Vine, P. R. Westall, A. P. Wingate, L. Wolman, G. S. Yeob. **Women:** R. C. A. Hunter, R. S. Mitchison, M. M. Tunstall-Behtens.

The Raymond Horton-Smith Prize for the academic year 1942-3 is not awarded.

The annual report of the Director of the Molteno Institute of Biology and Parasitology mentions that Prof. D. Keilin and Drs. E. F. Hartree, R. Hill, T. Mann, H. Laser, and M. F. Perutz have continued their work on the properties and function of intracellular catalysts and oxygen carriers. Dr. P. Tate continued to study the morphology and biology of Dipterous larvae; Dr. Ann Bishop has continued her work on the chemotherapy of avian malaria, on behalf of the Medical Research Council; Dr. Kenneth Smith and Mr. R. Markham have continued their studies on plant viruses, including new viruses attacking medicinal plants; and Dr. W. P. Rogers joined the Institute in October, 1942, to study the physiology and chemotherapy of parasitic nematodes.

### UNIVERSITY OF DURHAM

At a degree ceremony held in the Hall of the Castle at Durham on July 11 the Honorary D.C.L. of the University was conferred upon Dr. Gordon M. Holmes, F.R.S. In the course of his presentation speech the Public Orator recalled that Dr. Gordon Holmes graduated in arts and medicine at Trinity College, Dublin, and after post-graduate study abroad began his lifelong association with the National Hospital for Nervous Diseases, Queen Square. There he followed in the steps of distinguished teachers, and his wards in turn became the meeting-place of students from all parts of the world. To precision and clinical acumen he added an intimate knowledge of the work of others. His pre-eminence as a neurologist was recognized by his election as president of the Second International Congress of Neurology in 1935. He was for many years the indefatigable editor of *Brain*, and he maintained throughout life his interest in general medicine. In the last war Dr. Gordon Holmes was consulting neurologist to the B.E.F. in France; in the present war he served as chief consultant to the E.M.S. The University of Durham honoured him as a great teacher and as the leading representative to-day of the enduring English tradition of clinical neurology.

### UNIVERSITY OF GLASGOW

The degree of M.D. was conferred *in absentia* on Fl. Lieut. Nathan Sher, M.B., Ch.B., on July 22.

### UNIVERSITY OF ABERDEEN

At the Graduation Ceremony on June 29 Reginald Joseph Twort received the degree of M.D., with commendation for his thesis.

### UNIVERSITY OF WALES

#### THE WELSH NATIONAL SCHOOL OF MEDICINE

The following candidates have satisfied the examiners at the examination indicated:

**M.B. B.Ch.—Surgery:** Stuart Brest, L. G. G. Davies, E. M. L. Evans, Julia P. Gibbs, B. E. Heard, D. C. W. Jenkins, D. O. Lewis, Sarah M. Lewis, W. T. Lloyd, B. H. McCracken, Mary W. Owen, R. M. E. Seal, J. E. T. Sobey, IM J. Tanner, J. W. Thomas, H. O. Williams, P. R. J. Williams, Winifred S. Williams.

1 With distinction.

## Letters, Notes, and Answers

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### ANY QUESTIONS?

#### Some Points about Blood Transfusion

**Q.—(1) What is the total amount of blood in the body? (2) How much blood can a person lose in a single bleeding—e.g., from a war or air-raid wound—without loss of life? (3) How many pints of blood or other transfusion fluid can a patient be given with safety at one transfusion?**

**A.**—The total amount of blood in the body is in the neighbourhood of 11 pints. How much blood a person can lose in a single bleeding depends on the rate of loss. It is possible to lose a larger quantity if the loss is slow than if the loss is rapid. Again, there is a very great variation in the response of individuals to the loss of blood, and it would be difficult to give a categorical answer to the question, How much blood can a single person lose without loss of life? Probably if more than half the total blood is lost rapidly the outlook is not good. Again, the answer to the question, How many pints of blood or other transfusion fluid can a patient be given at one transfusion? is difficult. Experience in the present war has shown that no rule can be laid down as to dosage of transfusion fluids, except to say that enough fluid must be given to raise the blood pressure to 100 mm. Hg and maintain it there. In one individual 1 pint may do this. In another it may require 6 pints or more. It is certainly safe to give as much as 2 pints in a quarter of an hour to a shocked individual, and this can then be followed by further amounts at a slower rate. Blood-pressure readings are essential in order to regulate dosage.

The above applies, of course, to traumatic injuries. The question of a sick person is very different. The sick individual often has a cardiovascular system which is already damaged, and in such a case the rapid administration of large quantities of fluid is contra-indicated. Two to three pints given at a rate of 40 drops a minute is the largest amount one would probably give to a sick person who was not actually bleeding at the time of transfusion.

#### Vaginal Pessary

**Q.—In your "Any Questions?" section of July 1 (p. 33) you state that the most efficient and least harmful vaginal pessary is one of phenyl mercuric acetate. Could you give me more information? I should also be glad of advice as to the most satisfactory mechanical contraceptive pessary for a normal vagina.**

**A.**—For further information regarding phenyl mercuric acetate the inquirer should refer to the article mentioned previously (*Lancet*, 1928, 2, 882). Taking into consideration such factors as simplicity of application, harmlessness, and reasonable safety, the most satisfactory mechanical contraceptive for the average case is the Dutch cap vaginal diaphragm or pessary. The sizes vary from 50 to 90 mm. (diameter). It should fit the vaginal vault accurately, and this means a careful choice of size in each case. Moreover, it should not be used alone but in conjunction with a contraceptive paste or jelly. These appliances are supplied by most firms specializing in contraceptives, together with full instructions as to their use. An important point in technique is that the Dutch cap should not be removed until about eight hours after coitus.

#### Parasympathomimetic Drugs

**Q.—When drugs such as carbachol, which act on the parasympathetic nervous system, are administered, is their effect equally great on all those parts supplied with parasympathetic nerves? Is the vasodilatation that follows administration evidence of the existence of vasodilator nerves of parasympathetic origin? Could you state briefly what are the main clinical indications for administering carbachol, and what are the risks attached to its use?**

**A.**—The intestine and the bladder appear to be particularly sensitive to carbachol (doryl); the heart and blood vessels to acetylcholine (methylcholine). These differences in sensitivity of the different parts of the body are not very great and cannot readily



demonstrated in experiments on animals. A clearer difference between these two drugs is that carbachol has nicotine actions on autonomic ganglia and that mechlorin does not have these actions.

In practically all the places in the body where choline esters act there is a nerve which liberates a choline ester locally, but there is a logical necessity for the presence of such a nerve, and in a few places—e.g., the uterus of the young guinea pig—there is no nerve but argument which deduces the presence of a cholinergic nerve from the action of the drug is thus suggestive but not conclusive. The action of the drug gives no indication of the anatomical origin of the nerve. It is true that most cholinergic nerves are in the parasympathetic system, but the sympathetic system also contains many cholinergic nerves, and the nerves to voluntary muscle are cholinergic.

Carbachol has been successfully used in the treatment of postoperative intestinal atony, retention of urine, and glaucoma. In autism, high blood pressure, and arterial spasm the results have been disappointing. Numerous effects of overdosage have been described, including headache, nausea, hiccough, peristaltic waves, oedema, diarrhoea, flushing, asthma, a fall in blood pressure and in pulse rate. Practically all these effects can be stopped with atropine in adequate doses. A valuable review of the actions of choline esters was written by F. R. Fraser in 1938 (*British Medical Journal*, 1, 1249, 1293, and 1349).

### Liquid Paraffin

**Q.**—There is difference of opinion as to the use of liquid paraffin internally. Some authorities describe it as a "non irritating lubricant," while others condemn its use and suggest that it delays absorption of food and vitamins. It has even been suggested that it may cause irritation and lead to malignant changes in the gastro intestinal tract. In twenty years of practice I have yet to confirm any of these pessimistic observations but I should value an authoritative opinion on the subject.

**A.**—There is good evidence that liquid paraffin can interfere with the absorption of carotene, vitamin D, calcium and phosphorus, and vitamin K. This may be specially important during pregnancy, and it has been suggested that whenever mineral oil is used cod liver oil should also be given. It has also been suggested that the deleterious effect of liquid paraffin on absorption can be reduced by giving it as a single dose at night. There is some evidence that the prolonged administration of liquid paraffin may cause gastro intestinal symptoms, accompanied by loss of weight in some cases though I should not contraindicate its use as a laxative when given under medical supervision. It should not be used in salad dressings. There is no evidence that it may lead to malignant changes.

### Hypoproteinaemia

**Q.**—If nutritional oedema is in part the result of hypoproteinaemia, there is presumably a stage where hypoproteinaemia exists before the oedema appears. Can hypoproteinaemia be exactly diagnosed by the biochemist? For this purpose is an estimation of the blood protein of clinical diagnostic value in suspected cases of under nutrition?

**A.**—Hypoproteinaemia or an abnormal lowering of the plasma protein level, may be caused by insufficient protein intake due to undernutrition, faulty digestion of protein, inability to synthesize protein from amino-acids due to liver dysfunction, malignant disease, bowel obstruction, and increased protein loss through urapuration, ascites, nephrosis, burns, external gastro-intestinal fistulae, and haemorrhage.

Hypoproteinaemia can be diagnosed by estimating the plasma proteins (for methods see *J. Biol. Chem.*, 1936, 113, 167, 1937, 120, 481). The normal range is considered to be within 60 to 75 mg per 100 c.c. Values below 60 mg are usually considered to indicate hypoproteinaemia, although Binkley (*Ann. Surg.*, 1943, 117, 748) puts the figure at 65 mg. Many surgical patients have values between 60 and 45 mg per 100 c.c., and even 30 mg has been recorded in cancer patients and in malnutrition. There are two pitfalls in the interpretation of the figures, a normal value may be found when actually the clinical manifestations of hypoproteinaemia may be present. The first pitfall is the effect of dehydration, which may increase the level of blood protein and so mask a true protein deficiency. The other pitfall is that the total protein (albumin and globulin) may be within normal limits, but the albumin fraction may be depleted. This is because the globulin fraction is sometimes increased, especially in severe infections, so that a fall in the albumin fraction is masked, unless separate estimations of albumin and globulin are carried out. The average figures for the plasma proteins are albumin 4.5%, globulin 2.0%. It is a fall in the plasma albumin that causes the clinical manifestations of hypoproteinaemia, since it is concerned mainly with the maintenance of fluid balance in the blood and tissues. To eliminate these pitfalls a red cell count or haematocrit determination should be carried out to see if there is any dehydration, and separate estimations of albumin and globulin should be made in doubtful cases. Some idea of the protein

deficiency in the tissues can be gained if the plasma albumin and blood volume are known, because for every 1 g of plasma albumin lost, 30 g of protein are lost from the tissues. Thus if the plasma albumin is 3.0 g % (average 4.5 g) and the blood volume is 5 litres, the degree of protein depletion in the body is  $(4.5 - 3.0) \times 5,000 \times 30$  or 2.25 kilos. Such a figure is easily reached

$100 \times 1,000$

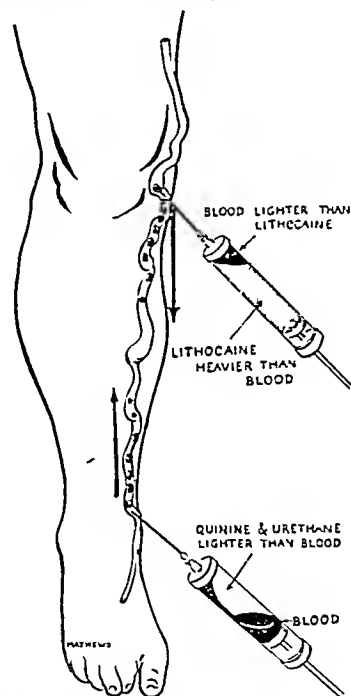
in patients suffering from cancer or starvation.

(For a full discussion of hypoproteinaemia see Elman and Lischer, *Internal Abstract Surg.* 1943, 76, 503.)

### Twin Injections for Varicose Veins

**Q.**—In using twin injections of quinine-urethane and lithium salicylate for varicose veins does it matter in which order these solutions are used and if so why?

**A.**—No, the order does not matter, but the level at which they are injected is significant. Quinine and urethane is lighter than blood and therefore should be injected at the lower end of the length of vein it is desired to thrombose. Lithium salicylate is heavier than blood and is therefore injected at the upper end of the



vein requiring to be sclerosed. The two substances meet in the vein and form a sticky precipitate with a powerful sclerosing action. Quinine diffuses up the vein, the lithocaine gravitates down, they are both sclerosing in their actions individually and their power is enhanced when being used together in this way. I enclose a diagram illustrating this.

### Hay-fever

**Q.**—In the second week of July a girl aged 10 was playing in some long overgrown grass and within half an hour of this developed urticarial patches on the back and considerable oedema of both eyelids, the eyes being almost closed as a result. The conjunctivae were slightly injected. There was no accompanying hay fever. Was this an allergic reaction to Timothy grass pollen? What was the path of entry of the offending protein, and would there be any point in trying to desensitize?

**A.**—Quite a number of children develop ocular symptoms as the first sign of hay fever. They roll in the grass, some of the pollen gets in their eyes and sets up a mild irritation. They then rub their eyes, and their hands are usually covered with pollen from pulling and handling the grass, this sets up an angioneurotic oedema of the eyelids from friction and local absorption. It is quite likely there was some accompanying urticaria of the nasal mucous membrane, but the usual objective symptoms of sneezing and running were not present. This is a pollen sensitivity probably to several of the English grasses (not necessarily Timothy), and the child should be tested with the various English grasses and a course of desensitizing injections given weekly from the first week in January until the first week in June next year.

## Skin Testing by Dust Extract

**Q.**—A book on allergy recommends skin testing by the dust of the asthmatic patient's own house. Please tell me if (and how) this is sterilized or treated before applying to the scratch, and how it is collected.

**A.**—Dust extract is prepared, if possible, from the contents of the vacuum cleaner applied particularly to mattresses and upholstered furniture rather than to carpets and rugs, as ordinary street dust is relatively inert. The dust is first defatted with ether, and each 25 g. of the dried defatted dust is covered with 100 ml. of Coca's solution (an antiseptic specially buffered saline solution, pH 7.0) and allowed to stand for 24 hours. The solution is filtered first through paper to clear it; and then through a Seitz filter to render it bacterium-free, as heat sterilization would tend to destroy its allergic properties. For a scratch test the resulting fluid may be used, but for intradermal testing it should be diluted 1:100. Coca's solution is used as a control.

## Motility of Spermatozoa

**Q.**—A man aged 38, married 10 years, is anxious to have children. His wife is aged 36. Both have recently been examined by a competent gynaecologist and urologist respectively. The spermatozoa of the husband were found to be non-motile, and therefore presumably dead. The patient was advised to have injections of chorionic gonadotrophin and of follicle-stimulating hormone. (1) What effect, if any, are these substances likely to have on the non-motile spermatozoa? (2) If the effect of the hormones is to cause increased motility, will this persist as a permanent feature, or will retrogression take place after stopping the injections? (3) Should he have his wife with him while undergoing the treatment? (4) Can I give him any guarantee that the treatment will be successful?

**A.**—The absence of motility in a specimen which has not been obtained in the consulting-room without contact with rubber, and which has not been examined immediately, is of questionable significance. On several occasions I have found motile spermatozoa on direct examination in patients who believed their spermatozoa to be non-motile as the result of a laboratory report on a transported specimen, even when transferred from a condom to a glass tube. Non-motility by itself is rarely present in the absence of other abnormal features. For the purpose of answering this question, I will assume that the number of spermatozoa was considerably reduced, and that there were many pathologically shaped, as well as a high percentage of non-motile, spermatozoa. Theoretically (1) chorionic gonadotrophins should stimulate interstitial cells, whereas (2) follicle-stimulating hormone, obtained from pregnant mares' serum, should stimulate seminiferous tubules. In actual practice the first appears to work in this respect in cases of hypogonadism secondary to pituitary hypofunction, and successful results are manifested by the return of libido and erections. As regards the second, there is little or no evidence that these gonadotrophins affect the seminiferous tubules in man, or appreciably influence the character of the spermatic fluid and its contents. Certainly any effects obtained by gonadotrophic stimuli tend to retrogression after stopping the therapy. (3) As to the presence of the wife, obviously this is a necessary link in any therapy designed to produce pregnancy, but coitus is not essential for a gonadotrophic stimulus to be effective. (4) From what has been written above, it is obvious that no guarantee can be given as to the success of the treatment.

## Brittle Nails after Gastrectomy

**Q.**—What are the cause and treatment of brittle finger-nails with many longitudinal cracks? The patient, a woman of 58, had a partial gastrectomy 10 years ago, and another gastrectomy for recurrent anastomotic ulcer 3 years ago; so that only a small portion of her stomach remains. It is only since this later operation that she has complained of the brittle cracking nails. Her nails are otherwise normal in shape (not spoon-shaped or hollow). She has no indigestion and lives on a normal mixed diet; her health is good. Her blood count is: R.B.C. 5,000,000 per c.mm.; Hb 86%; C.I. 86; W.B.C. 7,600 per c.mm. Differential: polymorphs 63%, lymphocytes 32%, large monocytes 3%, basophils nil, eosinophils 2%. R.B.C. slightly hypochromic; no abnormalities of shape or size; no nucleated R.B.C.

**A.**—Brittle finger-nails are not uncommon in women past middle age, particularly in time of war when additional housework increases the wear and tear on the nails. Moreover, the fat-soluble vitamins are believed to promote the health of the nails, and these principles may be reduced in the wartime diet. It is therefore not certain that the gastrectomy is the sole cause of the brittle nails, though it may well have played the chief part by impairing the absorption of the food. Iron deficiency is unlikely to be a factor, in view of the absence of anaemia and koilonychia, but calcium and fats may be lacking. These faults should be repaired by the two pints of milk a day to which this patient is entitled by her gastrectomy; this puts her into Class I (f) in the schedule of conditions qualifying for priority claims on liquid milk. Another reason why milk should

be beneficial is that the milk protein supplies organic sulphur, which is an important constituent of the nails. Nail-polish, polish-remover, and anti-cuticle solutions should be rigorously barred and a simple cream applied to the nails. Hypothyroidism must not be overlooked.

## LETTERS, NOTES, ETC.

## Stubborn Asthma

**Dr. A. H. DOUTHWAITE** (London) writes: It may be helpful to your correspondent who raised this subject under "Any Questions?" (July 22, p. 135), to receive a suggestion that he try pethidine, 100-mg. subcutaneously, if the measures which have been advocated fail. It has none of the alarming effects of morphine, which is most dangerous in asthma. Status asthmaticus I have found to be promptly terminated by it when continuous adrenaline treatment has failed.

## Artificial Insemination

A correspondent writes: Your reply concerning facilities for artificial insemination in this country (July 8, p. 65) is not strictly accurate. This method of treating sterility has for some time been employed in suitable cases at the Exeter clinic of the Family Planning Association.

## Unusual Ear Conditions

**Dr. S. L. ISAACS** (Merthyr Tydfil) writes: I was interested in the letter of Mr. C. Hamblen-Thomas concerning large perforations due to glycerin of carbolic drops. I have found on numerous occasions that patients are in the habit of warming these drops by placing the bottle with the cork removed in about half a cupful of hot water, with the result that after standing in this position the vapour over and above the exposed glycerin acid carbolic is quickly absorbed by the glycerin (glycerin, of course, being very hygroscopic), with the obvious result that a caustic effect is produced by the addition of the water to the glycerin acid carbolic.

## Clinical View of Shock

**Dr. W. W. WALTHER** (Queen Mary's Hospital for the East End) writes: Dr. Horace Hill (July 22, p. 126) should think again. The symptoms of shock are not identical with those occurring after the injection of histamine. As Mr. Zachary Cope points out, "the skin is usually cold and pale or cyanotic," and there is no flushing as shown by histamine.

## High Birth Weights

**Fl. Licut, K. M. Fox, R.A.F.**, writes from India: Further to the question on high birth weights in your issue of April 8 (p. 510), which has just arrived in this country, it might interest your correspondent to know that in the summer of 1938 I was called in to attend a patient by a midwife who had made a provisional diagnosis of locked twins. However, bimanual examination soon showed that there were triplets, not twins, with the leading member of the trio presenting a large head at the os. Under anaesthesia the patient was delivered of triplets, the first two each weighing 6½ lb., and the third one a mere 5½ lb., total weight 18½ lb. Each child suckled the breast and made uneventful progress.

## Trichomonas and Vaginal Discharge

**Dr. W. N. MASCALL** (acting director, L.C.C. (Whitechapel) Clinic) writes: I read in the *Journal* of July 22 under the heading "Vaginal Discharge after Hysterectomy" on page 135 the following sentence: "If both ovaries were removed it is possible that a trichomonas infection has been lighted up." I would like to point out that trichomonas infestation of the vagina is extremely rare either before puberty or after the menopause, whether this is natural or artificial. The average pH of the vagina is 7 at these times owing to the low glycogen content of the vaginal epithelium. The presence of glycogen is essential for the survival of the trichomonads, and it is believed the ovarian activity is essential for maintaining the necessary level in the vaginal epithelium. In adults the production of lactic acid from the glycogen by the action of Döderlein's bacillus maintains the vaginal acidity at pH 5 to 6. At this degree of acidity the *Trichomonas vaginalis* flourishes.

## Offers of Hospitality for Doctors' Children

The following further offers to accommodate the children of doctors practising in dangerous areas have been received. **Dr. F.** who practises in a rural area in Dorset, would take one child, and suggests that a girl between the ages of 3 and 5 would be best as he himself has a daughter of 4. There are no educational facilities in the district apart from the local elementary school. **Dr. G.** offers hospitality in the Isle of Man to a mother and child or to two children. If the former, help in the house would be expected, but there would be no financial expense except the cost of the journey. Any readers interested in these offers may communicate with the Secretary at B.M.A. House, Tavistock Square, W.C.1.

# BRITISH MEDICAL JOURNAL

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## THE NUTRITIONAL STATUS OF CAMBRIDGE SCHOOL-CHILDREN

By

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A survey of over 1100 Cambridge children was conducted in Jan. and Feb., 1942, and the majority were re-examined a year later. The purpose of the investigation was fourfold: first to determine nutritional trends during the war by repeated examinations of the children, secondly, to see whether vitamin supplements would affect the children in any detectable way, thirdly, to examine the possible interrelation of the various physical and mental attributes of the children, and, fourthly, within the limited scope possible in an investigation which was primarily nutritional, to determine the relation between social conditions and the physical state of the children.

The children were between 4 and 11 years of age, attending elementary schools. There were altogether about 7,500 children attending these schools in Cambridge, of whom some 6,000 were between 4 and 11 years old, the children included in this investigation were thus about 15% of the total or nearly 20% of the age group 4-11. Of those between 4 and 10 years, approximately half were from a school in a fairly poor district (junior school A) and the others from a school in a comparatively well-to-do district (junior school B), the 11-year-old children were from a senior elementary school in the same better-class district as junior school B.

Although the senior school and the junior school B were so close to each other, the children attending them were not exactly comparable. The senior school received children from a rather wider area than the junior school, some of its pupils had attended the latter, but many had attended schools from slightly poorer though neighbouring districts. Moreover, the children at the senior school were a selected group in the sense that they were children from the junior schools who had not gone on to a central, secondary, or public school. This selection of children for higher education depended partly on the results of a scholarship examination held when the children were aged 10 or 11, and partly on the financial circumstances of the family. Some children, usually of poor families, did not avail themselves of the scholarships although they had reached the requisite standard at the examination, on the other hand, several of the children were sent to one of the higher schools by parents who could afford to do so, even though their children had not been awarded a scholarship.

Although, therefore, we may legitimately compare the children from the two junior schools, those from the senior school fall into a rather special category, and the findings which are recorded here must be viewed in the light of the selection to which they have been subjected.

### The Investigations Undertaken

The procedure consisted of measurement of the height and weight, clinical examination, especially for signs of nutritional deficiency, examination of the gums and teeth, determination of haemoglobin, measurement of physical strength by the grip dynamometer. Additional data were obtained with the older children. Measurements of visual acuity, examination of the fundus oculi, slit lamp examination of the eyes, and measurement of intelligence and educational attainment were carried out in children of 8 years and over, and dark adaptation was determined in children of 11 years. The dark adaptation

findings are described elsewhere (Robertson and Yudkin, 1944). The results of the clinical and dental examinations, which were undertaken by the School Medical Officer and the School Dental Officer and the results of the mental tests will be published later.

Since the first examination half of the children at each school have daily been receiving pellets containing 5,000 i.u. vitamin A, 1 mg. vitamin B<sub>1</sub>, 25 mg. vitamin C, and 500 i.u. vitamin D so that, allowing for holidays and possible absences from school, the pellets supplied roughly half the daily requirements of these substances. The other half of the children have been given control pellets of similar size and taste but different in colour\*. Neither the teachers nor the parents were aware that half of the pellets were devoid of vitamins. Records of absences from school of illness, and of general behaviour are being kept by the teachers.

At the second examination some further studies were made on about 200 of the oldest children. These tests were carried out in order to see if it could be confirmed that vitamin supplements, as has been reported, result in improved physiological performance, they have been recorded elsewhere (Jenkins and Yudkin, 1943).

Unless otherwise stated, all the results described in this paper refer to the first examination, carried out early in 1942.

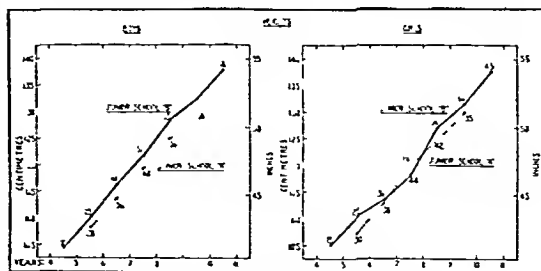


FIG 1—Height of Cambridge school-children comparison of good and 'poor' school

(a) Height and Weight.—The children were weighed completely stripped except for shorts or knickers. Their average heights and weights were higher than those reported for most other areas or the country, they are similar, for example, to the figures for 1938 for London school children, which are said to be above average for the country generally† (Benjamin, 1943).

\* The pellets were generously manufactured to my specifications and given by Messrs. British Drug Houses Ltd.

† The average weights of the Cambridge children were actually very slightly lower than those recorded for the London children, if, however, one allows for the fact that the London children were weighed in their ordinary indoor clothing, the weights are slightly higher.

Nevertheless the children from the poorer junior school A were about  $\frac{3}{4}$  in. shorter and  $2\frac{1}{2}$  lb. lighter than those from junior school B (Figs. 1 and 2). The average heights and weights for the children of the senior school (age 11+) were as follows. Height: boys (90) 53.8 in.; girls (98) 56.0 in. Weight: boys (83) 73.8 lb.; girls (98) 76.3 lb.

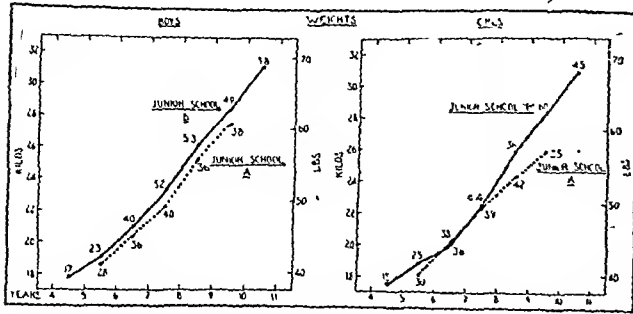


FIG. 2.—Weight of Cambridge school-children: comparison of "good" and "poor" school.

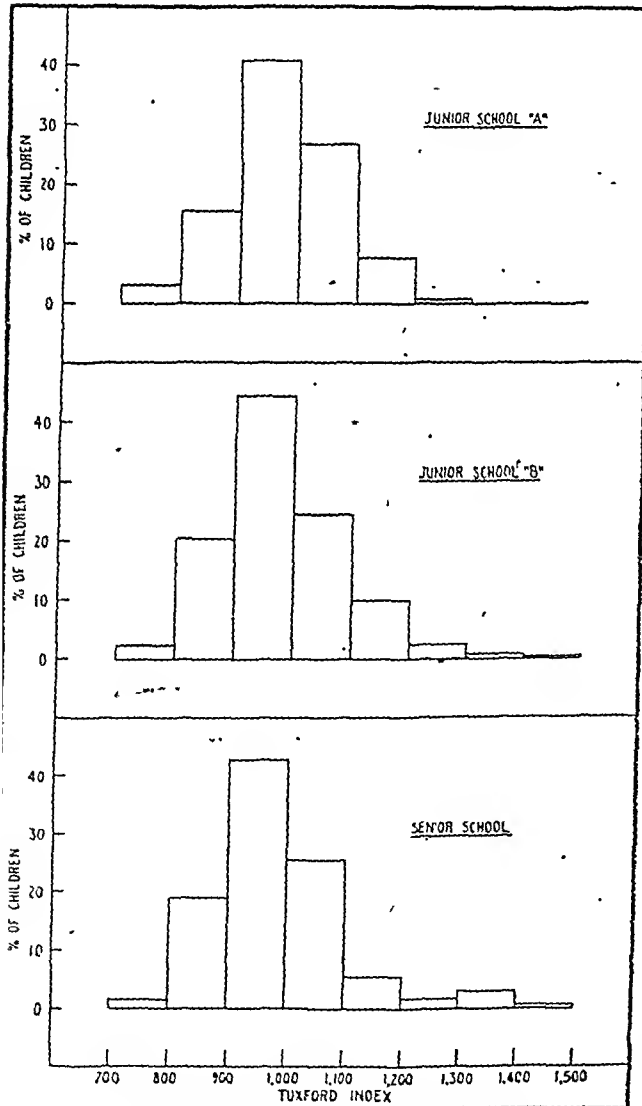


FIG. 3.—The Tuxford indices of the school-children.

Many workers have attempted to express the nutritional status of a child by an index which is usually derived from combination of two or more anthropometric measurements. The most frequently used of these are derived from formulae involving the height and weight of the child. By testing a number of such formulae Huws Jones (1938) decided that the

most reliable is the Tuxford index. In its original form (Tuxford, 1917) the index is:

$$\text{Boys: } \frac{W}{H} \times \frac{(381 - \text{age in months})}{54}$$

$$\text{Girls: } \frac{W}{H} \times \frac{(354 - \text{age in months})}{48}$$

More recently, Tuxford (1942) has revised the formula so that it now becomes:

$$\text{Boys: } \frac{W}{H} \times \frac{(335 - \text{age in months})}{48}$$

$$\text{Girls: } \frac{W}{H} \times \frac{(308 - \text{age in months})}{42}$$

This latest formula is based on the figures for London school children of 1938, which, as mentioned above, are very similar to those of our Cambridge children.

In general, such weight-for-height formulae indicate whether a child is heavy enough for his height—i.e., is well enough "covered." Now, it is well known that slight but long-continued malnutrition affects growth in height as well as in weight, and it might be thought that the retardation of both might possibly be such as to lead to no change in a weight-for-height index. This hypothesis is supported by the findings with the Cambridge school-children. Although, compared with the children from the better-class school, those from the poorer school are of inferior nutritional status, as shown by their heights, weights, and other attributes (see below), the Tuxford indices of the children of both these schools are exactly similar (Fig. 3; this includes the distribution of the indices for the senior school).

(b) *Haemoglobin*.—The haemoglobin was estimated on blood obtained from pricking the left thumb. The estimations in 1942 were carried out by using a Dare haemoglobinometer, which, through the kindness of Dr. Lucy Wills, I was able to calibrate against a standard Haldane apparatus. In 1943 the more satisfactory alkaline haematin method of King was used. Very little change in haemoglobin levels was found during the year (see below). The results shown in Fig. 4 are

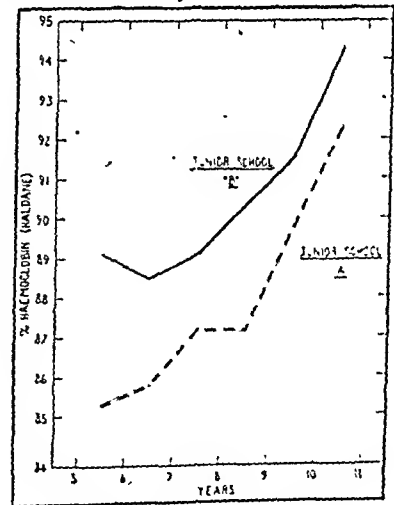


FIG. 4.—The haemoglobin readings.

those obtained in 1943, using the better technique. The average haemoglobin value of the school-children was 91% (Haldane). This is much higher than that found by Wills *et al.* (1942) for London school-children and by Davidson and co-workers (1942, 1943) for Edinburgh school-children. Both groups of investigators reported an average haemoglobin level of 80-82% in children examined in 1942. As with heights and weights, children from the poorer junior school A showed lower readings (by about 2%) than those from junior school B (Fig. 4). For children of the senior school the average haemoglobin level was 92.2%. There was no difference in haemoglobin between the boys and the girls.

(c) *Dynamometer*.—The strength of grip of the right hand was measured with a hand dynamometer. The boys, as would

be expected, had a stronger grip than the girls. Once again the children from the better-class school were superior to those from the poorer school, and this was seen both in the boys and in the girls (Table I; Fig. 5).

TABLE I.—Dynamometer Readings of Cambridge School-children

Age	Average Grip in Kilogrammes					
	Junior School A		Junior School B		Senior School	
	No.	Dyn. kilo.	No.	Dyn. kilo.	No.	Dyn. kilo.
Boys						
4+	6	8.7	18	10.0		
5+	32	11.1	23	11.7		
6+	32	13.0	43	13.9		
7+	43	15.5	38	17.8		
8+	34	18.6	52	19.5		
9+	38	19.7	49	21.2		
10+	14	19.8	54	24.9		
11+					55	24.6
Girls						
4+	5	8.6	15	8.5		
5+	30	9.8	29	10.4		
6+	36	11.1	36	13.4		
7+	35	14.2	44	15.3		
8+	38	16.9	39	17.5		
9+	40	17.8	54	19.4		
10+			42	21.7		
11+					95	22.0

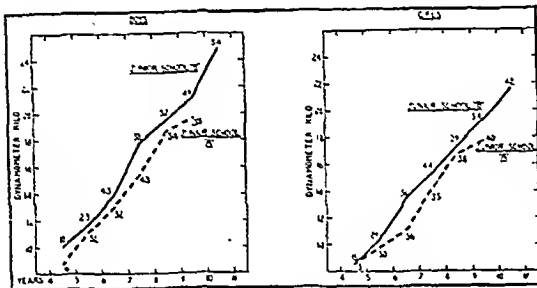


FIG. 5.—Dynamometer recordings of the strength of grip.

(d) *Slit-lamp Examination of the Eyes.*—The results of the examination of the eyes with the slit-lamp microscope have been described in a previous publication (Kodicek and Yudkin, 1942).

#### Changes between 1942 and 1943

In order to see whether the fourth year of the war had any appreciable effect on the condition of the Cambridge children, their physical measurements at the second examination were compared with those of the same age groups examined a year previously; for example, the average weight for 7-year-old children examined in 1943 has been compared with that of 7-year-old children seen in 1942. No significant difference was found in the dynamometer readings (Table II), but the average heights and weights of children in 1943 were greater than those of children of the same age a year ago (Tables III and IV). The average height of boys and girls of junior

TABLE II.—Dynamometer Readings of Cambridge School-children. Comparison of Children of 1942 and 1943

Age	Average Grip in Kilogrammes			
	Boys		Girls	
	1942	1943	1942	1943
Junior School A				
6	13.0	13.1	11.1	13.7
7	15.5	15.6	14.2	14.6
8	18.6	18.0	16.9	16.2
Junior School B				
5	11.7	13.2	10.4	10.6
6	13.9	14.7	13.4	13.4
7	17.8	17.9	15.3	15.1
8	19.5	20.1	17.5	18.1
9	21.2	21.1	19.4	17.7
10	24.9	24.3	21.7	20.8

TABLE III.—Height of Cambridge School-children. Comparison of Children of 1942 and 1943

Age	Average Height in Inches			
	Boys		Girls	
	1942	1943	1942	1943
Junior School A				
5	42.6	43.6	42.2	44.7
6	44.7	45.0	44.4	45.4
7	47.0	47.0	47.4	46.7
8	49.3	50.5	49.1	50.0
9	51.4	51.4	51.1	51.3
10	51.6	52.6	51.9	54.1
Junior School B				
5	43.5	43.9	43.7	44.0
6	45.8	46.2	44.7	45.5
7	48.0	48.2	46.6	47.6
8	50.6	50.5	50.0	50.2
9	52.1	52.5	51.8	52.5
10	54.3	54.4	54.1	54.2

TABLE IV.—Weight of Cambridge School-children. Comparison of Children of 1942 and 1943

Age	Average Weight in Pounds			
	Boys		Girls	
	1942	1943	1942	1943
Junior School A				
5	40.9	41.7	39.8	44.3
6	44.9	44.5	44.4	44.3
7	48.8	50.0	49.3	49.4
8	55.4	54.9	53.5	55.6
9	60.5	63.7	57.0	58.6
10	61.8	65.5	62.9	67.5
Junior School B				
5	42.0	43.7	41.6	43.2
6	46.2	47.6	44.2	47.7
7	51.3	51.4	49.7	50.3
8	57.6	58.4	57.0	56.0
9	62.7	63.1	62.5	63.3
10	68.4	67.0	68.0	71.4

school A in 1943 was about 0.6 in. more than in 1942; in the better-class junior school B it was about 0.3 in. The difference in weight was about 1½ lb. in junior school A; in junior school B there was no appreciable change in weight in the boys, but an increase of just over 1 lb. in the girls. The haemoglobin levels were about 1% higher; since, however, the estimations in 1942 and 1943 were carried out with different techniques it would be unwise to attach any great significance to the comparison of the values at the two examinations.

It is evident that, far from any adverse effect being apparent during the fourth year of the war, there was in fact an improvement in physique. There has been in general a gradual increase of height and weight of children since the beginning of the century, and that this increase is still observed suggests that the present nutrition of at least this group of children is being satisfactorily maintained. The fact that the increases in height and weight were greater in the poorer-class school is also a matter for satisfaction, indicating as it does that the differences between the nutritional status of the children of the two schools are being minimized.

#### Effect of Multiple Vitamin Preparations on School-children

Apart from the slit-lamp examination, all the examinations of the Cambridge school-children have been repeated after one year's feeding with the vitamin preparation. In addition, the records of the school-teachers were analysed, the opinions of the parents regarding the progress of their children were obtained, and additional examinations were made with a view to determining physiological function and the response to the vitamin C saturation test.

*Physique.*—No difference was detected in the gain in weight or height, in haemoglobin, or in strength of grip between the children receiving the vitamin pellets and those receiving control pellets.

*Dark-adaptation.*—There was no alteration in the dark-adaptation (final rod threshold) after the ingestion of the vitamin supplements (see also Robertson and Yudkin, 1944).

*Illness.*—The records of absences kept by the teachers have been analysed so as to give so far as is possible an idea of the relative



incidence of the major groups of illness. Since, however, the only difference was seen in those illnesses classed as respiratory (colds, coughs, bronchitis, influenza) I have for simplicity given in Table V the incidence and duration of respiratory illness only on the one hand and of all other illnesses on the other. I have also included absences due to causes other than illness. It will be seen that the "vitamin" children in both the junior schools were less often away because of colds, and on the average for a fewer number of days per illness, than the control children. This difference was not seen

The higher proportion of "vitamin" children in the senior school whose behaviour, according to the teachers, had improved is no statistically significant. On the other hand, the difference in both junior schools is significant.

In both the teachers' and the parents' records the high proportion of children who had apparently been improved by the control pellets is noteworthy, and once again stresses the importance of adequate controls in attempting to assess the value of vitamins in affecting behaviour and general health. It is perhaps worth repeating that

TABLE V.—Absences from School of Cambridge School-children

	Respiratory Illnesses			Other Illnesses			Other Absences		
	Absences per Child	Days Away per Child	Days Away per Absence	Absences per Child	Days Away per Child	Days Away per Absence	Absences per Child	Days Away per Child	Days Away per Absence
Junior School A									
Vitamin group .. .. .	0.74	2.73	3.69	3.11	12.18	3.91	1.47	2.83	1.92
Control group .. .. .	0.79	3.54	4.45	3.14	12.83	4.10	1.35	2.58	1.91
Difference in favour of vitamin group	0.05	0.81	0.76	0.03	0.70	0.19	-0.12	-0.25	-0.01
Junior School B									
Vitamin group .. .. .	1.37	4.87	3.40	1.81	12.65	7.00	1.09	3.05	2.80
Control group .. .. .	1.67	6.86	4.01	1.91	11.00	5.76	1.07	2.78	2.60
Difference in favour of vitamin group	0.30*	1.99*	0.61†	0.10	-1.65	-1.24	-0.02	-0.27	-0.20
Senior School									
Vitamin group .. .. .	0.91	3.31	3.61	1.75	4.82	2.75	2.47	5.52	2.23
Control group .. .. .	0.95	3.40	3.58	1.52	5.78	3.80	2.20	3.91	1.78
Difference in favour of vitamin group	0.04	0.09	-0.03	-0.23	0.96	1.05	-0.27	-1.61	-0.45

\* Significant difference. † Nearly significant difference.

in the older children of the senior school. In junior school B the difference in both incidence and duration of colds was statistically significant. The difference in the number of children at this school who had no colds—76 of the 217 "vitamin" children and 55 of the 212 "control" children—was also statistically significant. In junior school A the differences were not statistically significant, but this may be due to the fact that the records of the teachers in this poorer school were not so well kept as in junior school B. For example, the average attendance during the year, according to the official records of the local education authorities, was slightly better at junior school B (90% attendance) than at junior school A (89%); yet the absences recorded by the teachers were appreciably fewer at the latter.

**Behaviour.**—Both the parents and the teachers were asked for their opinion regarding the children's general well-being and behaviour, the former six months after the beginning of the experiment and the teachers throughout the year. The parents were asked to state whether appetite, sleep, nervousness, and tiredness had improved, deteriorated, or remained unaltered. If we consider only those children in whom improvement was recorded for at least two of the four items mentioned, then there was in each school a slightly

neither the teachers nor the parents were aware that the pellets given to half of the children were devoid of vitamins.

**Physiological Function.**—Following a report by Harper *et al.* (1943) that a short period of feeding with vitamin supplements improved the physiological function of a group of cadets, some of the older children were tested to see whether a similar effect could be observed. The four tests—vital capacity, breath-holding, endurance (R.A.F. 40 mm. mercury test), and the resting heart rate— which the Manchester workers claim were affected were carried out on 178 children in March, 1943; that is, after one year of feeding with vitamin supplements. No difference was observed between the "vitamin" children and the controls (see Jenkins and Yudkin, 1943).

**Vitamin C Saturation.**—Senior-school boys were tested by the method of Harris and Abbasy (1937). In this method, which is modified from Harris and Ray (1933), daily doses of vitamin C equivalent to 70 mg. per stone body-weight are given at about 10.30 a.m. and the urine is for analysis collected between 2 and 4.30 p.m. The dosing and the urine collection are repeated each day for five days. An excretion of 50 mg. or more in the specimen of urine is taken to indicate saturation.

Altogether, 109 senior-school boys were investigated, of whom 22 were 11 and the remainder 12 years old. Since some of the boys were absent during the week of the test, complete records were obtained on only 95 subjects. Of these, 45 had been taking the vitamin pellets and 50 the control pellets. The average number of days to reach saturation was 1.84 in the vitamin group and 2.59 in the control group. The proportion of boys reaching saturation on each of the five days is shown in Fig. 6.

Dietary vitamin C tends to be lowest in spring and early summer, when green vegetables are difficult to obtain (Harris and Olliver, 1943). The fact that the control group was saturated in as short a time as 2½ days (average) indicates that the intake of vitamin C of these children was higher than that of other groups of children studied in the spring during the war (see, for example, Harris, 1942). This is no doubt associated with the fact that green vegetables were unusually plentiful during the winter 1942-3.

### Discussion

Differences in height and weight have often been reported in children from different classes; thus, children from public schools are heavier and taller at a given age than children from elementary schools. But that differences in height and weight, and incidentally also in dynamometer readings, should exist between children of different elementary schools in the same town seems worthy of note, especially in a town like Cambridge. Cambridge is comparatively prosperous, and one would certainly not regard it as a town in which to observe widespread poverty or malnutrition. Severe or even moderate rickets, for example, is rare in Cambridge. And, as we have said, the average height and weight of the children as a whole compare favourably with those of most towns in Britain. That

TABLE VI.—Parents' Impressions of Improvement

School	Vitamin Group			Control Group		
	No. Improved	No. Not Improved	% Improved	No. Improved	No. Not Improved	% Improved
junior school A ..	82	107	44.2	71	102	41.0
junior school B ..	107	152	41.2	86	167	34.0
senior school ..	42	49	46.1	41	53	43.6

greater proportion of improvement in children receiving the vitamins (Table VI). The difference between the vitamin group and the control group is greatest in the children from junior school B. However, even this difference is not significant statistically.

The teachers were asked to record each month their impression of any changes in behaviour such as sociability, concentration, and memory. These records were, however, not kept very consistently, and it was difficult to assess them in any detail. All that has been one, therefore, is to note whether there has been any record of definite and maintained improvement in behaviour during the year (Table VII).

TABLE VII.—Teachers' Impressions of Improvement

School	Vitamin Group			Control Group		
	No. Improved	No. Not Improved	% Improved	No. Improved	No. Not Improved	% Improved
junior school A ..	63	118	35.6	44	128	25.6
junior school B ..	74	129	36.3	54	152	26.2
senior school ..	32	56	36.4	39	49	44.4

the differences are due to economic factors is supported by a study of the relation between nutritional status and family size (Yudkin, 1944a) and by the results of an investigation of children from industrial areas (Yudkin 1944b).

**Limiting Factors in Nutritional Deficiency.**—The absence of effect of vitamin or other nutritional therapy is not necessarily an indication that the diet was completely adequate in these essentials (Yudkin 1943, 1944c). Let us consider the results of

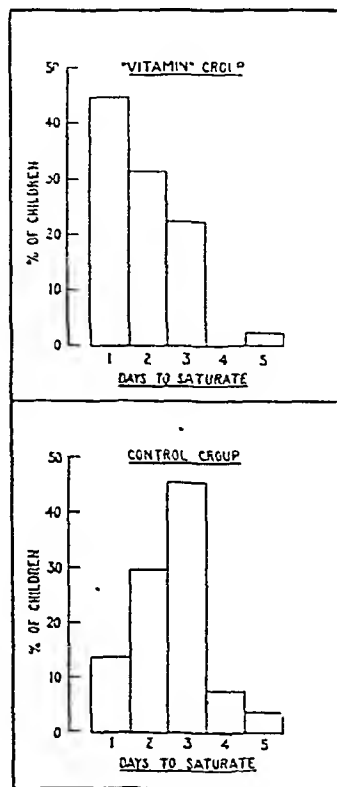


FIG 6—Vitamin C saturation tests

the Cambridge vitamin investigation from this point of view. Apart from the improvement in vitamin C saturation, which is simply an index of past vitamin C intake, the supplements effected an improvement only in respiratory illness and in general behaviour as assessed by the teachers. The fact that no improvement was produced in height, weight, haemoglobin, etc., even in children from the poorer school, does not mean that these are unaffected by vitamin A, B, C, or D. It might mean, of course, that the diets of the children supplied adequate quantities of these components. On the other hand, it might mean that the diets were deficient in other essentials in addition to these vitamins and that one or more of these other essentials was the limiting factor in growth, haemoglobin formation, and so on. An animal showing suboptimal growth on a diet slightly deficient, for example, in protein, calcium, and vitamin A will not be made to grow normally by the administration of only one of them. On the other hand, a similar degree of suboptimal growth caused by deficiency of, say, vitamin A only will be restored to normal by an increase in this factor alone.

#### Summary

The nutritional status of about 1,100 Cambridge school-children, determined in Jan and Feb, 1942, was found to compare favourably with that reported for children in other parts of the country. Nevertheless, in the Cambridge children appreciable differences were seen between those living in a poorer area of the town and those in a better-class area. Compared with the latter, the children from the poorer area were on the average 0.8 in shorter, 2.6 lb lighter, had

2% less haemoglobin, and a grip about 1.25 kg weaker, and showed more changes in conjunctival epithelium.

Most of the children were re-examined in Jan and Feb, 1943. The average heights and weights were slightly greater than for children of the same age examined a year previously; in other respects no change was seen. It may be said, therefore, that no deterioration in the diets of these children had occurred between the third and fourth years of the war.

Since Feb, 1942, half of the children have been receiving vitamin pellets at school, allowing for absences and school holidays, they were thus being given a supplement containing approximately half the daily requirements of vitamins A, B, C, and D. The other half of the children received control pellets containing no vitamins. After a year no effect was seen in the gain in height and weight, haemoglobin, strength of grip, dark-adaptation, resting pulse rate, vital capacity, breath holding time, or endurance measured by the R.A.F. mercury test. There was, however, an improvement in vitamin C saturation, a decrease in the incidence and duration of colds, and an improvement in school behaviour as assessed by the teachers.

It is pointed out that the absence of effect on growth, haemoglobin, etc., cannot be taken to imply that these are not limited by nutritional factors.

This investigation would have been quite impossible without the co-operation of the teachers of the Cambridge schools, which was given so generously and for which I am very grateful. My thanks are due also to Dr J. A. Smyth, medical officer of health for Cambridge, Dr Janet Laidlaw, Mrs Elsie Walton, my wife, and the many friends who have helped so willingly in the collection and analysis of the results.

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## NUTRITION AND SCHOLASTIC ATTAINMENT

BY

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A measure of far reaching significance which was placed on the Statute Book in 1906 was the Education (Provision of Meals) Act. This Act granted powers enabling Education Authorities to provide meals for children in attendance at public elementary schools who were "unable by reason of lack of food to take full advantage of the education provided for them".

The inquiries of Rowntree (1900) in the city of York and the Report of the Interdepartmental Committee on Physical Deterioration (1904) had revealed that many children received quite insufficient quantities of food and that a condition of semi-starvation was rife. School-children were particularly affected and it was recognized that the lack of food produced a condition of mind and body which made educational progress extremely improbable. Thus the ultimate object of the Act was the promotion of education among the poorer sections of the community, and it is probably correct to say, from a study of the antecedents, that the means to attain this end which those who framed the Bill had in mind was the prevention of actual hunger rather than the correction of defective nutrition.

Nowadays conditions have so changed that persons living at a correspondingly low economic level are no longer encountered. On the other hand, an enormous amount of defective nutrition, due principally to a long-continuing deficient intake of essential nutrients, exists among children of school and pre-school age. Reliable evidence of this has accrued during the last few years.

through numerous investigations which need not be cited in this paper.

The question which arises at this juncture is, To what extent, if at all, does malnutrition interfere with the educational progress of a child? In other words, do the various factors which culminate in malnutrition have an adverse effect on the functioning of the brain? This point is of particular interest at the present time when plans are being formulated for reform of the educational system with a view to raising the educational level of the community. If it can be established that malnutrition reacts unfavourably on scholastic progress it is pertinent to ask if the full benefit of educational reform can be achieved without a concurrent and properly organized attempt to reduce further, or eliminate altogether, defective nutrition in school children.

#### Findings in Other Investigations

References in the literature to the effects of malnutrition on educational status are not numerous, but almost without exception they stress the importance of this condition as a cause of scholastic retardation. For example, Baldwin (1922) deduced from his investigations into the physical and mental growth of children that, on the average, the well-grown, well-nourished child is generally superior in its school record to the smaller child of the same age. In another investigation, in which 423 children were examined by group intelligence tests and graded physically, it was shown that 52% of the group with the highest intelligence scores had no physical defects (Sandwick, 1920). When a considerably larger group of 4,558 children was surveyed a clear correlation was established between "intelligence" and the state of the health (Pearson, 1923). A more recent statistical study of the physique of elementary-school children with special reference to their mental ability was recorded by Habakkuk (1926). He examined the records of 3,914 boys and girls aged 7 to 12 years in South Wales, and came to the conclusion that the most backward were the shortest and the most advanced the tallest. A similar attempt to correlate physical development and intelligence was undertaken in Glasgow (Dawson, 1931). The evidence obtained was such that it could be maintained that the taller children were more active mentally. In this connexion it should be stressed that there is general agreement that height is a much better index of the nutritional state than is weight. The investigations of the authors of *Genetic Studies of Genius* (Terman *et al.*, 1926) make it clear that genius and exceptional brilliance are associated with, and are probably dependent upon, a sound physique; and, to a certain extent also, upon the superabundant energy which good health promotes.

Emerson (1922) believes that though malnutrition does not cause mental deficiency it may give rise to mental retardation; while Orr (1941), in the same connexion, said that "the power to use intelligence depends upon the state of the health."

A different approach to the problem was taken by Leighton and Clark (1929). Their Scottish experiment, which involved 1,425 children of from 5 to 13 years of age, demonstrated that those who had been given a regular extra ration of milk were noticeably more alert and boisterous than the control group, which had not had extra milk. The authors stated that teachers remarked on the altered demeanour and behaviour of the boys. A somewhat similar response to an extra ration of milk was described by Corry Mann (1926). The test boys were obviously more fit and were much more high-spirited.

#### Present Investigations

The line of approach to the problem adopted in the present inquiry is based on the view that consistent and sympathetic observation in his class in school enables a teacher to detect quite slight deviations from the normal ability to understand and memorize, as well as permitting him to pick out those children who, without being necessarily less intelligent, are, nevertheless, not so receptive and alert mentally. It will be generally admitted that a teacher who has had considerable experience in the handling of children is usually in a position to make valuable comment on a child who has been observed in class for months or more.

An opportunity presented by a nutrition survey in a group of public elementary schools was utilized to ascertain if any evidence along this line could be secured and if my assessment

of the nutritional state bore any relation to the estimate of the teacher on the response of the child in class. Each teacher chose the pupils who, in his opinion, were the brightest and those who were slow in comparison with the class average. Classes for children under the age of 8 years were excluded from the inquiry, so the selected individuals were of varying age above 8 to school-leaving age. Children who were backward because of inherent mental defect or because of physical disability had been ascertained and provided for earlier, and the children under inquiry were therefore regarded as being of normal intelligence. The broad social and environmental conditions were identical in the case of all children. The nutrition assessment was made on the findings of a clinical examination which followed that recommended by the League of Nations Health Organization (1938), and the classification used is that sponsored by the Board of Education (1934).

#### Results of the Investigation

(a) *Total Figures.*—In Table I the numbers of bright and slow children in each of the four nutrition grades, and the respective percentages, are set out.

TABLE I

Category	Nutrition A (Excellent)		Nutrition B (Normal)		Nutrition C (Slightly Subnormal)		Nutrition D (Bad)	
	No.	%	No.	%	No.	%	No.	%
Bright (355)	100	28.2	235	66.2	20	5.6	0	—
Slow (357)	24	6.7	251	70.3	79	22.1	3	0.9

A total of 712 children (355 bright and 357 slow) were subject to inquiry. Out of 355 bright children 100 (28.2%) were Nutrition A and 20 (5.6%) were Nutrition C. The remaining 235 children were classified as Nutrition Grade B. In the case of the slow children the number whose nutritional status could be passed as Grade A was 24. This was 6.7% of the group. On the other hand, 22.1% (79 children) of these 357 slow children were of slightly subnormal nutrition, and were graded C. In addition, the three cases of bad nutrition (Grade D) were among the mentally slow children. The remainder of the group—that is, 215 children (70.3%)—were of normal nutrition, and were classified as B. It is of interest to note that the relative proportions of A and C children in the bright and slow groups are to all intents and purposes reversed. Over 20% of the bright children and some 6% of the dull children were Nutrition A; whereas Nutrition C cases among the slow children amounted to over 20% of the whole group, and the much smaller figure of 5.6% represents the Nutrition C cases among the children found to be bright.

(b) *Data for Boys and Girls Separately.*—Figures relating to sexes separately were prepared, and some interesting results were obtained. The data are set out in Table II. A total of 583 children (280 boys and 303 girls) from the group considered under (a), above, were reviewed.

TABLE II

Sex	Mental Activity	Nutrition Grades				Totals
		A	B	C	D	
Boys (280)	Bright	No. .. 28	7.2	8	0	103
		% .. 26.0	66.6	7.4	—	172
	Slow	No. .. 12	126	32	2	170
		% .. 7.0	73.2	18.6	1.2	—
Girls (303)	Bright	No. .. 57	125	8	0	190
		% .. 30.0	66.0	4.0	—	113
	Slow	No. .. 6	77	30	0	—
		% .. 5.3	68.1	26.6	—	—

With regard to the relative position of the sexes, 26% of the bright boys were Nutrition A and 7.4% were Nutrition C, whereas 30% of the bright girls were graded A and 4% graded C. Only 7% of the slow boys were included in Nutrition Grade A, and there were 18.6% in Grade C; whereas in the case of the girls 5.3% were Nutrition A, but the much higher proportion of 26.6% were graded C. In other words, of the bright children graded Nutrition A, 26% were boys and 30% were girls; that is, there was a 4% difference in favour of the girls. On the other hand, slow children graded Nutrition C amounted to 18.6% of the boys and to as many as 26.6% of the group of girls.

#### Discussion

A natural assumption from the data recorded above is that a correlation exists between nutrition and scholastic attainment. The evidence would appear also to indicate that a condition of

subnormal nutrition can constitute a serious handicap to the educational advancement of a child. A further inference from the data is that the mental activity of girls is even more closely related to their general physical state than is that of boys.

It may be contended that these deductions are not valid, inasmuch as parents of low intelligence not only beget children with a poor mental capacity but, in addition, cannot accord these children proper and sufficient care, with the result that malnutrition arises. In this way, it could be argued, the children who are mentally slow and who also suffer from malnutrition can be accounted for. Though this sequence is undoubtedly of not infrequent occurrence, yet only a comparatively small proportion of the cases in any one area could be accounted for on this basis. Moreover, the investigations of Corry Mann (already cited) are particularly significant in this connexion, in that he found that the boys in the group receiving supplementary milk, whose nutritional condition was thereby raised above that of the other groups, were more high-spirited and active. The same observation has been made in school dining centres provided for children with defective nutrition. The inference is that the malnourished child who has been labelled "slow" may, as a result of corrected dietetics and improved nutrition, attain to an ability to use his mental powers equivalent to that enjoyed by his better-nourished school-mate.

It is evident that further light on this aspect of the nutrition of children will be of value particularly to those interested in educational advancement.

#### Summary

The nutrition grades of 355 bright and 357 slow children were investigated. Of the bright children 28.2% were graded Nutrition A and 5.6% graded Nutrition C. Only 6% of the slow children were Grade A, while 22.1% were graded Nutrition C. The 3 instances of Grade D children were found in the slow group.

Of this group 583 members were arranged according to sex. Of the bright boys 26% were graded A and 7.4% were graded C, the corresponding figures for the girls being 30% and 4% respectively. In the case of the boys who were regarded as slow, 7% were Nutrition A and 18.6% were Nutrition C, whereas 5.3% of the girls in the slow category were Nutrition A and 26.6% were Nutrition C.

I am indebted to Dr John Stokoe, whose keen interest in matters connected with nutrition was a stimulus to inquiry.

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## KOILONYCHIA AND ITS RECOVERY IN CASES OF THYROTOXICOSIS

BY

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So much emphasis has in recent years been thrown upon the relation of koilonychia to the anaemias, and especially to hypochromic anaemia, that it may be of value to record two cases and to comment that in neither was there any reason for supposing iron metabolism to be at fault.

#### Case I

Mrs A., aged 69, was admitted to hospital on May 11, 1943, complaining of nervousness, palpitations, abdominal colic, and loss of weight of two years' duration, and of general tiredness and staring eyes for three months. On examination she was found to be emaciated, nervous, and very excitable. She had diffuse brown

pigmentation of the skin of the neck and of both upper eyelids. The prominence of her eyes was associated with conspicuous lid retraction on both sides—retraction so great that her eyes closed incompletely during sleep. The left cornea had a small abrasion. The thyroid was firm, both lobes and the isthmus being easily palpable and definitely enlarged. There was no retrosternal dullness. The outstretched hands showed a fine tremor; regular tachycardia of 100 to 110 persisted during the day and declined little at night. The cardiovascular system showed no abnormality apart from the tachycardia, and the other main systems seemed to be normal. The tongue was dry, brick-red, and fissured, but not sore. Her red blood cells numbered 4,800,000 and her haemoglobin was 81%. On admission the hands were persistently cold and blue—an unusual feature in thyrotoxicosis. The nails were brittle, conspicuously spoon-shaped, longitudinally striated, and cracked. She said that they had been in this state for about six months. The skin surrounding the nail, and especially at its base, was dry and scaly, and was encroaching upon the actual nail itself in an irregular manner. The free margin of the nail bed, instead of showing the normal clear-cut line of demarcation, was irregular.

Her stay in hospital was prolonged owing to the development of various complications. Soon after admission an acute respiratory infection was treated successfully with sulphathiazole. At that time the patient was having 30 minims of Lugol's iodine daily, and at the end of the course, which coincided with the end of the respiratory infection, her pulse rate during the day was 80 to 90 and at night 80, with definite diminution of other thyrotoxic signs. During July she developed a large bed-sore and a suppurative parotitis, from which she recovered. Despite these infections her general health improved steadily, and it was noticed at the time that the condition of her nails was altering and that growth was now occurring normally, the scoop being pushed onwards (Fig. 3). The skin around the nails had become more normal and the pulp was more rounded. There was no further cracking of the nails. By August she had gained a stone in weight; her red blood cell count was 5,010,000 and Hb 93%. Her basal metabolic rate was + 61%.

During September she developed another acute respiratory infection, which was treated with sulphathiazole, and also a severe conjunctivitis with corneal ulceration after a short course of thiourea. Nevertheless her general condition continued to improve steadily and her weight was increasing. Her pulse rate was in the region of 80 to 90 both day and night; her basal metabolic rate was + 48%. On Oct. 1 her red cells were 4,690,000 and Hb 84%—values similar to those on admission. The normal growth of her nails continued, and as they grew they soon became perfectly formed and clear-cut at their margins, brittleness being lost (Fig. 4). She had gained nearly 2 stone more in weight.

#### Recovery of Nail Growth in Case I

The nail in Fig. 2 seem shorter than in Fig. 4. This apparent shortening was due to the skin clinging to the base of the nail and being carried onward with it. The extent of this skin encroachment could be ascertained by measuring from the V-shaped crease of skin to the nearest part of the exposed nail in Fig. 4 and transferring this measurement to Fig. 2. This is shown in the outlines of Fig. 1: the nail is at least as high up the finger as the dotted line of the right-hand tracing. It is important to fix this, the growing root of the nail, as accurately as possible if we are to ascertain the time at which growth

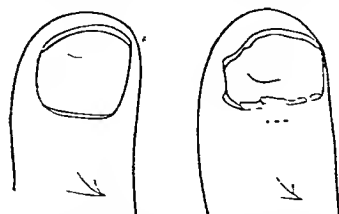


FIG. 1.—Case I. Outline of middle finger on June 21 (left); and July 19 (right), showing the relative position of the proximal edge of the scoop, the root of the nail, and a V-shaped crease in the skin over the distal interphalangeal joint. Used to estimate the date at which formation of deformed nail ceased. Drawings made from Figs. 2 and 3.

changed from normal to abnormal. The position of the proximal margin of the scoop can be fixed relative to a given skin crease in Figs. 2 and 3 and, through this, to each other. In this middle finger it moved onwards by 5 mm. in four weeks; and the rate at which the scoop grew onward in the index finger was the same. In Fig. 2 the growing root of the nail lies about 9 mm. above the proximal margin of the scoop. It

would seem, therefore, that the arrest of abnormal growth must have occurred about seven weeks before Fig. 2 was taken—a date about April 1, or six weeks before the patient entered hospital. It may have been a little more or less. Special inquiry showed that the patient was continuously at home with her family between June, 1942, and May, 1943, and that during



FIG. 2.—Case I, June 21. Fingers 2, 3, and 4 of right hand, showing spoon-shaped nails. Note broken skin near root of nail—dry, and attached to nail and drawn onward by its growth.



FIG. 3.—Case I, July 19. The same fingers, showing growth of well-formed new nail; the scooped nail is growing off.



FIG. 4.—Case I, Nov 15. The same fingers, with well-formed nails.

that period, though ailing, she refused to see a doctor and took no medicine of any kind. No iron was given to her during her stay in hospital. It seems very difficult in these circumstances to associate the koilonychia with an iron deficiency, clearing up, as it would be necessary to suppose, during the end of the period of her home life. Moreover, her blood counts gave no encouragement to this idea.

The case serves to stress the importance of noticing in cases of koilonychia, when first seen, how close to the root of the nail the scoop comes, and the rate of nail growth, in attempting to correlate the scoop with clinical events. The factors bringing about faulty growth are not necessarily present when the deformity is first seen; they may have ceased to operate many weeks previously.

#### Case II

Mrs. B., aged 59, was admitted to hospital on Jan. 25, 1944, showing symptoms and signs of severe thyrotoxicosis. She complained of extreme nervousness for three years, and palpitation, staring eyes, and loss of weight for six months. On examination she was found to be thin, flushed, sweating, and very nervous. Her prominent eyes showed marked lid-retraction, up to 5 mm. of sclerotic being exposed above the pupil and 3 mm. below. Her lids failed to shut during sleep. The thyroid showed a definite firm, even, pulsatile enlargement of the whole gland. The heart was slightly enlarged, and presented a regular tachycardia which decreased during sleep, a soft systolic apical murmur, and a accentuated aortic second sound. Her pulse was conspicuous water-hammer in character, and there was capillary pulsation. The blood pressure was 200/100 mm. Hg. A fine tremor shook the extended hands and all reflexes were brisk. The tongue was unusually fissured, and bright red, but not sore; there were sordes at the corners of the mouth.

The finger-nails were deformed and had been spoon-shaped, thin and brittle for about three months. The nails affected were those of both forefingers and, to a lesser extent, the right middle finger; the remaining nails were thin, brittle, and longitudinally striate but showed no scoop. The skin at the base of the nail was dry and adherent for 2 or 3 mm., producing apparent shortening of the nail as in the last case. The free nail margin was broken, and was irregular in thickness. The obvious concavity of the nail of the index finger extended up to the adherent skin.

Her basal metabolic rate two days after admission was +138 and her blood count showed 5 million red cells and 6,000 white cells which remained constant throughout her two months' stay in hospital. Weekly haemoglobin estimations showed a variation between 90 and 98%. A fractional test meal showed a normal acid curve.

For the first fortnight in hospital the patient was treated with rest in bed only. During this period her pulse rate subsided from 110 to 90 a minute with a slight general improvement. Thiouracil 1 g. three times a day was begun early in February. Five days later she developed severe conjunctivitis, which subsided in eleven days after the change to thiouracil 0.2 g. five times a day. Apart from this complication her general improvement continued steadily. This was shown by her calm behaviour and lack of apprehension, a fall in the pulse rate, and a conspicuous decrease in the exophthalmos and lid-retraction. Her basal metabolic rate decreased in five estimations steadily down to +15 and her weight increased by nearly a stone in two months. Her finger-nails gradually became normal; the brittleness disappeared, they became thicker and more unyielding, the dry-skin at the base of the nail receded, and the scoop gradually grew off.

The dose of thiouracil was reduced, the patient being discharged on April 1, 1944, on 0.2 g. daily.

#### Recovery of Nail Growth in Case II

In this case the nail of the index finger was at first concave over almost its whole surface. Some weeks elapsed before, as the nails began to grow properly, the upper margin of the scoop could be defined clearly. It was marked by staining it with a line of nitric acid, and its rate of onward movement was determined relative to the distal edge of the nail bed. On March 11 the distance was 8 mm., on the 25th it was 6 mm., on April 13 it was 4 mm., and on May 11 the line had just grown off. Thus the growth was regular, and at a rate of about 1 mm. a week. Now, the distance of the nitric acid mark from the root of the nail on March 20 was 6 mm.; and thus it may be calculated that normal growth began weeks earlier—namely, about a week after admission, a little more or less. Close inquiries showed that the patient had used nothing in her household duties, such as washing soda, that could be held to account for the condition of her nails on admission. She had taken no iron before admission, and was given none while in hospital.

#### Discussion

Discussion must be short because our observations on these two cases still leave the cause of koilonychia obscure. A brief inquiry into past records is enough to show that the spoon-shaped nail occurs under distinct circumstances, that it may be

hereditary or acquired, temporary or permanent and that it has been described in conjunction with various factors, local and general, thought to be of possible significance. Among other conditions we find thyrotoxicosis named more than once (Heller, 1927, Rossegger, 1936). curiously, thyroid deficiency has also been blamed (Schonstein, 1929). Reference may be made to the useful general accounts of Heller (1927) Cipollaro (1930), and Rossegger (1936).

The other chief point we desire to stress is that in temporary onychia, attempts to associate the nail change with any particular factor should take into account the abruptness with which the nail growth may lose its abnormality, while the change in the nail, which has been the result of earlier abnormal growth, may continue to be shown for many weeks or perhaps months. Thus it is clear that the presence of a concave surface does not mean that the process responsible for it is still active, indeed, when the concavity is at the distal end of the nail it is probable that the cause has been for a long time in abeyance—a fact to which Toegel (1937) draws attention in his case which followed brief exposure of the nails to benzene.

Our thanks are due to Sir Thomas Lewis for his assistance with these cases, and to Prof. H. P. Himsforth and Dr. Kenneth Harris of University College Hospital, for permission to use the case reports.

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## HISTOLOGICAL EFFECT OF INJECTION OF MEPACRINE (ATEBRIN) DIHYDROCHLORIDE\*

BY

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Recently a note was published (Hawking, 1943) concerning the histological effects produced by the intramuscular or subcutaneous injection of mepacrine methanesulphonate (atebrin musonate). However, the preparation most commonly issued for injection in the Army is the dihydrochloride (atebrine dihydrochloride). An investigation has therefore been made to see whether the effect of the dihydrochloride is significantly different from that of the methanesulphonate, and the opportunity has been taken to compare both of these preparations with quinine dihydrochloride, which is the preparation of quinine most commonly recommended for injection.

A 4% solution of quinine dihydrochloride has a reaction of pH 3.08. A 10% solution of mepacrine methanesulphonate has a reaction of pH 4.0 and one of 5%, pH 4.24. A 3.3% solution of mepacrine dihydrochloride has a reaction of pH 4.40. All these reactions were measured at 17°C. There is consequently no substantial difference in the acidities of the two solutions of mepacrine, and both are somewhat less acid than that of quinine dihydrochloride. The chief physical disadvantage of mepacrine dihydrochloride lies in its lower solubility. The methanesulphonate is soluble in water up to 33%, but the dihydrochloride only up to about 3.3% at 17°C. To obtain a 10% solution the mixture must be cautiously warmed to about 20°C (decomposition occurs on boiling), and then the solution is cooled to 37°C and injected without delay.

## Technique

Mepacrine dihydrochloride (atebrine dihydrochloride, Wm-throps), 43 mg in 0.5 ccm of warm water, or mepacrine methanesulphonate (May and Baker), in equivalent amount (50 mg), was injected intramuscularly into the thigh or loin of rabbits, some injections were also made subcutaneously on the abdomen. Similar injections of quinine dihydrochloride (Howards), 20 mg in 0.5 ccm, were given to other rabbits in the previous work it had been found that the toxic action of 20 mg of quinine was approximately equal to that of 20 mg.

of mepacrine. The animals were killed at suitable intervals (1 to 10 days), the sites of injection were fixed in formalin and studied by the usual histological technique. Altogether mepacrine dihydrochloride was injected into 11 sites intramuscularly and 4 sites subcutaneously, and mepacrine methanesulphonate into 4 sites intramuscularly. Quinine dihydrochloride was injected into 7 sites intramuscularly and 3 sites subcutaneously.

A parallel series of observations were made with rats. 43 mg of mepacrine dihydrochloride in 0.3 ccm of water was injected intramuscularly into the thigh and subcutaneously on the abdomen, respectively, in 8 sites of each type, 5 mg of mepacrine methanesulphonate was injected intramuscularly and subcutaneously into 3 sites of each type, and quinine dihydrochloride 10 mg in 0.3 ccm of water was similarly injected into 8 sites of each kind. The dose of quinine was twice that of the mepacrine, since the therapeutic dose of quinine (0.6 g) is usually at least twice that of mepacrine (0.3 g).

## Experimental Results

**Naked eye Appearances.**—When mepacrine dihydrochloride was injected into the lumbar muscles of rabbits a fusiform lesion was produced about 4 cm in the long axis of the muscle, by 2 by 1 cm. The lesion, on section, was dark red surrounded by a narrow yellow or whitish zone (leucocytes). In the thigh the connective tissues along the sciatic nerve were usually swollen, and often there were haemorrhagic patches in the adjacent muscles, but the appearances were less regular than those in the loin. The thigh is much less suitable than the loin for observing the effects of intramuscular injection, since so many fascial planes are present that the injected material is deposited chiefly in the connective-tissue spaces between the muscles rather than inside the muscles. In the thigh of rats there was occasionally some yellowness and oedema of the connective tissue around the chief vessels and nerves, and in one animal killed after seven days there was contracture of the muscles, but on the whole the macroscopical changes were inconspicuous. The lesions produced by mepacrine methanesulphonate were indistinguishable from those described above and so were those produced by quinine dihydrochloride (apart from the absence of any yellow staining).

When mepacrine dihydrochloride or methanesulphonate was injected subcutaneously it caused great thickening of the skin extending 4 to 9 cm and due to yellow gelatinous oedema of the deep connective tissue, later a hard necrotic scab was formed. With quinine dihydrochloride the swelling was less marked and there was no yellowness.

Since mepacrine is strongly fluorescent some of the animals were examined under ultra-violet light, diffuse yellow fluorescence was seen in the tissues around the site of injection, especially subcutaneously, but the distribution could not be definitely mapped out by this method.

**Microscopical Appearances.**—When mepacrine dihydrochloride was injected into the compact muscles of the loin an area of coagulative necrosis with haemorrhage was produced, as described above. A short distance inside the margin of this area there was a zone of disintegrated leucocytes (seen macroscopically as a yellow band), but the necrosis extended outside this zone, and the demarcation between necrotic and living muscle was initially indistinct. After some days there was a second cellular reaction at the demarcation line, and in 10 days a definite layer of granulation tissue was formed in which were embedded shrunken muscle fibres, a few giant cells, and new collagen. In the looser tissues of the thigh the main reaction occurred in the intermuscular connective tissue, which was initially greatly distended with fluid and infiltrated with polymorphs and mononuclears. Haemorrhages and collections of albuminous exudate were also present, and most of the tissue appeared necrotic. The superficial layers of the adjacent muscles were necrotic to a variable depth and the connective tissue inside the muscle often contained fluid and leucocytes, haemorrhage was sometimes present. After from 3 to 7 days some of the necrotic muscle fibres became calcified, and the necrotic areas were separated from the healthy tissue by a zone of young granulation tissue containing many mononuclear cells. In the thighs of rats the appearances were similar. The lesions caused by mepacrine dihydrochloride were indistinguishable

\* Report to the Malana Committee of the Medical Research Council.



able from those caused by the methanesulphonate, which were described in the previous note and which were confirmed in the present work. The lesions produced by quinine dihydrochloride could not be definitely distinguished from those due to mepacrine; at the margin between the surviving and the swollen coagulated muscle fibres, groups of shrunken basophilic fibres were found, but these also occurred to a less extent in some of the sections of tissue with mepacrine. The necrosis produced in the loin by 20 mg. of quinine was not quite so extensive as that produced by 43 or 50 mg. of mepacrine, but that produced by 10 mg. of quinine in the thigh of rats was not conspicuously greater than that due to 4.3 or 5 mg. of mepacrine.

When mepacrine dihydrochloride or methanesulphonate was injected subcutaneously into rabbits or rats it caused necrosis of the epidermis, subcutaneous layer of muscle, deep connective tissue, and part of the muscle of the abdominal wall. The deep connective tissue was greatly distended with fluid and contained variable numbers of cells; at first these were principally polymorphs, but after a few days mononuclears predominated. By seven days the necrotic area was surrounded by a zone of granulation tissue. With subcutaneous injections of quinine dihydrochloride (20 mg.) the oedema, necrosis, and cell infiltrations were somewhat less extensive than with mepacrine (43 mg.). In rats 10 mg. of quinine caused somewhat less swelling and cell infiltration than 4.3 mg. of mepacrine, but the necrosis was equally extensive.

Pieces of tissue injected with mepacrine were fixed in formalin, cut as frozen sections, and examined on a fluorescence microscope. The necrotic muscle fibres shone bright yellow; connective tissue and the outer coat of blood vessels from the areas of necrosis shone a little; other tissues were hardly visible.

#### Discussion

From the above experiments it is clear that there is no difference in the local toxicity of mepacrine dihydrochloride and that of mepacrine methanesulphonate, although methanesulphonate is more convenient to use owing to its greater solubility. The necrosis caused by mepacrine is indistinguishable in type from that caused by quinine dihydrochloride. The relative amounts of necrosis which will be produced in man by therapeutic injection of the two compounds are difficult to predict from animal experiments, since the size of the lesion is not proportional to the dose. As described above, when given by intramuscular injection 43 mg. of mepacrine caused somewhat more necrosis than 20 mg. of quinine; but the necrosis produced by 4.3 mg. of mepacrine injected into the thigh of rats was not conspicuously less than that produced by 10 mg. of quinine. When injected subcutaneously into rats, 4.3 mg. of mepacrine produced more swelling and cellular reaction than 10 mg. of quinine did, but the necrosis was no more extensive. Since the therapeutic dose of mepacrine by injection is only one-half to one-third that of quinine, it is probable that the necrosis produced by intramuscular injection of mepacrine will be less extensive than that produced by quinine; and this conclusion agrees with the clinical reports reviewed in the previous paper. Nevertheless it is clear that the local damage produced by intramuscular injections of mepacrine is far from negligible.

Mepacrine given by intramuscular injection is rapidly absorbed. As concluded in the previous note, the damage caused is not sufficient to contraindicate its use if the patient's life or health is in danger, but it is great enough to make this method of administration inadvisable if the patient can possibly take the compound by mouth. Intravenous injection of mepacrine has been found in American experience to be dangerous to life, and its use has been condemned. Subcutaneous injection of mepacrine is not recommended under any circumstances; it was included in the present experiments for technical reasons as being a sensitive method of displaying the effect of injected substances upon the tissues.

#### Summary

The histological effect of intramuscular and subcutaneous injection of mepacrine dihydrochloride (atabrine dihydrochloride) in rabbits and rats was compared with those of mepacrine methanesulphonate and of quinine dihydrochloride. Mepacrine dihydrochloride has the

same acidity in solution as the methanesulphonate, but it is less soluble (solubility 1 : 30 at room temperature) and therefore slightly less convenient to use; the local toxicities of the two compounds are indistinguishable one from another. The injection of therapeutic doses of mepacrine produces necrosis of the tissues around the site of injection; this necrosis is identical in type with that produced by the injection of therapeutic doses of quinine dihydrochloride, but it is probably somewhat less extensive.

It is considered that mepacrine dihydrochloride is suitable for administration by intramuscular injection, although it is less convenient than mepacrine methanesulphonate; but this route should not be used if it is practicable to give the compound by mouth. Mepacrine should not be given by subcutaneous or intravenous injection.

Grateful acknowledgments are due to Mr. F. J. Higginson for the histological preparations.

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## STERILIZATION OF THE SKIN BY COLOURLESS FLAVINE (5-AMINO-ACRIDINE)

BY

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AND

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In the *British Medical Journal* of May 18, 1918 (p. 562), one of us (V.B.), in conjunction with Carl Browning, introduced a new antiseptic solution which we named violet-green (sometimes known as "Bonney's blue"), for sterilizing the skin; this, because it was entirely non-irritant, could be applied in strength for many hours without harming the skin. The bacteriological investigations then undertaken showed that, to sterilize the skin completely, the time over which the antiseptic can be applied is even more important than its absolute bactericidal power; or, in other words, more effect is obtained from a bactericide of moderate potency which can be applied for a long time than from one whose potency is of a very high order but which, on account of its effect on the skin, can be applied for only a very short time. Violet-green, however, combined high bactericidal power with non-irritancy and therefore amply filled the bill, and since its introduction it has been extensively used not only in surgery and obstetrics but in dermatology as well. It has, however, been objected against it that it intensely stains the bed-linen of the patient and the hands of the nurses. This is true, particularly when one is unaccustomed to its use. On the other hand, applied to the vagina, the staining is a great advantage when—as, for instance, in total hysterectomy—that canal has to be opened from above, for the deep coloration defines it very clearly.

The recent production of colourless flavine\* (5-amino-acridine) suggested to one of us (V.B.) the making of a solution similar to violet-green, but containing, instead of 1% of equal parts of crystal violet and brilliant green, 1% of colourless flavine, in the same solvent—namely, equal parts of rectified spirit and water. The presence of water appears to be, in general, a necessity for the full development of antiseptic action; and, in connexion with that requirement and the pale yellow powder with which this paper is concerned, an analogy may be drawn between it and another and very homely yellow powder, called mustard, which, pungent and tear-provoking when mixed with water, can yet as a dry powder be placed on the tongue without any taste or discomfort. The spirit is added to counteract the grease of the skin, which checks a purely watery solution from spreading itself and delays absorption.

It should be noted that colourless flavine is not really colourless, but has a pale lemon tint, which just stains sufficiently to show the limits of its application—a very desirable property in any antiseptic used for the skin. To make the solution, the flavine is first dissolved in the water and then the spirit is added.

**Method of Application.**—The skin of the operation area, having undergone the usual cleansing, is first painted with the solution and then covered with a piece of double-thickness lint.

\* Made by Glaxo Laboratories, Ltd.

soaked to capacity in the solution; this in turn is covered by a sheet of waterproof material and fixed on by a binder or bandage. The compress is applied 6 hours before the operation, and is removed on the operating table.

**Bacteriological Tests.**—These were carried out on 38 consecutive cases prepared for abdominal section. In each case, when the compress was removed, a platinum loop was made to streak the prepared skin surface and was then streaked on the surface of human blood-agar in a Petri dish. Four such streaks were made from different parts of the prepared area and were streaked on four different areas of the plate. As a control, four similar streaks were taken from an area of skin just outside the prepared area and streaked on the surface of another blood-agar plate. Multiple streaks enable a judgment to be made between growth indicating permanent diffuse infection and growth indicating chance contamination or loop-holes in the preparation.

### Results

**Prepared Areas.**—Of the 38 plates from the 38 prepared areas, 29 showed no growth at the end of four days' incubation and 9 showed growth. Of these 9, one exhibited it on 3 of the 4 streaks, four on 2 of the 4 streaks, and four on 1 streak only. No plate had growth on all 4 streaks. Moreover, the bacterial colonies were few and isolated, except on the plate which showed growth on 3 streaks, and in this case there were other reasons to believe that the preparation had not been carried out thoroughly. As regards the growth on the other plates, these too were probably due to imperfect preparation, though in lesser degree. The effect of the antiseptic, however, is best displayed by comparing the number of sterile streaks with those not sterile; for of the total 152 streaks made from the prepared areas only 15 showed growth. From these the following organisms were identified: *Staph. aureus haemolyticus*, from 9 streaks; non-haemolytic *Staph. aureus*, from 1 streak; and *Staph. albus*, from 9 streaks.

**Controls from Unprepared Areas.**—All the 38 plates from the 38 unprepared areas showed growth at the end of four days' incubation. Growth occurred on all four streaks in 36 of them, and on three out of four streaks in 2. Counting the number of streaks instead of the number of plates, it is seen that of the 152 streaks made from the unprepared areas 150 showed growth and only 2 remained sterile. The growths in most cases were profuse, and the following organisms were identified: *Staph. aureus haemolyticus*, from 118 streaks; non-haemolytic *Staph. aureus*, from 10 streaks; *Staph. albus haemolyticus*, from 17 streaks; non-haemolytic *Staph. albus*, from 86 streaks; *Str. haemolyticus*, from 1 streak; non-haemolytic streptococcus, from 16 streaks; *Staph. citreus*, from 4 streaks; and diphtheroid organisms, from 30 streaks.

In addition to these tests one of us (S.A.), in order to ascertain the depth to which the antiseptic effect reached, on 13 occasions took cultures from the cut edge of the skin after the incision was made. In 12 cases no growth occurred, but in the remaining case *Staph. aureus haemolyticus* grew. This was the same case in which 3 of the 4 streaks taken from the prepared area showed growth and in which there was a strong suspicion that the area had not been properly prepared.

### Discussion

It is to be noted that *Staph. aureus haemolyticus* was by far the commonest organism recovered. It occurred in 35 of the total of 38 plates taken from the unprepared areas, and the frequency on the skin of an organism so potent for mischief gives all surgeons cause to think furiously. The danger to surgical achievement which lurked in unsterilized skin, and the need to abolish it, were taught by the great thinker Lister. Then, in reaction, arose the soap-and-water school, headed by Lawson Tait, which asserted that simple cleanliness was enough: that good surgical results can be so attained is true, for healthy tissues have strong resisting powers. Later still, another school of thought emerged which, recognizing the difficulty of completely sterilizing the skin, employed as the chief line of defence cotton or rubber sheeting to cut out the skin—and this remains the usual practice to-day. But, although the soap-and-water school as such has disappeared, there remain some persons who, believing that swabbing with an antiseptic immediately before the operation sterilizes the skin,

unknowingly depend on what its adherents depended on. The bacteriological investigations carried out in connexion with violet-green showed quite conclusively that such brief applications do not effect sterility, though they do enfeeble the organisms so that growth on the agar plate is delayed as compared with that on the controls. Iodine is the best of these perfunctory applications, because it has superior power of penetrating organic material—a quality made use of in the sterilizing of catgut.

Organisms entrenched in the skin are very stout enemies, and to knock them out a vigorous and, above all, prolonged attack is required. Those who do not appreciate this fact ascribe the satisfactory healing of the wounds they make to the perfunctory measures they have taken, though in reality they owe it to that natural tissue resistance which enabled the soap-and-water school to make good its claim. But every now and then the enemy gains a foothold, and failure of the wound to heal kindly leaves the operative result something less than perfect and the surgeon with his pride hurt—and sometimes worse things happen. Surgical success depends on so many factors that the share taken by rigid antisepsis cannot be assessed in figures, though it can be perceived by anyone who studies attentively over a number of years the results of different surgeons practising different degrees of antisepticity. But whatever the share is, everyone must agree that operative infection arising from the skin is a theoretical possibility, and it is the duty of a surgeon to close all doors against all possibilities, theoretical or otherwise. To ensure, as far as may be, initial sterility of the skin should be the first line of defence against infection from the skin, and sheeting the second line, in case the first fails. For those who object to violet-green on the score of staining, the solution we describe, if used in the manner set forth, efficiently and inoffensively sterilizes the skin.

Our thanks are due to the pathological department of Cheltenham Hospital for the work it has done for us.

## PITUITARY CACHEXIA TREATED WITH CORTICOTROPHIC HORMONE

BY

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Panhypopituitarism, not the result of pituitary necrosis following pregnancy, has been regarded as a clinical entity (Fraser *et al.*, 1941). We (Hemphill and Reiss, 1940, 1942) have described cases in which severe melancholic depression associated with clinical pituitary cachexia—namely, emaciation, asthenia, loss of hair, desiccated skin, and low output of 17-ketosteroids—developed after the menopause. Although there was usually evidence of polyglandular insufficiency, where the skin was dry, hair brittle, and 17-ketosteroids low with subjective complaints that the "bowels did not operate," adrenocortical failure seemed the most important endocrine disturbance. On this hypothesis a number of such cases have been treated with corticotrophic hormone. This treatment was on the whole promising, and early results have been recorded already (Hemphill and Reiss, 1940, 1942). The case described below showed such extreme emaciation that the picture was that of advanced Simmonds' disease. Complete physical recovery followed treatment with two courses of corticotrophic hormone. The mental condition cleared up some time later.

### Case Record

A woman aged 41 was admitted to the Bristol Mental Hospital on Dec. 21, 1940. She was married, but had never been pregnant. There was no history of antecedent mental or physical illness. The menses ceased abruptly at the age of 39 without hot flushes or other subjective menopausal disturbances. About six months before admission she became depressed, lost appetite, and imagined that her viscera were deranged and the bowels "stopped up"; she attempted suicide. This was the mental condition on admission. Physically she was thin, weak, and frail-looking; height 5 ft. 6 in.,

weight 6 st. 3 lb. The skin was sallow, with an extremely dry "desiccated" texture; sweating was entirely absent, and there was a marked sensitivity to cold. The blood pressure was 90/60 mm. Hg. There were no respiratory, cardiac, or renal abnormalities. The breasts and mons veneris were atrophied; the hair of the head was brittle and lustreless, that of the pubis and axillae scanty; muscle bulk was very much reduced. There was no assayable output of gonadotrophic, corticotrophic (method of Reiss *et al.*, 1936), or thyrotrophic (method of Heyl and Laqueur, 1935) hormones in the total urine of 96 hours; the output of 17-ketosteroids was 2.6 mg. per 24 hours. The patient (Figs. 1 and 2) displayed none of the

delusions of alimentary malfunction and gain in appetite, there was at first little mental change. Even the posture and expression were unaltered in spite of the improvement in physical state. There has been a change recently. She is now less retarded and seems to be emerging from the depressive state.

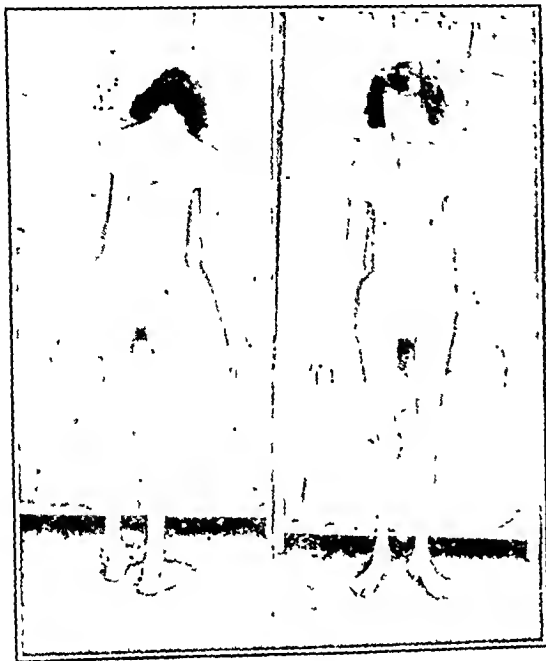


FIG. 1

FIG. 2

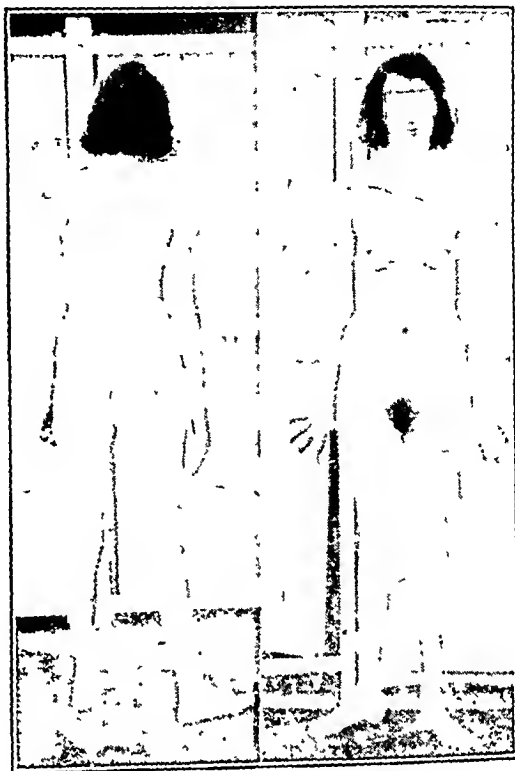


FIG. 4

FIG. 5

restless activity seen in anorexia nervosa. There was a low concentration of intercellular water, as shown by the diurnal electrical resistance of the skin, which, normally now and steady after the menopause (Hemphill, 1942), was high and fluctuated widely. Attempts at fattening failed in the next ten months; the weight dropped to 4 st. 11 lb.

Corticotrophic hormone, 40 sudanophobic units daily for 24 days, was administered. There was an immediate improvement in appetite and some return of the sense of well-being. The desiccated appearance of the skin had gone, and within four days the electrical resistance fell to the normal low level, at which it remained steadily. Two months later a further course of 14 daily injections of 25 units was given. The weight rose steadily and has continued to do so (Fig. 3). It is now two years since any hormone treatment has been

#### Discussion

In this case the physical condition was that of pituitary cachexia, and conformed closely to the picture of Simmonds' disease. Although there was no history of antecedent pregnancy the emaciation and asthenia, dry skin, loss of hair, at subnormal output of anterior pituitary hormones may be attributed fairly to adrenocortical insufficiency secondary hypopituitarism. This was corrected by treatment with corticotrophic hormone. Improved adrenal performance would be accompanied by improved water and fat storage with normal salt retention, and therefore better metabolism of alimentary function. Objective evidence that this took place was provided by the gain in weight and strength, loss of the desiccated quality of the skin, restoration of the normal electrical resistance behaviour, rise in output of 17-ketosteroids, and loss of delusions of alimentary inadequacy, which, as we believe, are a secondary derivation of the physical illness. The mechanism of cure was at first replacement therapy. Either atrophy or suppression of function of the adrenal cortex for want of trophic stimulation produced at least a large part of the clinical picture. Stimulation of the adrenal cortex by injected corticotrophic principle of the pituitary at first corrected the deficiency. It is reasonable to suppose that with an approach to normal water and fat metabolism other endocrines behaved in a more normal way, so that to some extent their insufficiency was adjusted. That the patient was able to remain well and even to improve further when corticotrophic hormone was no longer administered indicates that once the anterior-pituitary-peripheral-endocrine system was set in motion, there being no destruction of anterior pituitary substance, it could continue to function satisfactorily without aid.

It is believed that menopausal symptoms in many women are due to a temporary rise in gonadotrophic hormone output from hyperactivity of the anterior pituitary (Nathanson *et al.*, 1940). We have noticed in this and similar cases that the menopause came abruptly and there was a complete absence of menopausal symptoms. Assays in such cases showed a very

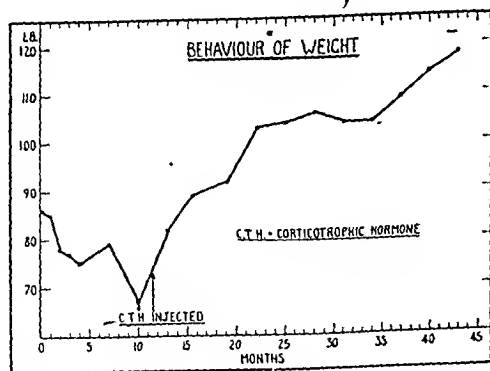


FIG. 3

given, but the improvement has been maintained. The breasts have developed and there has been a normal deposition of fat and restoration of hair loss (Figs. 4 and 5). Menses have not returned, and the vaginal smear, as before treatment, is of the post-menopausal atrophic type. The 17-ketosteroids rose to 8.3 and later improved to 10 mg per 24 hours. Apart from an immediate loss of the

low or a negligible output of gonadotrophic hormone. This suggests that in this type of case there is a sudden functional reduction in pituitary activity to be followed later by the physical symptoms of hypopituitarism. The suggestion that the picture of pituitary cachexia without structural changes in the pituitary itself can follow the menopause is supported by the resumption of normal pituitary function observed in this case after treatment. The physiological properties of corticotrophic hormone have been studied in hypophysectomized rats. It is known that sugar storage is much reduced after hypophysectomy, for the combustion of fed sugar is much higher than in normal animals. This condition has been corrected by corticotrophic hormone (Reiss *et al.*, 1938). The cholesterol and fat content in hypophysectomized rats can also be increased by corticotrophic hormone (Reiss *et al.*, 1937). No doubt there were comparable actions in the case we have described.

### Summary

A case of clinical pituitary cachexia in a nulliparous woman has been described. Clinical and hormone studies indicated extreme hypopituitarism. Treatment with corticotrophic hormone resulted in complete restoration of weight and cosmetic features. This was not a case of anorexia nervosa. The psychotic depression was not relieved until a considerable time after physical improvement was complete. The origin of this condition has been discussed.

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## Medical Memoranda

### Effect on the Nutrition of School-children of adding Vitamins and Minerals to the Diet

The purpose of this experiment was to discover if the addition of minerals and vitamins to the diet of school-children would make them gain weight at an increased rate.

#### THE INVESTIGATION

The experiment was carried out between Oct., 1940, and May, 1941, in an industrial area on the south bank of the Thames. For three months 300 children were weighed fortnightly, half of them were then given vitamin supplements for five days a week for three months, and the fortnightly weighings were continued. The ascorbic acid and vitamin B<sub>1</sub> contents of the urine of the "vitamin children" were determined before and after the administration of the supplement, a few vitamin A tests were performed with the photometer. The incidence of colds in the groups was recorded.

The daily supplement given contained 360 mg. of calcium, 552 mg. of phosphorus, 4,000 units of vitamin A, 300 units of vitamin D, 200 units of vitamin B<sub>1</sub>, 12 mg. of available iron, 20 mg. of ascorbic acid, and some trace of minerals.

**Results.**—The average gain in weight of the vitamin children was no greater than that of the controls. The initial urinary estimations suggested that the intake of vitamin B<sub>1</sub> and of ascorbic acid was low, but there was no gross deficiency. Very few of the children showed increased excretion of the vitamins at the end of the experiment (It should be noted, however, that the vitamins were estimated in single specimens of urine.) The few photometer tests carried out did not show any marked deficiency at either the beginning or the end of the experiment, there was no difference between the two groups in incidence of colds.

#### DISCUSSION

The experiment, though limited in scope, seems worth reporting, for it was carried out earlier than the other vitamin-feeding tests, in a different part of the country, and minerals as well as vitamins were added to the diet.

The fact that the children did not gain weight at an increased rate while having the supplement may be explained in several ways. The tablets might not have been taken regularly, no vitamin shortage may have been present initially, or a vitamin deficiency may have been present which was so severe that the supplements were not adequate to deal with it. Or a moderate deficiency might have existed, but vitamins given in tablets might not have been so effective as they would have been if

given in fruit and vegetable juices. Or a moderate deficiency might have been present, capable of being dealt with by the supplements but accompanied by a deficiency either of first-class protein or of calories. Finally, the children might have been on optimum diets at the beginning of the experiment, and so could not be expected to gain at an increased rate.

There is not space to discuss these points fully. It seems probable that a mild vitamin deficiency existed, accompanied by a shortage of protein. It is possible that the vitamin tablets were not so effective as fruit and vegetable vitamins; it is probable that the children were not on optimal diets (This last conclusion was arrived at by comparing the average weights of the boys who took the supplements with those of public-school boys).

This experiment merely corroborates the findings of several workers in this field. Feeding of vitamins in tablets to school-children has had no appreciable effect on weight.

It would be interesting to see the effect on the weight of English school-children of the diet recommended by Brown and Robertson of Toronto as late as 1942. Who could help thriving on food such as the following. (1) A quart of milk daily (32 oz)? (2) One generous serving of orange, grape-fruit, tomato, or raw cabbage, fruit at another meal, and two vegetables besides potato. (3) One serving of whole-grain cereal with wheat germ. (4) One serving or more of meat, eggs, fish, or fowl, with eggs three or four times a week, and liver or kidney once a week. (5) One regular dose of a good source of vitamin D during at least the six colder months of the year.

I should like to thank Vitamins Ltd. for supplying the tablets free of cost, and also all those who helped me with the experiment.

CECILE ASHER, M.D., M.R.C.P.,

Assistant M.O.H. to the Borough of Finsbury (formerly of Erith)

#### REFERENCE

- Brown, A., and Robertson, E. C. (1942) *J. Kansas med. Soc.*, **43**, 237.

### Herpes Simplex Corneae in Malaria

Herpes simplex corneae is said to be the commonest ocular complications in malaria (Duke Elder, 1943). Low and Fairley (1941) state that iritis, retinal haemorrhage, and optic neuritis also sometimes occur. In a series of 4,000 European cases of malaria in West Africa herpes simplex corneae was the only ocular complication noted. Rings of the malignant tertian form of malaria were demonstrable in 35% of the cases. The remainder were diagnosed on clinical grounds as malignant tertian malaria. Corneal lesions developed in the following four cases.

#### CASE HISTORIES

**Case 1.**—This patient had three attacks of malaria. In the second attack he developed herpes of the lip on the second day and herpes of the right cornea on the eighth day. The eye was red and painful and corneal sensitivity was diminished. Staining showed multiple fissures in the corneal epithelium. The eye settled in ten days, leaving one nebula. After the third attack, two months later, the nebula had faded and sensitivity had returned to normal.

**Cases 2 and 3.**—One patient developed herpes simplex corneae in his first and fourth of five attacks of malaria. Dendritic ulcer followed in both instances. The first herpes developed on the sixteenth day, in the left eye, and was rapidly followed by a spreading dendritic ulcer. Treated with atropine and heat, the ulcer healed in 40 days, leaving a scar. The second herpes occurred on the seventh day of a later attack of malaria. A dendritic ulcer, in the shape of a lion rampant, developed on the site of the old scar, and spread rapidly. The whole corneal epithelium was removed with a strong solution of iodine (7% iodine and 5% potassium iodide in alcoholic solution). The eye improved rapidly and was quiet within ten days, leaving the old scar and impaired corneal sensitivity. Another attack of malaria with herpes labialis three months later provoked no eye complications, although the corneal sensitivity was still impaired. The original corneal scar was then less pronounced.

**Case 4.**—This patient developed herpes of the left cornea on the tenth day of his second attack of malaria. A small ulcer formed near the limbus, which was slow to heal. Treated with atropine and heat, it became vascularized and quiet in five weeks.

#### COMMENT

In four cases of unocular herpes simplex corneae among 4,000 cases of malignant tertian malaria corneal lesions occurred between the seventh and the sixteenth day of illness. The best result followed removal of the corneal epithelium with strong iodine solution.

J. GRAHAM SCOTT, M.D. Glas., B.Sc., D.O.M.S.,  
Major, R.A.M.C.

#### REFERENCES

- Duke Elder, Sir W. S. (1943) *Textbook of Ophthalmology*, **2**,  
Low, G. C., and Fairley, N. H. (1941) *In Price's Textbook*  
London.

## Reviews

### PRINCIPLES OF NUTRITION

*Nutrition and National Health*: being the Cantor Lectures delivered before the Royal Society of Arts, 1936. By Major-General Sir Robert McCarrison, M.D. (Pp. 75; illustrated. 6s.) London: Faber and Faber, 1944.

*Rose's Foundations of Nutrition*. Fourth edition. Revised by Grace MacLeod, Ph.D., and Clara Mac Taylor, Ph.D. (Pp. 594, including an appendix of 190 pages; illustrated. 53.75s.) New York: The Macmillan Company, 1944.

What was sound teaching in nutrition in 1936 is still sound to-day, and the re-publication of Sir Robert McCarrison's lectures is welcomed. In them he has given a short account of his experiences in the relation of diet to health and disease in India, supported mostly by his own experimental work on rats. He has brought his knowledge of certain seriously deficient Indian diets to bear on the diets of the British people. With a breadth of view which is very stimulating he is able to show that the effects of partial deficiencies may be at least as serious (e.g., in lack of resistance to infection) as those of certain more nearly total deficiencies (e.g., in rickets). His teaching is always constructive. He shows how poor diets may be made good, simply and cheaply, and he pleads for wider education (not only of the poorer classes) on the constitution of good healthy diets, and particularly on the value of whole wheat, milk, and vegetables. The book will be read with pleasurable appreciation by many people, and not least by those who, by now, may be getting rather tired of the "textbook" kind of writing on the subject of nutrition.

*Rose's Foundations of Nutrition* has been largely revised by two of Prof. Rose's friends who had worked in the same department with her for many years, and with whom she had discussed new arrangements and additions to her book for its next edition. The new arrangements are the result of further experience gained in teaching the principles and practice of nutrition to students with many different backgrounds. The additions are the result of the ever-increasing volume of research work which is being carried out in laboratories all over the world, and of the increasing interest in and even legislation for the practical application of the findings to human dietaries. The more recently discovered vitamins—riboflavin, nicotinic acid, pyridoxine, pantothenic acid, para-aminobenzoic acid, biotin, choline, folic acid, inositol, vitamins K, M, and P, the grass-juice factor, and the milk factor—are treated as fully as present knowledge and the scope of the book demand. Daily requirements of calories, protein, calcium, iron, vitamins A, B<sub>1</sub>, C, D, riboflavin, and nicotinic acid are accepted in the amounts proposed by the Food and Nutrition Board of the National Research Council, U.S.A. Particular foods—e.g., foods derived from grain, vegetables and fruits, eggs, cheese, nuts, meat and other flesh foods, fats, sugars and other sweets—are each considered as a whole. The construction of adequate diets for adults, mothers, babies, pre-school and kindergarten children are treated in a capable and practical manner, with enough evidence given in an interesting form to make the reader see how well worth while it is to give the thought and trouble necessary to give an adequate diet for human beings of all ages and ranks of life.

### A YEARBOOK OF HEALTH INSTRUCTION

*Health Instruction Yearbook*. Compiled by Oliver E. Byrd, Ed.D. (Pp. 308. 18s. 6d.) California: Stanford University Press; London: Oxford University Press.

In order to improve health education in American schools and institutions of higher learning Prof. Oliver E. Byrd, director of health education at Stanford University, has published a comprehensive yearbook, the first of an intended annual series. It is designed for the use of teachers of hygiene, school nurses, school administrators, students, and others who desire to know of the developments in the field of health, and it seems extremely suitable for the purpose. It includes an enormous mass of reliable and up-to-date information, derived mostly from American sources but including many references to experiences in Britain and other countries. Some of its

chapters are so full of facts and figures as to be slightly indigestible for the general reader, but the information should prove useful for reference.

Among the twenty chapters will be found a lengthy one on nutrition and health. This includes an interesting sidelight on the extraordinary variety of peoples now incorporated in the British Army. For them no fewer than 130 different ration scales of food have to be provided. Though we in this country may think that ration cards are a worry, we must pity the average Swede, who has at least 25 cards in current use, and has to read a sort of stock market report whenever he goes out to shop. In the chapter on exercise and mechanics we read that of the first two million men examined in America for military service, 50% had to be rejected, almost all of them for physical and mental defects. The chapter on mental health and disease records that the Nazis at first tried to whip their soldiers into shape by brutality, punishment, and other rough treatment, but that on the advice of their psychologists they found it advantageous to make military life attractive, to assist instead of to punish, and to play up the group spirit. Officers were required to be informal with their men in contrast to the old Prussian concept. The long chapter on infection and immunity deals rather fully with malaria and venereal disease, while there are shorter chapters on habit-forming substances and on safety (especially traffic accidents). From the chapter on family health it is surprising to learn that over 40% of the native Americans living in the United States (in 1940) were not registered at the time of birth. A long chapter on school health is followed by shorter ones on occupational health and community health services. In the last chapter, on trends and probabilities, it is stated that a Bill was introduced in the Senate in 1943 which proposes a single unified system of national social insurance. It resembles the Beveridge plan in many respects. Another item of information relates to a scheme which is said to be unique in municipal history. The City of New York has contracted to pay the Public Health Research Institute \$100,000 a year for fundamental medical research and investigation.

### A HANDBOOK ON V.D.

*Handbook of Diagnosis and Treatment of Venereal Diseases*. By A. E. W. McLachlan, M.B., Ch.B., D.P.H., F.R.S. Ed. (Pp. 364; illustrated. 15s. plus 7d. postage.) Edinburgh: E. and S. Livingstone, 1944.

When an author sets himself the task of writing a book on a medical subject he should, like an orator or a preacher, have two main objects in view: first, to gain the attention of those whom he is addressing, and, secondly, to hold it. Dr. McLachlan in his *Handbook of Diagnosis and Treatment of Venereal Diseases* certainly succeeds in the former. This is an attractive little book of convenient size, crammed with useful information and adorned with numerous figures—many of them beautifully reproduced in colour; in fact it would be hard to find anywhere coloured plates which depict the lesions of syphilis more faithfully. It is in regard to the second desideratum that we find him less successful. The style is ponderous, not to say pedantic, tautology is frequent, and long words are used where simple short ones would meet the case.

The essential points in the diagnosis of syphilis, and the signs of the disease in its various stages, are set out with commendable clarity, and the treatment of the disease is in keeping with modern British teaching; that is to say, the concurrent-intermittent system, using neoarsphenamine and bismuth, is the one recommended. Gonorrhoea is dealt with at some length, and the sulphonamides are skilfully handled—not given in inadequate doses, as occurs only too commonly nowadays. Apparently the subject-matter of this book had been in hand for some time before publication, since, of the various recent intensive methods of treating syphilis, only the five-day method is mentioned, and the word "penicillin" does not occur in connexion with the treatment of either gonorrhoea or syphilis. Sulphonamide-resistant gonorrhoea is rearing its ugly head more and more, and often taxes the ingenuity of the experienced venereologist, to say nothing of the general practitioner. A fuller section on this subject would have added greatly to the value of the book. Besides sections on syphilis, gonorrhoea, and chancroid there is a chapter on urethroscopy which is particularly good, and, finally, one on other conditions

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commonly referred to 'venereal disease' departments; this last comprises only 17 pages, which seem inadequate when it is realized that a large proportion of the clientele of the average V.D. clinic is suffering from none of the three main venereal diseases; non-gonococcal urethritis, balanoposthitis, and *Trichomonas vaginalis* infestations are all very common, as also are warts on the genitals.

The general practitioner and the student will find this little book a mine of information. The teaching is sound and founded on personal experience, and if new methods of treatment have developed too fast for author and publisher to keep pace with them, these industrious and harassed people can hardly be blamed.

### Notes on Books

Prof. GLANZMANN's brochure on epidemic poliomyelitis (*Die epidemische Kinderlähmung*. Berne: Hans Huber; Sw. fr. 6 80) contains a useful and well-presented collection of statistical data relating to Switzerland in general and Berne in particular. Since 1935 there have been three years in each of which more than 1,000 cases of the disease were notified in Switzerland: 1936 (1,269), 1937 (1,494), and 1941 (1,479). As in other countries, the disease has tended to become more widespread, the age incidence to move towards older ages, and the seasonal distribution (though a summer maximum persists) to be extended. Prof. Glanzmann is somewhat inclined to favour the view that sewage is a vehicle of infection, but the brochure—which is based upon a lecture—does not, except by providing statistical data and maps of distribution, contribute much to epidemiological knowledge.

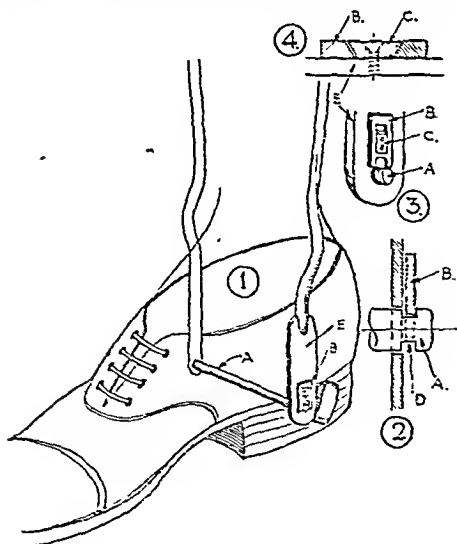
H. K. Lewis and Co. have published at 4s. an eighth edition of Dr. R. D. LAWRENCE's booklet *The Diabetic A B C*, containing practical guidance for patients and nurses. With it is issued a third edition (price 9d.) of *The Diabetic A B C War-time Supplement*.

## Preparations and Appliances

### A WALKING CALLIPER SPLINT

Dr. J. MACFARLANE COWAN (Stafford) writes:

Although the design of walking calliper splints has remained unchanged for a long period, there are two disadvantages in



the customary design, and complaints by patients of discomfort are by no means infrequent. Owing to what amounts to a three-sided box construction with a non-rigid fourth side (formed by the two pins and the boot heel), lateral mobility is not well controlled. The normal arrangement of straps, or stirrups, to keep the two pins at the lower end inserted into the heel is

clumsy and not always effective, and tends to make the splints uncomfortable to wear.

It occurred to me that a four-sided box construction would increase the rigidity appreciably, and would at the same time allow of a locking device being fitted which would permit a simple and positive location of the lower end of the splint. A modification was designed and a test model constructed. This has now been worn for some months by a patient, who reports that the comfort and stability are far in excess of those achieved by any splint he has previously had.

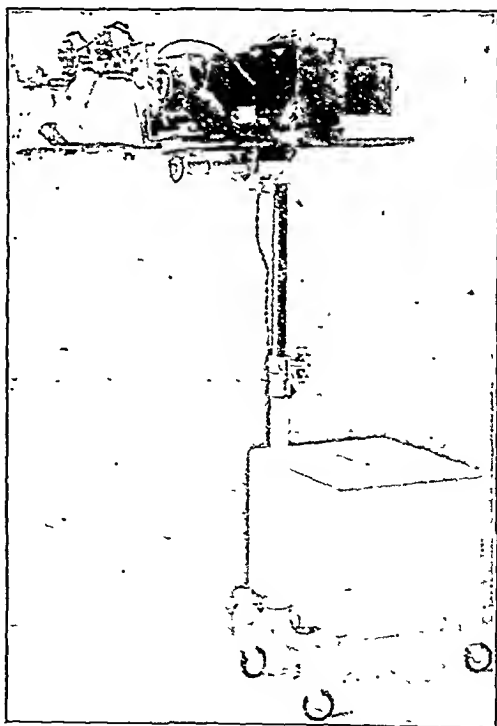
The accompanying diagram illustrates the construction, which is not difficult and could be carried out by anyone with engineering experience. The lower ends of the splint are modified by removing the pins, and on one side fitting a piece of metal rod 1/4 in. in diameter, and on the other side a plate with a 1/4 in. hole and locking device as shown. The natural spring of the metal side-pieces of the splint allows it to be removed when unlocked, though in the locked position the splint is practically rigid. The simple locking device is shown in Figs. 2, 3, and 4.

I am indebted to Mr. G. M. Boon, A.R.I.B.A., for the drawing and his assistance in the construction of this modification.

### A CLINICAL CAMERA-STAND

Dr. B. RICHARDSON BILLINGS (Pettis Wood, Kent) writes:

I have recently constructed a camera-stand with universal movement which facilitates clinical photography, especially photography of surgical operations under aseptic conditions. Any type of "still" or "movie" camera can be used with a lens capable of the work in hand. The head (sterilizable) incorporates hood, lamps, and reflector. Lamps are photostoods adjustable to any required position. The reflector can be either mirror or prism; in either case the same optical principle applies as in a laryngoscope, affording a "surgeon's-eye view" of the field. The mirror is removable for straight-through photography without altering other factors which should remain



fairly constant. In performance the apparatus is quick, easy, and efficient.

I am indebted to Mr. Kenneth Heritage, F.R.C.S., senior surgeon at St. John's Hospital, Lewisham, for his co-operation and for his permission to try this apparatus over his table; and to the theatre sister and staff.

## BRITISH MEDICAL JOURNAL

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## CONTROL OF BACILLARY DYSENTERY

Notifications of dysentery in each of the past three years have been double the average of the immediate pre-war years, and during 1944 the larger incidence has been steadily maintained. Part of this apparently increased prevalence may be due to greater awareness of the infection, together with a greater use of laboratory facilities, for clinical diagnosis of the mild endemic dysentery in this country is not easy, and the 7,000 annual notifications must represent only a small part of the total morbidity. Thus if the incidence of dysentery in a community is a measure of current hygienic standards we should have to admit that these standards have fallen in recent years. Added to that is the very real risk of more severe types of dysentery being introduced by troops returning from abroad. Indeed, Shiga-dysentery carriers have already been identified among Italian prisoners of war here. Dysentery is still one of the major epidemic infections of war, and improved cultural methods have shown that convalescent carrier rates may be as high as 80% of affected cases, so that movements of troops are likely to introduce the disease to unsalted Service and civilian populations. This hazard must be much in the mind of the Army hygienist at present, and it is proper to consider what are the most effective measures for preventing the dissemination of dysentery both at home and abroad. But first we need to know how the infection is spread.

Explosive outbreaks of dysentery are less common than happens with the enteric fevers, and epidemiological evidence suggests that case-to-case infection is the usual mode of spread in civilian communities. The infector is more likely to be the missed mild case or convalescent or healthy contact carrier than the typical clinical case, which is quickly recognized and isolated. The infecting organism may be transferred in a variety of ways, but the infected food-handler who has not been disciplined to hand-washing after using the w.c. and before handling food is particularly dangerous. Flies undoubtedly play an important part in spreading the disease in subtropical countries, where the incidence of dysentery is closely related to the seasonal prevalence of the fly. But flies flourish also in temperate climates, particularly when sanitation reverts to more primitive forms as with armies in the field, or when food-residues are salvaged and hens in the back-garden contribute to the larder. Spread of infection by contaminated water supplies is unlikely, but milk-borne outbreaks may and do occur. In these circumstances control of dysentery depends primarily on high standards of public sanitation and personal hygiene, but these are the prophylactic measures which are least easy of attainment by armies in the field or in devastated towns. The Army

has, however, aimed high in its hygienic standards by disposal of excrement to prevent fly-breeding, by close supervision of cookhouse and staff, by various anti-fly measures and by educational talks. It will no doubt be the task of the medical staff of G.S., the Allied Army's Civil Affairs branch, to do the same for liberated European towns. At home there is need for greatly increased facilities for public and private lavatories for hand-washing, a habit which, after use of the w.c., should be as automatic as adjusting the dress.

In dealing with an outbreak of dysentery further spread will be prevented not so much by isolation of the clinical case as by detection and cure of the missed case and convalescent and contact carriers,<sup>1</sup> whose numbers may far exceed the patients with clinical dysentery. Detection has been greatly facilitated by the use of desoxycholate-citrate agar and the rectal swab, but, except in "closed" communities, this is not a very practicable procedure. Cure of the clinical case of dysentery is hastened by sulphamide therapy; even sulphanilamide<sup>2</sup> seems to be effective, but the safest drug is sulphaguanidine, under which in moderate doses rapid improvement occurs with little risk of toxic effects. However, bacteriological cure is as important as clinical cure, and has been too little studied by those with opportunities for comparing the efficiency of different sulphonamides in this respect. Sulphaguanidine will usually get rid of members of the Flexner family including the Newcastle variant, from both clinical case and carrier, but, save in early infections, it is much less effective against the Sonne bacillus,<sup>3</sup> which is more susceptible to sulphapyridine.<sup>4</sup> Additional information is needed about the efficacy of sulphadiazine, popular in America and our own sulphamezathine, which, besides being relatively non-toxic, could probably be used in much smaller dosage than sulphaguanidine—a point of some importance when large numbers have to be treated in the field. As an alternative to detection and treatment of the carrier, which in widespread outbreaks may be as impracticable as isolation of meningococcus carriers is now realized to be, chemoprophylaxis may, as has happened with the meningococcus carrier, prove to be the best method of stopping an epidemic. Thus Scott<sup>5</sup> quickly controlled an outbreak of Sonne dysentery in a mental institution by giving all the inmates the remarkably small dose of 0.5 g. sulphaguanidine thrice daily until four days after the last reported case was clinically well.

There has been sharp divergence of opinion about the value of two other prophylactic measures—specific bacteriophage and vaccines. Bacteriophage has been lauded for prevention and for cure of dysentery, but it is noteworthy that its advocates usually had no adequate control series, while those who had instituted this check reported guardedly or unfavourably upon it. Large quantities of bacteriophage—apparently the standard treatment for forward troops in the German Army—were captured at El Alamein; it was found to have a high potency against the dysentery strains prevalent in North Africa at the time.

<sup>1</sup> *British Medical Journal*, 1944, 1, 806.

<sup>2</sup> *Lancet*, 1944, 1, 784.

<sup>3</sup> *British Medical Journal*, 1943, 2, 35.

<sup>4</sup> *Lancet*, 1943, 2, 71.

<sup>5</sup> *J. Amer. med. Ass.*, 1943, 122, 588.

Boyd and Portnov,<sup>6</sup> therefore decided to test its prophylactic and curative value against dysentery in controlled trials among German prisoners of war. For the prophylactic test all the inmates in one P.O.W. "cage" were given 10 c.cm. of bacteriophage by mouth before breakfast on each of three successive mornings. The sickness rates in this cage and in three similar control cages were accurately kept for four weeks before and four weeks after the course of bacteriophage. The incidence of dysentery in the "treated" group was 27.5 per 1,000 in the first four weeks and 19.5 per 1,000 in the second four weeks; the corresponding figures in the control series were 11.25 and 10.29. Thus, although there seemed to be some benefit from prophylactic phage, the difference was not apparently significant, and the incidence of infection in the treated group was still higher than in the control group over the same period. Two series of cages were chosen for the treatment test. Bacteriophage was given by mouth (15 c.cm. thrice daily for two days; three 10-c.cm. doses on the third day) to all men in one group as soon as they reported sick with diarrhoea. The control group had the standard saline treatment. Analysis of the results disclosed no effect from phage therapy either in aborting the typical clinical infection or in modifying its course, although the phage persisted in the faeces for 5 to 6 days and was detectable for short periods in both blood and urine.

Prophylaxis of dysentery by vaccines has found little favour, except, perhaps, in mental hospitals. The multiplicity of antigenic types of dysentery bacilli and the severe reactions provoked particularly by the Shiga strain have complicated the problem. However, Schütze<sup>7</sup> has shown that fractions of the Shiga bacillus prepared by Morgan's method give good protection to mice injected subcutaneously at two to six weeks' intervals, a higher degree of resistance being observed with the longer interval between the two injections. The U.S. Office of War Information in a bulletin dated May 8 has also reported encouraging results in the protection of children with a mixed Flexner vaccine. Thus the control of dysentery is being tackled vigorously from many standpoints, and these "combined operations" should help to prevent this troublesome and highly infectious disease gaining a stronger foothold than it already has on both the home and battle fronts.

### D.D.T.: A NEW SYNTHETIC INSECTICIDE

In peacetime insect pests are often exceedingly troublesome, but in this country they do not spread disease to any serious extent. The operations of war, however, involve sending many of our soldiers abroad to live under relatively primitive conditions, sometimes in tropical or subtropical climates. Inevitably there is a considerable danger of insect-borne diseases, some of which, like typhus, malaria, and dysentery, are very serious. Usually the principal method of preventing or controlling such epidemics is to attack the insect vector. Consequently the supplies of efficient insecticides become of vital importance in

"global" warfare. At all times, but especially in war, it is an advantage for an insecticide to be synthetic. Insecticides of vegetable origin mostly come from distant countries where space and labour for cultivation are available and where the climate is suitable. These growing areas may be overrun by the enemy (e.g., Malaya); and in any case the transport of the material takes up shipping space. In the early part of this war we suffered from the disadvantage of having no wholly synthetic substitute for the widely used plant products pyrethrum and derris. Supplies of these insecticides rapidly became scarce in spite of rigid economies. The lack of suitable synthetic compounds was not for want of searching. In a number of Government and industrial laboratories in various countries a systematic examination of compounds of possible insecticidal value had been going on for a decade. The fact that nothing very striking had been found is due to the almost infinite variety of organic compounds; many thousands of samples had been tested. Quite recently, however, it has been discovered that a comparatively simple compound has outstanding merit as an insecticide. This is 2,2-bis (parachlorophenyl) 1,1,1-trichloroethane, known as "D.D.T." from the generic name dichlor-diphenyl-trichloroethane. When pure it is a white crystalline solid with a slight, not unpleasant, odour. Practically insoluble in water, it dissolves in many organic liquids; it is non-volatile and chemically rather stable. D.D.T. was first synthesized in 1874, but its remarkable toxicity to insects remained unsuspected until 1940, when the Swiss firm Geigy A.G. took out an initial patent in Switzerland. The material came to the notice of British and American scientists almost simultaneously in 1942, and the preliminary tests soon revealed its great promise. At this time the chief demands by the Allied Services were for insecticides to use against the malaria mosquito and the typhus-carrying louse. The new compound appeared to be suitable for supplementing or entirely replacing the insecticides already employed. But from the initial laboratory tests a great deal of careful investigation was necessary before D.D.T. could be produced and used on a large scale. This research was carried out rapidly but thoroughly by entomologists, chemists, and medical men at a number of laboratories both in this country and in America. By a complete exchange of progress reports the work was carried out as a unified project without reduplication of misunderstanding.

One of the first points to be investigated was the possible danger to man. This was assessed by determinations of both acute and chronic toxicity on a variety of mammals. Although we cannot substantiate statements which have appeared in the daily press to the effect that D.D.T. is entirely harmless to man, it is quite safe in the form in which it is used. The dry powder is practically harmless unless eaten; it is not absorbed through the skin, but it may be when in solution. Precautions, therefore, should be taken by operators frequently handling solutions of the compound in kerosene or other liquids. The production of the material raised a host of problems which have since been solved. Methods of manufacture have been improved; and the various impurities in commercial samples have been isolated and examined. A pilot plant

<sup>6</sup> *Trans. roy. Soc. trop. Med. Hyg.*, 1944, 37, 243.

<sup>7</sup> *J. Path. Bact.*, 1943, 55, 457.

was started to produce fair quantities for large-scale trials. Finally, full-scale plants were set in operation. A great deal of experimental work went to perfect the practical application of the insecticide against various pests. For use against the body louse two methods were worked out. In one D.D.T. was employed in a diluted dust, and in the other undergarments were impregnated with it to render them louse-proof. The dust is useful for speedy application to large numbers of infested civilians to check a typhus epidemic. The remarkable effectiveness of this method was demonstrated recently in Naples. The successful quenching of the epidemic in mid-winter has received its due recognition, and we will merely emphasize that, apart from the effectiveness of the insecticide, its ease of application was the most important factor. No other delousing method could hope to approach the maximum number of 73,000 people treated on one day. Impregnation of undergarments is most suitable for soldiers or others issued with uniform clothing. It is a most effective way of keeping a large body of men louse-free for an extensive time under difficult conditions. The treatment is imperceptible on the garments and does not readily wash out. This will be the main protection for British troops in liberated Europe where typhus is endemic over large areas. For preventing malaria, D.D.T. can be made up in emulsions and sprayed over the waters where the larvae occur. But this method, though reliable, does not give protection from the adults already present. Therefore methods of spraying from the air have been devised, by which large areas can be rendered safe before planned operations are carried out. While Service requirements must take prior place at the moment, the post-war possibilities of this new weapon against malaria are enormous. It is known that the peacetime world death rate from malaria was about 2,000,000 annually, and the annual economic loss to the British Empire alone was between 50 and 60 million pounds.

Even in Britain the insecticide will have many peacetime applications. On account of its permanent nature, surfaces sprayed with strong solutions remain toxic to insects for weeks or months afterwards. This is of obvious value for checking the persistent house-fly, especially in places like hospitals, where they are all too common and indeed dangerous. Another pest which can be attacked by this method is the bed-bug. The possibility of bug-proofing houses will come as a godsend to the harassed health authorities in some districts. There are other uses too numerous to mention; but it is clear that the large quantities being manufactured for the Forces will be absorbed after the war. Veterinary practice and agriculture will benefit, but perhaps the most advantage will accrue to human hygiene.

### HEALTH OF THE STUDENT

Many people are inclined to take the health of students for granted. The "very lean, And pale and leaden ey'd" student of Thomas Hood is now thought of as a robust youth spending half his time in games. Yet in some respects, from a health point of view, students are a neglected community. Unlike their contemporaries in office and workshop, they do not come under National Health Insurance, nor are they included in any general

scheme of medical examination. Some universities and colleges, like Birmingham and Sheffield, and the women's colleges at Oxford, impose an entrance medical examination or an overhaul during the first year, and others, like Leeds and Liverpool, have an examination scheme on a voluntary basis. But many colleges have no such scheme now or in prospect. In the years of student life, from 17 to 25, tuberculosis still takes first place among causes of death; the peak incidence of tuberculosis in females happens in that age period. Medical students are perhaps better provided for than students in other faculties by reason of their immediate access to hospital facilities when ill, but that is not the same thing as preventive examination and periodical overhaul. Moreover, in their clinical years they are more exposed than most students to risk of infection of one kind or another.

The British Medical Students Association, at two conferences, has paid a good deal of attention to student health, and has co-operated with three other organizations—the National Union of Students, the Scottish Union, and the British Dental Students Association—to form a committee which has in turn produced a pamphlet<sup>1</sup> setting forth a long-term and a short-term policy. The discussion of a long-term policy is halted by the prospect of social insurance on something like the Beveridge plan and of a national health service. Obviously it would be better to have a complete scheme for everybody than to ask for special arrangements for students. There are, however, certain things which can be done at once. The committee of these undergraduate organizations urges that every student should be examined by a medical practitioner on entering the university or during his first term, and periodically thereafter, and that for this purpose a university should appoint a whole-time medical officer. This has already been done in the University of Birmingham, where a whole-time medical officer works in close touch with the director of physical training. Matters to which the students attach special importance are the x-ray examination of the chest, eyesight examination, dental care, and the availability of immunization against diphtheria and, particularly in the case of medical students, against typhoid, smallpox, and scarlet fever. So far as treatment is concerned attention is drawn to two insurance schemes. One of these is the Oxford University Provident Association, which, for an annual fee of three guineas, arranges for a number of services and benefits in sickness up to a stated maximum. The other is a compulsory scheme for students at the University College of Wales, Aberystwyth, covering attendance and treatment. On the more preventive and environmental side it is said that some of the smaller universities are short of recreational facilities, and some colleges have no playing fields or gymnasiums at all. The committee recommends the avoidance of a narrow scholastic outlook, the cultivation of outside interests, the encouragement of summer camps and "assisted" holidays abroad, and the accent of cheerfulness in refectories, common rooms, and libraries. An odd omission from the pamphlet is any reference to students' lodgings. Few of these nowadays are as melancholy as the digs in Lant Street, Borough, which curbed even the high spirits of Bob Sawyer, but some of those to be seen in university towns are far from hygienic. There is everything to be said for providing bright, roomy, well-managed hostels.

The health education of the student is important from a wider point of view than his own well-being. The students of to-day are destined to be the educated leaders of to-morrow, and through them will come largely the dissemination of health knowledge and wholesome habits to the general community.

<sup>1</sup> *Health and the Student*. Obtainable, price 4d., from British Medical Students Association, B.M.A. House, Tavistock Square, W.C.2.

### MEDICAL BENEVOLENCE IN WARTIME

Sir Arnold Lawson, chairman of the Royal Medical Benevolent Fund, has issued a letter to subscribers setting out the position of the Fund after nearly five years of war. He announces with pleasure that the Presidents of the three Royal Colleges and the Master of the Society of Apothecaries have consented to serve as *ex officio* members on the committee of management. In 1943 the Fund distributed in gifts and annuities the record sum of £22,702. The experience of the RMBF in war, like that of other charities, is that there are fewer new applicants, but the circumstances of those who do apply are more urgent and distressing, so that larger grants are necessary. The income from subscriptions and donations amounted to £14,374, not quite up to the level of 1938. More subscribers have signed the seven year covenant, which, with income tax at ten shillings in the pound, has the effect of doubling the subscription. Another wartime difficulty encountered is the lack of domestic help for the old and infirm beneficiaries. The Fund has considered establishing a home of its own for these people, but the idea has been deferred until after the war, when it may be made the object of a victory endowment fund. Sir Arnold Lawson appeals to medical men, especially medical officers of health, who have such opportunities of knowing members of the profession and their friends, to act as local branch secretaries.

### FREEDOM TO PUBLISH

We print in this week's *Supplement* a letter from the Secretary of the British Medical Association which has been sent to the secretaries of voluntary hospitals, medical officers of health of county councils, county borough councils, and borough councils, and to the clerks of these councils. The letter brings to light once more the practice of certain authorities of imposing a censorship on the publications of medical men in their service. It certainly seems ironical that in twentieth century Britain we should have to plead for freedom to publish the written word. It is all the more remarkable when we consider that the freedom that is being asked in the Secretary's letter is the right to publish scientific articles, which are supposedly a statement and elaboration of ascertained facts. The almost casual way in which people in this country are coming to accept the surrender of freedom as something which in some mysterious way is bound up with progress is a phenomenon for which the future historian will no doubt find sufficient reason. But at a time when the medical profession is being faced with one huge restriction on the freedom to practise we should at least do all we can to preserve the freedom to speak and to write and to publish. For with these goes the freedom to think. It was only last year that we criticized in these columns the restriction imposed by the London County Council upon its medical officers, and as a result the LCC altered its standing order to the effect that medical officers could publish books and articles on "purely technical or scientific" subjects without first having to seek permission from the Chief Medical Officer. In the amended standing order the words "purely technical and scientific" replace the words "scientific or professional" which appeared in the previous order. Why this alteration? In the profession of medicine there are very many matters of interest and importance to doctors which cannot be described by the words "purely scientific and technical." Indeed, these other matters now loom unpleasantly large, and at this moment the LCC sees fit by implication to impose a censorship upon the publication by its medical officers of their views on medical politics. Is it that the LCC is afraid of criticism of its adminis-

trative machine, or is this just another example of the arbitrary abuse of authority by those in powerful positions? We would appeal to the LCC as the largest employing authority in this country to treat its medical men as responsible adults and as free men. This is a cause which medical men generally, whether employed or practising freely, should make their own, and they should bring pressure to bear at all points until these political birthrights are restored.

### FATTY LIVER AND SUDDEN DEATH

A remarkable series of cases in which sudden death was associated with an advanced degree of fatty degeneration of the liver is reported by R. L. Graham.<sup>1</sup> A total of 11 such cases came to his notice at Baltimore during only one year. In 6 of these there was some lesion other than that in the liver which might have been responsible for death, but in 5 which are described in detail the liver was the only organ showing any significant changes post mortem. Their ages ranged from 27 to 40 years, and in each case there was a strong history or suspicion of alcoholism. In 3 there was a short period of unconsciousness before death, accompanied in 2 by seizures described as epileptic, but in the other 2 there were no such manifestations, and one death occurred during sleep. The fifth case was remarkable in that the man concerned had been called up for Army service and submitted to a prolonged medical examination on the day of his death without any abnormality being detected. The constant post-mortem finding was a large, obviously fatty liver showing microscopically so great a distension of the cells with fat globules as to compress their nuclei. The alcohol content of the liver was estimated and was in no case so high that acute alcoholism could have been the cause of death. Blood sugar estimations were made in only one case and found to be within normal limits, the author nevertheless suspects that hypoglycaemia may be a factor in this condition. The other possibility is a vitamin deficiency, such as the inadequate diet of the alcoholic is particularly liable to cause. There is some experimental support for this hypothesis, since Sebrell and Onstott<sup>2</sup> have reported that dogs on a diet deficient in riboflavin and developing a fatty liver are liable to sudden collapse and coma, which is rapidly fatal unless riboflavin is administered. This condition is apparently unrecognized, but the occurrence of such a series in a single American city suggests that it cannot be altogether uncommon, and Graham's observations should lead others to recognize and elucidate it further.

### INFECTED LIVERS WANTED

The group investigating infective hepatitis for the Medical Research Council at Cambridge are anxious to obtain specimens of liver from rapidly fatal cases of acute yellow atrophy, acute or subacute necrosis occurring in patients suffering from infective hepatitis (catarrhal jaundice), or arsenotherapy jaundice. The pieces of liver should be 4 cubic inches in size, removed with aseptic precautions, and placed in a sterile container packed in ice. Specimens should be sent thus packed on passenger train to either The Jaundice Laboratory, Department of Pathology, Tennis Court Road, Cambridge, or Dr MacCallum, Wellcome Research Institute, 183, Euston Road, London, WC1, whichever can be reached most rapidly from the dispatching centre. The specimens should be marked "To Be Called For," and a telegram sent giving notice of their arrival.

<sup>1</sup> *Johns Hopk. Hosp. Bull.*, 19-4, 71, 16.  
<sup>2</sup> *Publ. Hlth. Rep. Wash.*, 1938, 53, 83.



# TRACHOMA IN LONDON: THE END OF A CHAPTER

BY

ARNOLD SORSBY, M.D., F.R.C.S.

1903	292
1904-13 yearly average	112
1914-23 "	29
1924-33†	34
1934-43 "	13

\* Excluding the years 1915-18, for which no data are available.

† Excluding the year 1924, when there were 201 admissions from an outbreak at Poplar.

On May 10, 1944, the last five remaining children in the trachoma block at White Oak (L.C.C.) Hospital were discharged and the block closed down. It would be obviously fallacious to assume that trachoma no longer exists in London, but the conclusion is warranted that the affection no longer presents a problem of epidemic proportions among school-children of the metropolis—a state of affairs that prevailed within living memory.

Elsewhere (Sorsby, 1935) an account has been given of how trachoma came to be introduced during the first half of the last century among children under the care of the Poor Law authorities. The workhouses, the private contractors' schools of the type of Dotheboys Hall, the barrack schools of the multiple and conflicting Poor Law authorities of London, and the rudimentary medical and hygienic services provided by these authorities all tended to make trachoma—and other infections—endemic in Poor Law institutions. The need for effective isolation and treatment had been pressed upon the authorities by numberless ophthalmologists and physicians; it was unanimously held by oculists that the then existing state of affairs was "an arrangement for favouring the production and spread of the disease, and then keeping it in check by unceasing, laborious, and expensive medical treatment"; and the medical officer of one of these Poor Law schools bluntly testified that "hundreds of eyes admitted healthy have been attacked here, and it is useless, and would be cowardly, to attempt to deny or conceal it." In 1872 Bridges spoke of the Anerley Poor Law School as "a great ophthalmic infirmary"; Nettleship, in 1875, found that only 20% of 8,798 children at Poor Law schools examined by him had eyes free from infection; and in 1890 Sydney Stephenson was hoping for a time "when 'ophthalmia at Hanwell' will not form a standing and attractive headline for the evening papers."

That trachoma could be stamped out by effective segregation and treatment was not merely a matter of informed opinion; it had been proved by a short-lived experiment carried out for Anerley by Nettleship and his wife at a temporary isolation school in 1872, and by Stephenson in 1889 for Hanwell in an iron-built structure which the authorities of that school had been compelled to erect against their will. But the "bane of the Poor Law school" continued with it till the end. It was not until a departmental committee of the Local Government Board reported adversely in 1897 on the whole spirit and structure of the Poor Law schools that action became possible. The recommendation of this committee that there be established one or more ophthalmic and other hospital schools under the control of a central authority for the metropolis made it possible for the Metropolitan Asylums Board to proceed with the building of the necessary hospital schools. Two such institutions, with a total bed capacity of 720, were opened at White Oak Hospital on March 20, 1903, and High Wood Hospital on July 26, 1904. Three schools had been planned in 1897, but so effective were the measures adopted at Hanwell, which had served in the meantime as a central isolation school, that doubt arose whether one school would not be adequate. The temporary isolation school at Hanwell, erected in 1889, rather than the opening of White Oak Hospital, may therefore be regarded as the beginning of the solution of the trachoma problem among Poor Law children in London. The subsequent history is one of continuous decline in the incidence of trachoma as judged by the annual admissions. By 1918 High Wood had become superfluous, and was closed down as an ophthalmic school, and White Oak itself was half empty.

In 1921 children from London County Council schools began to be admitted—a radical departure not only administratively but also clinically, as non-infectious cases, such as children with phlyctenular ophthalmia, were admitted; subsequent to 1924 all chronic eye disease in L.C.C. school-children was being treated at White Oak Hospital. As for trachoma, the following figures show the steady decline in admissions:

The decline in the numbers admitted during the past 10 years has been steady, as can be seen from the figures of actual admissions for each of the years from 1934 to 1943 in sequence: 21, 31, 11, 28, 10, 5, 8, 5, and 7. It is worth noting that these admissions include children from outside the L.C.C. area.

That trachoma is still not infrequent in London is only too obvious by the number of adult patients seen at the eye hospitals. It is difficult to assess the total number, but each patient presents a considerable individual and social problem, and is the source of a potential epidemic. From every point of view, early and persistent treatment is essential. The lack of persistence on the part of many patients and the no less marked lack of adequate in-patient facilities for such patients at eye hospitals raise the question whether the present-day methods of dealing with trachomatous adults could not be bettered. The L.C.C. under pressure of war made provision for the admission to one of their fever hospitals of adults suffering from trachoma, but it is possible that more radical measures are required. Indicative of what can be achieved by systematized and persistent effort, experience at Glasgow may be quoted (Sorsby, 1939). Notification was made compulsory in that city in Oct., 1914, and is still in force. The number of new cases notified has shown an almost steady decline since 1915, as the following figures show:

Year	No. of New Cases	Year	No. of New Cases
1915	112	1930	25
1916	69	1931	32
1917	90	1932	24
1918	47	1933	20
1919	85	1934	17
1920	77	1935	18
1921	68	1936	12
1922	68	1937	15
1923	62	1938	15
1924	55	1939	10
1925	41	1940	7
1926	43	1941	10
1927	27	1942	10
1928	30	1943	5
1929	45		

In terms of case rate per 1,000,000 of population, the following figures illustrate the downward trend:

Year	Case Rate per 1,000,000
1919	78
1924	41
1929	39
1934	15
1939	9
1940-3 yearly average	7

Notification was supplemented from the beginning by systematic treatment in a trachoma clinic, where examination of contacts was also carried out, and by the provision of in-patient accommodation for both children and adults requiring in-patient treatment.

In London, with its excellent school medical service, trachoma in school-children is unlikely to escape observation and treatment, but there are no systematic special provisions for the pre-school child and the adult. Statutory notification of trachoma would seem to be a necessary step; not, indeed, for the purpose of obtaining statistical data—this is a subsidiary consideration in making notification of any affection compulsory—but for the creation of the machinery needed for the detection of this insidious affection, the study of the home conditions under which it may be spread, and the provision of adequate facilities for treatment. London, with its universal contacts in normal times, is especially prone to the accidental introduction of trachoma, and under suitable conditions the disease may spread rapidly, as the epidemic in Poplar in 1924 revealed. To justify action it is unnecessary to conjure up a spectre of infection spreading from a trachoma-infested Continent at the end of the war. The experience at White Oak Hospital has shown that trachoma could rapidly be eliminated from a highly infected school population—and this experience, supplemented by that obtained at Glasgow, rather than imaginary fears, amply justifies an energetic approach to the residual problem of trachoma in the adult population.

## Summary

The closing of the trachoma block at White Oak Hospital, Swanley, is recorded. Trachoma may now be regarded as eliminated from the child population of London, in striking contrast to the conditions prevailing a generation ago among the poorer sections of the community.

In the light of the history of this achievement and the more recent experiences at Glasgow, where a great reduction in trachoma has followed statutory notification and the provision of adequate facilities for treatment of both adults and children, it is suggested that the elimination and prevention of trachoma in adults in London demand that the affection be made notifiable and that statutory provision be made for treatment centres.

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— (1939). *Rev. int. Trachome*, 16, 143.

## KING EDWARD'S HOSPITAL FUND

Guy's Hospital is to be the first to benefit from the provision made by Lord Nuffield, when the Nuffield Trust for the Special Areas was established some seven years ago, that any sums which might be available (through repayment of loans, etc.) from the Trust should go to King Edward's Hospital Fund. A first instalment of £300,000 has been received by the Fund, and Lord Nuffield has asked that out of this a grant of £250,000 should be made to Guy's. This was announced by the Duke of Gloucester when he presided at the recent annual meeting of the King's Fund. In the same speech the Duke said of the Government's health service proposals:

"We wish all success to the Minister in the very difficult task before him, and we welcome the indications he has given of his desire to find an enduring solution which will be generally acceptable. We do not believe that such a solution can be found by any method which fails to preserve the freedom of the medical profession and of voluntary hospitals. While we welcome assistance from public funds, it is of the first importance that it should leave the governing bodies of voluntary hospitals and their medical staffs unfettered in their pursuit of health and healing."

Presenting the report of the Fund's Committee on Hospital Diet Sir Jack Drummond said that the catering service had, with a few notable exceptions, been the Cinderella of the hospital services. In this respect we were a generation behind the U.S.A. and Canada. Courses of lectures and demonstrations in hospital catering, to which hospitals had been invited to send representatives, had been arranged and had been a great success. Much useful information had come out of them, including a suggestion for quarterly refresher meetings, when officers in charge of catering in hospitals might meet to discuss problems. He hoped that the time was not far distant when the difficulties caused by shortage of staff and equipment would be overcome and the feeding of patients and staff would become one of the primary concerns of hospital administrators.

The report of the Radium Committee, which was presented to the meeting by Sir E. Rock Carling, recommended that in future the clinical supervision of radium work in hospitals of the King's Fund should be entrusted to the Radium Commission, which exercised these functions through the whole of Great Britain outside the Metropolitan area. The income of the King's Fund was £325,813 for 1943, and in making this announcement the treasurer said that the Fund had given a good deal of attention to the discussions on the White Paper. "Two things," he said, "stood out as necessary: (1) in the arrangements for hospital services there should be a true partnership between the municipal and voluntary hospital; and (2) voluntary hospitals should continue to receive very large voluntary income."

It may be added as a footnote to the announcement of the £250,000 for Guy's Hospital that this will enable the hospital authorities to start on the plans (which they have had for some time) not only to restore the buildings damaged by enemy action but to bring the bed accommodation up to 1,000; to provide the latest equipment of every kind for diagnosis and treatment; and to build a new college for its medical students and create a great medical teaching centre there. It is also hoped that a "Guy's" will be erected in some country area, within easy access of the parent institute, which will provide for the physical re-education and rehabilitation of patients.

## MEDICAL RESEARCH IN EIRE

The report for the year 1943 of the Medical Research Council of Ireland has been issued from its office at 85, Merrion Square, Dublin. The membership of the Council remains unchanged, except that Prof. J. W. Bigger (representing the University of Dublin) resigned owing to his continued absence from Dublin and Prof. W. R. Fearon was nominated by the University to fill the vacancy. During the year the Council continued its policy of assisting scientific investigators in schemes put before it by workers interested in particular problems. Support was also given to schemes of research into public health questions of pressing importance or interest; for example, epidemic goitre in certain areas in Co. Tipperary, and the bacteriology of epidemic diarrhoea and enteritis in Dublin. At the request of the Department of Local Government and Public Health the Council advised on the establishment of a special research into the chemotherapy of tuberculosis, and a grant of £3,000 per annum was voted by the Dail for this scheme; arrangements were also made for investigating the problem of the typhoid carrier. As in past years a number of whole-time grants and grants-in-aid were made to individual workers in various branches of medical science. The report includes a summary of work done by grant-holders during 1943 and a list of their publications.

## RELIEF IN EUROPE

Some idea of how UNRRA, the organization of which was outlined in these columns on July 29 (p. 166), is getting to work was given at a press conference recently. The first phase of civilian relief (provisionally estimated to last six months) will be the responsibility of the Allied Armies and the Civil Affairs Branch of the Army. Six to eight public health officers appointed by UNRRA will be attached to the Army's Civil Affairs Branch for this first or military phase and released to UNRRA afterwards. Contact is maintained with the various Allied Governments, particularly with their medical representatives, who know what the problems of relief will be, and it is hoped to appoint further public health officers for purposes of liaison. It was emphasized at the conference that the function of UNRRA is to help re-establish and strengthen a country's national and local health and medical services so that it can deal with its own problems as soon as possible. UNRRA will not force any country to take its help, but will respond to requests. Preliminary discussions have shown that large numbers of doctors and nurses will not have to be recruited; most countries have enough personnel to carry on their normal work. Medical supplies are, however, a different matter. Agreement has been reached between Great Britain and the U.S.A. on drugs and dressings required, methods of packing, labelling, etc. The basic supplies are in two forms. (1) An emergency unit containing drugs, surgical equipment, etc., to meet the requirements of 100,000 people for one month, one hospital of 200 beds with operating theatre and x-ray apparatus, and five 40-bed hospitals. These latter are tented cottage hospitals to supply the needs of remote villages. (2) A standard unit with supplies for 1,000,000 people for three months; this unit will form a pool from which actual needs in particular areas can be met.

As already announced, UNRRA has an epidemiological bureau, which will collect and distribute information, and a special division (the Displaced Persons Division) to deal with one of the most urgent problems—the return home of refugees, with all that that means in the way of medical inspection, prevention of epidemics, quarantine, immunization, etc. As UNRRA has special responsibilities for the supply and distribution of food, it has its own nutrition experts, who will investigate on the spot the actual nutritional conditions of the people. Already liaison with the three Balkan missions in Cairo—Yugoslavia, Greece, and Albania—is complete. Three doctors and three senior nurses are now supervising camps and training suitable refugees in nursing, etc., and other staff are waiting to join them.

The Pedestrians' Association states that the 35 m.p.h. general speed limit for motor vehicles that became law in the United States in October, 1942, for conserving rubber has turned out to be the biggest life-saver since the introduction of motoring. According to the U.S. National Safety Council the number of persons killed was reduced to 2,000 a month in the first month of the limit, compared with 3,920 in the corresponding month of the preceding year. In 1943 the total of road deaths was 23,300 compared with 40,000 in 1941. Though the number of cars in use has greatly diminished, a considerable part of the reduction is generally attributed to the speed limit.

## Correspondence

### Milk for School-children

SIR.—Dr. Alison Glover's letter (July 29, p. 160) omits any reference to one important gap in the scheme. During the school holidays not only is the milk allowance reduced by one-half but it can only be obtained if the child actually consumes it on the school premises. Now the exactions on the time of mothers of young children are at present far too great for them to be able to accompany the children, as requested, to the school premises during the morning. The position is aggravated by the fact that this year not only does the summer milk ration stand at the winter level but dried milk is unobtainable and tinned milk—on "points"—is very scarce. Nor can the last two be considered adequate substitutes for fresh milk. Again, it does not seem reasonable that this holiday milk supply should be limited to elementary schools under the Board of Education. Milk rationing for the whole community has made this distinction, once reasonable, quite unfair.

On inquiry I am informed that the milk no longer consumed at the schools during the holidays is returned to the "pool." Surely a solution would be for the milk to be delivered at the homes on production of the school-child's ration book. It has, I understand, actually been urged against this that the parents might drink the children's milk! So far as my observation goes, exactly the opposite occurs; the parents give up their own milk supply for the children.

A pamphlet entitled *Better Health*, published under the auspices of the Ministry of Health, bears on the cover: "Your Child must have that Extra Milk." Yet other Departments appear to obstruct this being effected.—I am, etc.,

Cambridge.

W. LANGDON-BROWN.

### Infective Hepatitis

SIR.—I was most interested in the admirable paper on infective hepatitis by Prof. Witts (June 3, p. 739). There are more points of difference between habits of British officers and British other ranks which may be of interest as regards the mode of entry of the virus of infective hepatitis into the body. The British officer is prone to drink plain water to slake his thirst, and when he drinks spirits these are often diluted with plain water—if not out of preference then at least out of necessity. On the other hand, the British other rank rarely drinks plain water: even when ill it is difficult to get him to drink plain water. He "brews" and drinks tea at all times of the day and night, and he will drink beer if he can get it.

It is believed that the liver is the site of election for the virus of infective hepatitis. Syphilis and many of the drugs used in the treatment of syphilis are hepatotoxic agents and so can lower the resistance of the liver to any substance or infecting agent which has a predilection for attacking it. Accordingly should occasion no surprise that when syphilitics under treatment do develop infective hepatitis the disease is usually severe—or rather less benign—and of longer duration than it is in non-syphilitics. That is only to be expected.

It seems to me that valiant attempts are being made to prove that syphilitics or others under similar treatment do not suffer from infective hepatitis but suffer from post-arsenical jaundice instead. Why, I cannot fathom, because in lots of cases of so-called post-arsenical jaundice the classical clinical picture of infective hepatitis is obtained. The remainder, I agree, would appear to have an afebrile onset and present themselves with anorexia, nausea, upper abdominal discomfort, and jaundice, etc., but there are numerous cases of individuals who do not suffer from syphilis and who have not been receiving arsenic or other hepatotoxic substances who give a similar history and show similar features. Such cases are diagnosed, quite rightly in my opinion, as of infective hepatitis, even though no febrile disturbance has been complained of or noted. Furthermore, as regards so-called post-arsenical jaundice, surely it is of significance that its incidence in V.D. clinics is less pronounced when separate needles and separate syringes are used for the introduction of arsenicals into the body. It would be strange were the incidence of true post-

arsenical jaundice to fluctuate in similar fashion as infective hepatitis with jaundice does in the non-syphilitic population. In addition the fact that the pathological lesions in the liver in infective hepatitis with jaundice and in so-called post-arsenical jaundice are at least similar, if not exactly the same, would appear to support the thesis that they are both one and the same disease. It is not disputed that arsenic may cause liver damage with jaundice, but I do feel that it is erroneous to regard syphilitics, under arsenical therapy, who develop jaundice, as suffering from toxic jaundice due to arsenic and not infective hepatitis.

As regards homologous serum jaundice, it is believed to be different from infective hepatitis, one reason being that the incubation period may be as long as 90 days. It results from the introduction of serum from a human source into the body. So far no one has succeeded in producing infective hepatitis with jaundice in any form of life other than the human being. The serum producing so-called homologous serum jaundice is said to contain an icterogenic agent—presumably the virus of infective hepatitis. Well, if that is so, then the serum must contain antibodies to the virus or infecting agent of infective hepatitis. Not every person having such a serum introduced into the body develops jaundice, and those that do develop so-called homologous serum jaundice may not do so for as long as 90 days. But is this prolonged incubation period not understandable, if, as would appear to happen, an antigen and appropriate antiserum are injected together into a host frequently susceptible to the effects of the antigen, which in this case, I suggest, is the virus of infective hepatitis?

The pathological lesion in the liver is said to be similar, if not exactly the same, in all three types of jaundice. Accordingly it is difficult to believe that they are all not due to the same infecting agent, as the only points of difference are in the soil in the case of syphilitics and the mode of introduction of the virus in so-called homologous serum jaundice.

As regards symptomatology, I feel that pruritus, which though rare is less rare than urticaria and which I have found only in very severely jaundiced patients, is a pre-urticarial state and is indicative of marked impairment of liver function.—I am, etc.,

J. MACKAY-DICK,

Major, R.A.M.C.

Middle East Force.

### Military Psychiatry

SIR.—Lieut.-Col. H. B. Craigie's article, "Two Years of Military Psychiatry in the Middle East" (*B.M.J.*, July 22, p. 105), is of much importance and merits careful consideration.

It is stated that an analysis of the admissions at one psychiatric centre during a six-months period showed that as much as 46.2% of neurosis and 37.5% of psychosis cases had had a previous breakdown, and that in addition 38% of all anxiety neurosis and 33% of all hysteria cases showed evidence of "markedly abnormal" personalities before their present breakdown, while 20% showed evidence of a "markedly psychopathic" family history, not easy to obtain under the circumstances; also an analysis of one large series of cases showed that 79% of the neurotic sick had a bad previous history.

Of the total psychotic cases 50% suffered from schizophrenia, a particularly intractable and dangerous disease, while 30% were manic-depressive, a form very liable to recurrence, and about 7% had various degrees of mental deficiency. Of 623 such neurotic and 216 psychotic cases discharged from one hospital during a period of three months, 92% of the former group and 70% of the latter were, it is stated, returned to duty, 61% and 48% respectively to full duty.

There can be little doubt that Lieut.-Col. Craigie is correct in saying that "the potentially 'infective' nature of psychiatric casualties is always a factor of considerable importance," and that "irresolute incompetent men are useless in modern warfare," but surely it is clear that the vast majority of these cases are most unstable "misfits" who should be eliminated, as Lieut.-Col. Craigie says, and who, to quote him again, "can cause difficulties and even disasters out of all proportion to their numbers, and whose presence constitutes a continued if only a potential menace to the morale of the group as a

whole"; and yet, as stated, 92% of 625 such neurotics and 70% of 216 psychotics are sent back to duty during one period of six months!—I am, etc,

B. H. STEAV

Late Psychiatric Consultant, Royal Hospital,  
Wolverhampton and Staffordshire Infirmary,  
and Medical Superintendent, Stafford  
Mental Hospital

St Mawes, Cornwall

### Resistance of Gonococci to Chemotherapy

SIR.—Lieut.-Col. D. J. Campbell (July 8, p. 44) draws attention to the severity of gonorrhoea affecting the Army in Sicily and Italy, and makes the statement: "Since the invasion of the Latin countries gonorrhoea has proved intractable to the former accepted methods of treatment by chemotherapy." It is possible that this decrease in the number of sulpha-drug-sensitive gonococci is a phenomenon not solely confined to the Mediterranean theatre of war. In the isolated establishment in which we work naval personnel from all branches of the Service are admitted for treatment. The disease is treated early, all the men reported as soon as they noticed a urethral discharge, and adequate and accurate dosage is assured by admitting the cases to a ward reserved solely for the purpose in sick quarters.

In the accompanying two tables the fresh infections with gonorrhoea admitted during the first six months of 1942 and the first six months of 1944 are contrasted. By a coincidence the identical number—i.e., twenty-three cases—was admitted in both periods and the figures can therefore be compared directly. It will be seen that in spite of the fact that the newer sulpha drugs—sulphathiazole and sulphadiazine—were employed, treatment took half as long again. Twice as many patients needed more than one intensive course, although the drug was usually changed with each new course to find if the organism was sensitive to the different sulpha derivatives.

TABLE I

	Number of Cases Treated	Average Grammes Drug Case	% of Different Drugs Used	Average Number of Days under Treatment
Jan-June, 1942	23	32	Sulphapyridine 96 Sulphanilamide 4	13
Jan-June, 1944	23	48	Sulphapyridine 24 Sulphadiazine 27 Sulphathiazole 49	19

TABLE II

	Number of Cases Treated	More than one Intensive Course	T A B Shock	Irritation
Jan-June, 1942	23	5	1	8
Jan-June, 1944	23	10	5	12

Posterior urethral infection was present in 50% in 1944 as opposed to 35% in 1942, as evidenced by the necessity for irrigation treatment. No fewer than five cases required T A B shock as opposed to only one in the earlier series. Finally, the average number of days required for a cure (including at least two days' observation after treatment) was nineteen in 1944 and thirteen in 1942, although two of the 1942 cases were complicated by a syphilitic infection, whereas the 1944 cases were apparently straightforward. The usual adjuvant methods for investigation and treatment were used where indicated—urethroscopy, sounds, T A B shock, prostate massage, sitz baths, and so on. All the patients reported exposing themselves to infection within the British Isles. There were no metastatic complications.

One case included in the 1944 series is of special interest. The patient was treated over a period of sixty-eight days with 26 g. of sulphapyridine, 52 g. of sulphathiazole, and 52 g. of sulphadiazine, T A B shock on ten occasions with brisk reactions and irrigations. At the end of this period he still had a purulent discharge containing gonococci. He was therefore put on a continuous intramuscular drip of glucose saline and given 100,000 units of penicillin in twenty-four hours. A further 200,000 units were given over forty-eight hours and no gonococci have been demonstrated since then, although there has been a slight watery urethral discharge on two occasions. If sufficient penicillin becomes available in the future it would be reasonable to use it for gonococcal cases after two intensive courses of a sulpha drug have failed to effect a cure.

It would be unwise to draw conclusions from such small series of cases, but as these infections were contracted under

similar conditions it appears that gonorrhoea in this country is becoming progressively more resistant to treatment with sulpha drugs, including the newer variants.—We are, etc,

SELWYN TAYLOR.

F. C. BARLOW.

Surg. Lieut., R N V R

### Gonorrhoea on the Continent

SIR.—The type of gonorrhoea in males met by Lieut.-Col. D. J. Campbell in Italy (July 8, p. 44) is exactly the type which was familiar to the venerologist all over middle Europe during the pre-sulphonamide era. Simple uncomplicated gonorrhoea of the anterior urethra was rare; the infection spread rapidly to the posterior urethra, and complications as mentioned by the author were only too frequent. Correspondingly, there was a high number of complications in the female patients. It was thought that a large proportion of the complications could be explained by the early intensive local treatment generally used—namely, syringing or Janet's method in the male patient and intracervical treatment in the female. In contrast to the British treatment with potassium permanganate generally practised, protargol, albargine, and other silver-salt solutions were widely used on the Continent. As Lieut.-Col. Campbell did not subject his men to an early intensive local treatment this explanation has to be abandoned. A difference in the virulence of the gonococcus seems probable. With the advent of sulphonamide treatment the number of complications in the male and female decreased on the Continent, but did not reach such a low level as in this country.—I am, etc,

Preston

A. FESSLER.

### Rheumatic Fever and the Sulphonamides

SIR.—Dr W S C Copeman's letter (July 22, p. 127) raises an interesting point. Some time ago I wrote to Cmdr. Coburn of the United States Navy as follows:

"I notice that your experiences have been similar to mine and you have found that treatment of tonsillitis with sulphonamide compounds has not decreased the liability to rheumatic fever, and yet sulphonamide administered for long periods at a time in small doses seemed to have a prophylactic effect. I am wondering if you could suggest any explanation as to how these two apparently opposed actions can be correlated."

His reply is given below:

"In answer to your question, this is our opinion. A rheumatic subject is sensitized by an acute streptococcal infection, and the administration of sulphonamide during or subsequent to infection has no beneficial effect because the trigger mechanism is already released. On the other hand, the administration of small prophylactic doses of sulphonamide checks implantation of hemolytic streptococcus and thereby prevents acute infection and the release of the trigger mechanism."

I am in agreement with Cmdr. Coburn's opinion. I would like to point out also that the administration of sulphonamides to acute rheumatic subjects does more harm than good, although I have no doubt as to its prophylactic use when given over long periods of time to rheumatic subjects in a quiescent phase.—I am, etc,

Royal Infirmary, Edinburgh

A. J. GLAZEBROOK.

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SIR.—Rheumatic fever is at present regarded as a sequel, probably of an allergic nature, to an infection with streptococci—such as tonsillitis or suppurative otitis media. Treatment of an infection of this type with sulphonamides will not prevent the subsequent rheumatic reaction, and the case quoted by Dr W S C. Copeman is thus not surprising (July 22, p. 127). The great value of the sulphonamides in this field, as established in the last few years, lies in the prevention of streptococcal infections, mainly of the upper respiratory tract, in those children that have proved their special sensitivity to streptococcal infections by developing an attack of rheumatic fever. These children are very prone, as we all know, to repeated attacks of streptococcal infections only too often followed by renewed attacks of rheumatic fever with endo-, peri-, and

myo-carditis. When these children are given small doses of sulphonamides continuously from October to July, or even throughout the year, the majority of these streptococcal infections with their rheumatic sequelae can be prevented. The once-bitten heart can be spared further damage, and the lucky ones whose hearts have remained unharmed during the first attack stand a much greater chance of growing up with sound mitral and aortic valves.—I am, etc.,

London, W.1.

G. SCHÖENEWALD.

### Bacterial Endocarditis treated by Sulphapyridine

SIR,—A case of bacterial endocarditis treated by sulphapyridine and resulting in apparent recovery occurred in my practice and would seem to be worth recording.

The patient, a youth of 16, complained of sore throat accompanied by the usual signs and symptoms of acute tonsillitis. This was treated by ordinary antipyretic drugs, and the patient was able to return to work in about two weeks. A week later I was called to see him. He complained of symptoms suggestive of influenza—pain in the back and limbs, temperature elevated, and pulse correspondingly rapid. Despite treatment the temperature remained high and his condition did not improve. I became suspicious of a slight rheumatoid rigidity and the presence of Kernig's sign was also suspected. He was sent to hospital for investigation. In hospital the cerebrospinal fluid was examined, but no meningococci were seen. The Widal test was also negative. A blood culture revealed the presence of a pure growth of *Staphylococcus aureus*. Changing cardiac murmurs appeared, the heart enlarged, and the abdomen became distended with ascites.

The patient was given sulphathiazole and sent home as he was not a case for a fever hospital. After his return home his condition appeared to be hopeless. I tried to obtain sulphathiazole for him, but at that time it was not available. He was therefore put on sulphapyridine and received two courses each of 0.12 g. His temperature subsided, the cardiac murmurs disappeared, and the abdominal distension gradually diminished. A short time after this he had a recurrence of the pyrexia, which rapidly subsided on the administration of a further course of sulphapyridine.

I saw him recently, two years after his illness. He complains of pectoral pain and some slight breathlessness on exertion. Examination revealed a normal-sized heart, normal in rate of beat and regular in rhythm. There was a slight roughness of the first sound at the mitral area but no definite murmur. I intend to send him for electrocardiographic investigation.—I am, etc.,

Stevenston.

R. P. LAWRIE.

### Slow Induction of Anaesthesia and Vomiting

SIR,—We are all grateful, I feel sure, for the excellent advices on pentothal administration which have been tendered in your correspondence columns during recent weeks. Dr. Roberts (July 29, p. 161) in particular is to be congratulated upon his sane and lucid expositions on the subject. There is just one point that has been overlooked, however. Although anaesthetists are by now agreed that the administration should be cautious, both in regard to dosage and speed of injection, no one has yet mentioned the fact that slow inductions of any anaesthetic agent predispose to vomiting. Battle and air-raid casualties are unprepared for operation, and only too often have loaded stomachs which show little or no signs of emptying even after several hours' wait, this being due to the fact that digestion is to a large extent inhibited during shock, especially when morphine has been employed. Furthermore, during slow inductions the area of hypersensitivity of the vomiting centre at the lower level of the second stage (Guedel) is traversed slowly, thereby allowing a relatively long period during which the patient is predisposed to vomit. The anaesthetist is, therefore, in the horns of a dilemma; should he inject quickly in order to pass through the area of hypersensitivity in the shortest time possible or induce slowly to avoid aggravating the shocked condition? The answer lies, of course, in effecting a compromise; the first cubic centimetre may, with advantage, be given rapidly, while further administration should remain cautious.

Unless the above facts are fully realized trouble is bound to occur sooner or later. Nothing is more unpleasant and difficult than the clearing of vomitus from the pharynx of a patient with severe injuries to the face, to say nothing of the anxiety caused by watching such a patient becoming progres-

sively anoxic from a persistent laryngeal spasm! This state of affairs is not associated solely with pentothal administrations; it may occur in the course of any anaesthetic given under similar conditions.—I am, etc.,

A. H. GALLEY,  
Anaesthetist, E.M.S., Sector IX.

### Perineal Tears in Normal Confinements

SIR,—Before drawing the conclusion that "considerable numbers of cases with perineal tears in domiciliary maternity work are left without attention" surely one should consider the following factors.

1. (a) The district or private nurse is attending exclusively to one patient throughout the second and third stages of labour. That patient is a woman with whom the nurse has kept in touch for some months; she will also be in contact with patient and relatives for two weeks after the birth. (b) The hospital nurse may be in charge and the part charge of 2 to 6 cases in different stages of labour. She may see any one patient for a few hours only, and loses touch when the patient leaves the labour ward. Personal interest is at a minimum.

2. (a) In domiciliary work the nurse, the patient, and the relatives are pleased when the case is successfully conducted without a tear. The nurse can get home or to rest with the minimum of delay feeling she has done a good job. If a tear necessitates sending for a doctor there is a lot of additional fuss and worry in the household, and frequently a long delay before everything is "safely over." (b) In hospital work, where there is a doctor on tap, a tear is treated as part of the normal routine and very little importance is attached to it.

I consider that these factors tend to produce a smaller number of tears in normal confinements in domiciliary work, the district or private nurse being very intent on avoiding the extra inconvenience to all concerned. Also I think that hospital nurses should be taught to regard a perineal tear as a slightly disgraceful lapse on the part of the person delivering.—I am, etc.,

ISABEL M. GARDNER.

Liverpool.

SIR,—Dr. H. E. Humphrys (July 29, p. 160) draws attention to the low percentage of perineal lacerations reported by midwives. The figure 11.3% is ridiculous, even when the proportion of multiparae is high, and my figure for all degrees of laceration and episiotomy is far in excess of the 23.5% of the writer.

Midwives should be required to report all perineal and vaginal lacerations, no matter how trivial. All require repair, and the reporting of many cases should not necessarily be taken to reflect against the capabilities of the midwife. Admitting that many lacerations are inflicted by unskilful delivery it should be appreciated that a perineal laceration, which can be repaired, inflicts less permanent harm than an overstretched anterior vaginal wall, even with an intact perineum, a condition which may be associated with intractable stress incontinence of urine.

Finally, let us press for efficient perineal repair and discard the bad old practice of inserting one—or more—stitches to close a laceration involving the perineum, pelvic floor, and posterior vaginal wall. The results of the former are excellent and of the latter very poor.—I am, etc.,

Newcastle-upon-Tyne.

WM. HUNTER.

### Timing in Schäfer's Method

SIR,—Misleading quotations from R.A.M.C. Training, 1935, made by Dr. E. F. Chapman (July 8, p. 57) resulted in criticism of this excellent first-aid manual by Mr. A. M. McMaster (July 22, p. 128). As one who has been called upon to teach (July 22, p. 128). As one who has been called upon to teach first aid to medical personnel, both in this country and with the B.N.A.F., may I be permitted to quote from my own copy of R.A.M.C. Training, 1935, chap. 37, para. 677, and thus correct the erroneous impression which has been created: "Lean forward . . . and so produce a firm, downward pressure . . . on the loins . . . this part of the operation should occupy the time necessary to count slowly—one, two. By this means the air . . . is driven out of the patient's lungs. . . . Immediately after this swing backward, slowly releasing the pressure . . . this part of the operation should occupy the time necessary to count slowly—one, two, three."



Most standard textbooks, including the *BP* have their quota of errata, and it is possible that Dr E F Chapman's copy of *R.A.M.C. Training*, 1935, has not been revised in the light of such corrigenda or addenda. This means that, with regard to the timing of Schafer's method, uniformity in first-aid teaching does in fact exist in *R.A.M.C. Training* 1935, *First Aid in the R.N.*, and the *R.A.F. Teaching* as well as in the Royal Life-Saving Society's booklet and that of the St John First Aid to the Injured.

To anyone who is considering making public reference to any of the Service manuals may I therefore suggest that their nearest Service M.O. or medical orderly be approached on the subject beforehand, as the latter are responsible for keeping their manuals revised in the light of recent addenda not always available under present circumstances to civilian medical practitioners through H.M. Stationery Office. This frequent revising of all manuals is more than a duty in the Services—it is inspired by their great aim to disseminate a high standard of first-aid teaching as modified by recent advances, and thus maintain at the lowest possible level the number of war memorials—I am, etc.,

War Memorial Hospital Woolwich

SAMUEL HALES

### Results of Colles's Fracture

SIR,—The interesting letters in recent issues (July 8, p 55, and July 22, p 126) on the subject of plaster of Paris in the treatment of Colles's fractures prompt me to record my own satisfactory experience of the non-plaster method. Some 16 years ago I sustained a Smith's fracture of the right wrist, and, alarmed by the results I had seen in others, I determined to concentrate on a movable joint. From the second day the splints were removed three times a day for massage and exercise. In two weeks I was able to use a knife and fork in public without even a bandage on my wrist, in four weeks I drove my car 60 miles, repeating the journey next day, with no ill effects beyond disturbed sleep for a few nights.

One point I would like to stress is my belief that the successful functional result, with some thickening of the ulnar bone as the only deformity, was in large measure due to the fact that the bones were x-rayed and set within half an hour of the accident, thanks to the kindness of my colleagues—I am, etc.,

Mentrose.

PHILLIS EWART

### Dangers of Lay Psychotherapy

SIR—May I be allowed through your columns to draw the attention of members of the medical profession to a practice which is being attended with increasing dangers. I refer to the rather casual way in which sufferers from neurotic disorders are sent to clinics organized and run by laymen. There are many such clinics in London and the Provinces. The directors are often well-meaning clergymen who gather around themselves a group of lay helpers. These people have had no training in psychiatry, somatic medicine, and neurology. They are incapable of making a differential diagnosis. Their equipment is a superficial knowledge of Freud and a morbid curiosity.

Recently a ministerial colleague of mine was brought to the verge of suicide through mishandling by a colony of lay psychotherapists. He had been obliged to leave his work owing to a "nervous breakdown." He went from a provincial town to London, where a well-known minister advised him to consult a lay psychotherapist. This gentleman passed my friend on to one of his helpers—a man who worked in an office and practised psychotherapy as a pastime. He proceeded to treat his patient by simple psychoanalysis. A thorough medical examination was not insisted upon, nor was a qualified psychiatrist consulted.

After a few months of this treatment my friend became mentally very ill. He returned to his home town, and immediately consulted the medical superintendent of a mental hospital, who diagnosed at once incipient manic depressive psychosis.

The gravity of the matter will be seen in the fact that his church authorities required from the lay psychotherapist a report on the minister's condition. The report stated that my friend "would not yield to treatment," and was not suited

to the ministerial life—and this after very many years of service as a parson.

It is because of such cases of ruinous mishandling that I would urge the medical profession to investigate very closely the claims and practices of lay psychotherapists. My own conviction is that no person suffering from mental disorder, however slight, should be treated by anyone who is not a recognized medical psychologist.—I am, etc.,

HORACE DOWLING

### Spanish Medicine

SIR—I should like to intervene with a few considerations in the controversy on medicine in Spain. We may divide the practice of medicine into two different aspects, clinical and research work. Of the former, hardly anything can be made known abroad, and thus Spain, which is a country where the average practitioner maintains a standard at least equal to that of most other European countries, is medically underrated through her actual insufficiency in medical research work.

Yet it may be worth while to enumerate some of the Spanish contributions to medicine from the Middle Ages up to the present time, besides those of Ramon y Cajal and his histological school, already quoted in your paper. Those contributions are the following: Haemostasis through cauterization, first description of the treatment of deformities of mouth and teeth, tracheotomy, discovery of the parasite of scabies, feeding with stomach tube, discovery of ether, first use of tinctures and brandy in therapeutics; discovery of the pulmonary cycle of the circulation of blood (this a century before Harvey); treatment of malaria with bark of cinchona, operative treatment of strangulated femoral hernia, first recorded abdominal laparotomy (14th century), immunization against cholera, operative "cerclage" for kidney injuries; orthopaedic resection of kidney, first blood bank; closed plaster treatment of compound fractures, establishment of the first lunatic asylum, creation of toxicology as a science and paediatrics as a specialty, first description of such diseases as smallpox, measles, paralysis following fracture of spine, serous pericarditis, mediastinal abscess, pharyngeal paralysis, otitis media, intestinal tuberculosis, and chronic military tuberculosis.

The list is not exhaustive, and although I do not claim for my country a leading position in medicine, I think it only fair that Spain should be given her fair place among the co-builders of medical science—I am, etc.,

Manchester

JAMES ELIAS

### Treatment of Gas Gangrene

SIR—The name of Gen. Mitchiner is itself a guarantee that his recent article (*Journal*, 1944, 2, 37) will be widely read and may have an important influence on the practice of war surgery. Therefore it is important to draw attention to two of his "thoughts" on gas gangrene: (1) that the disease has occurred less frequently and on the whole less virulently than in the last war, and (2) that antitoxin and sulphonamides seem to have next to no value if the disease is established. Because both views are so directly opposed to others that rest on well-documented evidence (MacLennan, *Lancet*, 1942, 2, 63, 94, 123, and 1944, 1, 203; Macfarlane, *B.M.J.*, 1943, 2, 636; MacLennan and Macfarlane, *B.M.J.*, 1944, 1, 683) it is to be regretted that Gen. Mitchiner has not thought it necessary to give any reasons for his vitally different conclusions. Meantime it is to be hoped that war surgeons will continue to regard gas gangrene as a dangerous and ever-present menace, and will use antitoxin and chemotherapy in the treatment of the disease. Gen. Mitchiner aims at eliminating complacency and encouraging adequate treatment. His remarks on gas gangrene are a great danger to his own objectives—I am, etc.,

London

CLAUDE FRANKAU

H. L. Arbeiter and M. G. Levine (*Minnesota Med.*, 1943, 26, 1065) report the case of a man aged 34 who was reinfected with pneumococcus meningitis six months after the first infection. A different type of pneumococcus was present with each attack—namely, Type 25 in one and Type 10 in the other. No otitis was evident, but there was a history of a skull fracture two years before the first illness. The patient recovered both times after a combination of sulphonamide and antiserum treatment.



## Obituary

L. E. SHORE, O.B.E., M.D.

Many Cambridge men will learn with regret that Dr. L. E. Shore, formerly university lecturer in physiology and Fellow of St. John's College, died in a nursing home at Bath on July 27.

Lewis Erle Shore was born at Churcham, Gloucestershire, on July 5, 1863, the second son of T. W. Shore, F.G.S., a well-known Hampshire archaeologist. He was educated first at Southampton Grammar School and Hartley College, and from St. John's College, Cambridge, where he won double first-class honours in the Natural Sciences Tripos of 1885, entered St. Bartholomew's Hospital. After graduating in medicine in 1887 he returned to Cambridge and was elected a Fellow of his College, proceeding M.D. in 1891. During the 'nineties he contributed to the *Journal of Physiology* a number of papers on peptone and on gaseous metabolism of the liver, and to these columns (jointly with W. H. Gaskell) on the physiological action and effects of chloroform. L. E. Shore was a familiar and much-liked figure in the laboratories and lecture room of the Department of Physiology at Cambridge, and with Sir Michael Foster he wrote the popular textbook *Physiology for Beginners*, which reached a second edition in 1913. For thirty years he served St. John's as junior bursar with quiet efficiency during the difficult period of recovery from a severe decline in value of the lands owned by the College. He worked on the staff of the First Eastern General Hospital, which was set up at Cambridge during the last war, and his main care was the neurological patients. At the Annual Meeting of the B.M.A. held at Cambridge in 1920 he was vice-president of the Section of Neurology and Psychiatry. His elder brother, Dr. T. W. Shore, now in retirement, is emeritus lecturer on biology at St. Bartholomew's, and was warden, and later dean, of the Medical College for very many years. His nephew, Dr. T. H. G. Shore, is physician to the Prince of Wales's Hospital, Plymouth.

Dr. FRANK BRYAN, who died on June 29 (writes L. O. L.), was born at Prestwich, near Manchester, in 1877, and educated at Clifton College, where he became a noted gymnast, winning all the belts and the Carlin Cup and representing his school twice at Aldershot. From Clifton he passed to King's College, Cambridge, where he promptly won a place in the college boat and, I understand, he was well in the running for a university blue. He took his B.A. with second-class honours in the Natural Sciences Tripos of 1898, and from Cambridge went to St. Mary's Hospital, London. After graduating in medicine he held appointments at the Middlesex County Asylum, Tooting, and at the Derby Royal Infirmary. He bought a practice at Selston, Notts, but on the outbreak of the last war he joined the R.A.M.C., and for over three years served with the rank of captain in Bombay, partly as an embarkation officer, and also in a staff appointment at the Alexandria docks. Frank Bryan was twice seriously ill, and to enable him to have a short rest he was made personal surgeon to Sir Charles Munro for a trip to Basra at the end of the war. When he returned home he became one of the original medical officers under the National Health Insurance scheme, and later went to Plymouth until he retired. From 1938 he bravely fought failing health. He was modest and unassuming, with a keen sense of humour, always cheery, and ever ready to take part in the affairs of Tavistock, where he lived.

Dr. BERNARD KELLY, who served the Royal United Hospital, Bath, very faithfully for a number of years as visiting anaesthetist, died suddenly on July 5, aged 58. He studied medicine in Dublin and took the diplomas of the Irish Royal Colleges in 1912. He was with the R.A.M.C. in Palestine during the last war, from 1916 to the beginning of 1919, mostly in casualty clearing stations. Before going to Bath he practised at Exeter and was honorary anaesthetist to the Royal Devon and Exeter Hospital. In addition to his post at the Royal United Hospital, Dr. Kelly was honorary anaesthetist to the Ear, Nose, and Throat Hospital and to the Eye Hospital at Bath. He is survived by his widow, and by a son and a daughter, who are both serving over-seas, the one as squadron leader in the R.A.F. and the other in Queen Alexandra's Imperial Nursing Service Reserve.

Dr. REES PHILLIPS, who practised for many years in Kington Road, London, S.E., died on July 16. He was born at Llanboidy, North Wales, in 1878, and from Aberystwyth College went to study medicine at the Middlesex Hospital, graduating M.B.Lond. in 1902, B.S. in 1907, and M.D. in 1919. His early appointments were those of obstetric house-physician at the Middlesex, house-surgeon to the Brighton Hospital for Women, and assistant medical officer to the Lambeth Infirmary. He had been surgeon to the M Division of the Metropolitan Police, public vaccinator for the borough of Lambeth, a few months before the last war was M.O. to the 24th Battalion of the London Territorial Regiment. During the war he served Gallipoli, Egypt, and Palestine, and reached the rank of lieutenant-colonel, R.A.M.C.(T.A.); he was mentioned in dispatches and awarded the Territorial Decoration. On returning to civilian life he took the D.P.H. in 1920 and the D.M.R.E. in 1921. Dr. Rees Phillips joined the B.M.A. in 1913.

We regret to announce the death on July 31, at his home Southcote Road, Reading, of Dr. HENRY JOSEPH MILLIGAN, M.C., who had been medical officer of health and school medical officer for the county borough of Reading since 1919. He took his medical course at the University of Glasgow, graduating M.B., Ch.B. in 1905, and proceeded M.D. in 1919 after taking the Cambridge D.P.H. Dr. Milligan's first appointment was that of assistant medical officer to the Southern Hospital, under the old Metropolitan Asylums Board. He returned to Glasgow as senior assistant medical officer at the Eastern District Hospital, and next moved to Bootle to take the posts of deputy M.O.H. and tuberculosis officer. Meanwhile he had been called to the Bar as a member of Gray's Inn. During the last war he served with the R.A.M.C. and won the Military Cross, retiring with the honorary rank of major. He was a Fellow of the Society of Medical Officers of Health and acted as examiner for the Royal Sanitary Institute, of which also he was a Fellow. He published articles on infant welfare and the health of school-children and on the supervision of pasteurized milk, and was responsible for eighteen annual reports on the health of Reading. Dr. Milligan had long been a member of the B.M.A. He represented his Division at the Annual Meeting of the Association in 1923, and was a member of the Central Council from 1932 until 1938. He served on the Public Health Committee for the same period and on a number of subcommittees and *ad hoc* committees at headquarters, including the Maternity and Child Welfare Subcommittee.

## The Services

Major-Gen. Sir Ernest Cowell has been awarded the American Legion of Merit for distinguished service to the Allies. He recently came from the Middle East to Northern Command as Deputy Director of Medical Services.

Majors (Temp. Lieut.-Cols.) W. J. Young, M.B.E., I.M.S., and R. B. Davis, I.A.M.C., have been awarded the D.S.O., and Capt (Temp. Major) R. K. Pilcher, Capt. F. R. Glover and H. Pozner, R.A.M.C., and W. Thomson, I.A.M.C., have been awarded the M.C. in recognition of gallant and distinguished services in Burma.

### CASUALTIES IN THE SERVICES

Major LESLIE ROLAND JORDAN, who died of wounds on July 15 in Normandy, joined the R.A.M.C. in 1940 and finally was commanding officer and surgeon of a field surgical unit. He studied medicine at Bristol, graduated M.B., Ch.B. of the University in 1931, and obtained the F.R.C.S. diploma in 1934. After holding house appointments at the Bristol Royal Infirmary and Royal Hospital for Sick Women and Children he was R.M.O. at the National Temperance Hospital, London, and then settled in practice at Muswell Hill, becoming surgeon to the Hornsey Central Hospital and clinical assistant at the Central London Throat and Ear Hospital. He joined the B.M.A. immediately after qualifying.

A. H. C. writes: Capt. S. C. H. HOOP, R.A.M.C., was educated at Tonbridge School, where he had a brilliant career, both entering and leaving with exhibitions, the latter to Caius College, Cambridge. He came down from Cambridge in 1939 after only two years, forsaking a certain First in the Natural Sciences Tripos because he felt it his duty to qualify and get into the Services as soon as possible. He did his clinical studies at the Middlesex Hospital, where he collected no prizes merely because he entered for none, yet had he tried he would have done great things clinically. He must have been among the first troops to land in France, and soon earned the admiration and affection of his fellow officers and men by his bravery in battle and selfless application to the job in hand. Before his death in action he was recommended for the Military Cross.

**Wounded**—Temp Major D S Clark War Subs Capt R C Droop, T H Harrison, W R Lamb Lieut A O G Smith, R.A.M.C.

**Killed on active service in Normandy**—Capt A Ramage, R.A.M.C.

### DEATHS IN THE SERVICES

The following tribute to Surg Rear Adm G I BUCKERIDGE comes from Surg Vice Adm Sir Basil Hall. For a few men it is possible to gain universal popularity and affection. It is to be free from the enmity of others, but Guy Buckridge achieved this by his charm of manner, courtesy, and complete freedom from affectation. His medical education was at Guy's and soon after qualifying in 1903 he joined the Royal Navy. In this Service he had a distinguished career, his last appointment, before returning under the age limit, being that of surgeon rear admiral in charge of the R.N. Hospital at Haslar. Buckridge had a flair for administrative work, and for several years was employed in this duty at the Admiralty, where he was at one time Deputy Medical Director General. His legal type of mind, judgement and great aptitude for seeing the possible consequences and contingencies arising from any decision or proposed regulation made his opinion and advice invaluable. After retirement he held an appointment with the International Council for Non Intervention in Spain in which his experience and character were great assets in dealing with difficulties inherent in an international organization. During the present war he acted as chair man of a Medical Examining Board at Acton. Buckridge was an extremely well read man, and had a vast and accurate knowledge of French and English history. Possessed of a very acute sense of humour, and a quaint manner of expressing his opinions of men and matters, he was a most delightful companion. His sudden death on July 14 has created an empty space in the lives of all those who were happy to be his friends.

## Universities and Colleges

### UNIVERSITY OF OXFORD

In a Congregation held on July 15 the following medical degrees were conferred

**B.M. B.Ch.**—E H Brown, L M Rose, H K R Kilpatrick, L G Kinschick, F D Chandler, G E L Graham, G S Jones, Mrs S N Byron, Moe, In absence, R S Wilkinson, J S Oldham, S Blackard, F O, Daint, A R Dismore, H J L Marriott, J Roberts, A H Wheeler, R R de Mowbray, P V Wadsworth.

### UNIVERSITY OF LONDON

The following have passed the examinations for the Academic Postgraduate Diploma in Medical Radiology: Patricia P Franklin and David Raeside.

The following have completed the Third (M B, B S) Examination for Medical Degrees: April, 1944.

**Honours**—E A Fairburn (distinguished in pathology), J C Taylor (distinguished in applied pharmacology and therapeutics).

**Fees**—Gulldry V S Aldridge, R A Allen, J Altman, E A Andrade, A A Baker, P E Baldry, A P Bentley, H Bentley, H Bunyash, C C Bowley, E Brennan, J L Brennan, P R Bromage, R Cannon, M B Carson, S Cashman, P R Clarke, T A Clarke, M D Collins, M D Crennon, Ada I, Daie, Barbara S Davies, J E Davies, C E Dent, Patricia H Dokie-Clark, Mary P, Douglass, D C H Draffin, D A Evans, Winifred J Ferraby, R Finney, J H Fothergill, J Fry, A J P Graham, G Grant, Audrey M Gray, I R Gray, B A I Greenish, G A Griffin, Ruth M Haslam, G Henington, A T Hunt, Lois E Hunter, Rosemary Jackson, P S Isaksson, W C Johnson, June M Kingston, S M Kinsley, C H R Knowles, G de Lee, H L Le Nava, teur, Dil Durell, M C W Long, Anne I Mackessack, Joan Martin, R Merryweather, K H Miller, P J W Monks, Stella M Murray, Catherine A Neill, J A Nassim, A J P Oldham, D B L Pailthorpe, P E S Palmer, B W T Pender, W J Penman, H A Philcox, Ella Freinkel, J H Rey, P Rib, I Charlotte Saba, E S Shalom, Angèle M P Snow, Rachel F E H Spicer, F M G Stammers, D M Stevens, J W Stewart, I H Syed, P M Vasey, Patri A E Q Walsh, J C P Weber, G P West, J D A Whitham, K C Willett, T J Wilmet, J L Winkler, A M Wood, N L Yap.

### U.C.H. MEDICAL SCHOOL

The following scholarships, exhibitions, and prizes have been awarded at University College Hospital Medical School.

**Goldsmith Entrance Scholarship** (1) J P Johnson (2) Miss E A Bryan. **John Goldsmith Entrance Exhibition** J P Ministry. **Flister Entrance Scholarship in Pathology** W G Spector. **Atchison Scholarship** A S Smith. **Atkinson Morley Scho scholarship** D A W Edwards. **Magrath Scholarships** Medicine, R E Wargman. Midwifery, E A Andrade. **Erichsen Prize** and **Alexander Bruce Gold Medal** O L Wade. **Luston Gold Medal** Miss M Farquharson. Miss M E Hughes. **Fellowship Gold Medal** Miss M E Hughes. **Fellowes Silver Medal** D W H Barnes. **Hilfred Trotter Medal** Miss M E Hughes. **S G A Forsyth** Tuke. **Bronze Medal** C E Drai. **Suckling Prize in Obstetrics and Gynaecology** Miss S M Howarth and Miss P M Lloyd. **Flister Exhibition in Pathology** D A G Galton.

### UNIVERSITY OF GLASGOW

A series of meetings will be held in the Department of Ophthalmology on Wedne days from Sept 6 to 27, at 8 p.m. The meetings are open to all medical practitioners and senior students interested in ophthalmology.

### ROYAL COLLEGE OF PHYSICIANS OF LONDON

At a quarterly Comitia held on July 27, with the President, Lord Moran, in the chair, the following were elected officers for the ensuing year: **Censors**, A C D Firth, George Graham, W H Wynn, Donald Hunter. **Treasurer**, C M Hinds Howell, **Registrar**, H E A Boldero, **Assistant Registrar**, A A Monceff.

The following awards were announced: The Gilbert Blane Gold Medal to Surg Cmdr W A Hopkins, R N, and the Bisset Hawkins Medal to Brig J A Sinton for his work on preventive medicine and particularly malaria. Lord Moran was appointed representative of the College on the General Medical Council. Dr John Parkinson was appointed Harveian Orator for 1945 and Dr W Russell Brain Bradshaw Lecturer for 1945. Viscount Dawson was re-elected representative of the College on the governing body of the British Postgraduate Medical School, and Dr W G Wylie on the Child Guidance Council. Sir Edmund Spriggs will deliver the Harveian Oration on Oct 18.

The following, having satisfied the Censors' Board, were elected to the Membership of the College.

B G C Ackner, M B R A F A R, N H Desai, M B H P Goldman, M B J F Goodwin, M B K Hazell, L R C P R A F, P G Holman, M B E B Jarrett, M B Robert Moore, M B F J P O Gorman, M B, R A F A R, Audrey Palmer, M B F Post, M B Ljwelyn Roberts, M D, M Roth, M B P H Sanderson, M B V K Summers, M D W F T Tarlow, M B R A M C, B E Tomlinson, M B, G Watkinson, M B D N White, M B B Wolman, M B.

Licences to practise were conferred upon the following 149 candidates (including 16 women) who had passed the Final Examination in Medicine, Surgery, and Midwifery of the Conjoint Board and have complied with the necessary by laws.

J C L Adams, M S Adams, V Altman, B E Andrews, W E Anwyl, G D Arthur, C C Bashi, Brigid M Balfour, Margaret M Ballantine, D Barker, W R Barrett, H E Batten, T C Beard, R G Bird, D Blake, J T Blois, Kathleen A C Bowen, Johanna E G Bracer, E H Brown, D F J Brown, C F Bunting, I J Carré, M R Chaudhuri, R E Connor, P B S Cooper, P J W Corser, W E Crocker, G David, D L Davies, P D B Davies, J M Davis, D Denner, Siella D H De Zilwa, A R Dismore, C D Drew, R D Eke and E W Ellis, H M Emrys Roberts, G F Ensor, D G Farquhar, M A Floyer, A C Frazer, A B Freeman, G R Frenn, H T P S Frew, Joan G Garai, J Garber, Kathleen F Garde, Barbara W Gerrard, Beryl J Goff, I H Gordon, W Gordon, A H Griffith, G J Haas, J L Hansell, P Hancin, J A Harrington, W C Harris, F H Hedges, F N Hils, J C Hingston, M D Hillel, I S Hodgson, Jones C L Hollick, M S Hughes, M R Hunt, Breddan B Jacobs, L J R Joel, Christine M H Jones, C C Kennedy, P F Kennish, L Komar, J P MacI, Kyle, A G Leatham, W Leech, Leslie Levy, M L Levy, H J Lewis, A V Lillywhite, M R Lister, R G Lomax, J D Loughrey, Mured J Lowe, J W McConna, ne, P D C Mackay, I A Magnus, W Marshall, F G W Marston, J R Mayers, E T G Meade, Waldo R I Meacock, H G Middleton, S Moller, G Monahan, D M Montgomery, D J Morton, C P Movon, A H R Muir, A O Nichols, J M Norman, K O M O'Meara, Faye Orme, D Orme, H W Palmer, G Parry, D R Patchett, B K Patel, G O Patton, C C Peckles, J T Pemberton, Mary B Penney, A J S Perfect, A Percy, Mary Ransome, J K Ratcliffe, W T D Ray, Patricia L Read, J H T Rees, L E L Ridge, P K Robinson, B S Rose, K W Ruppel, S A Sachak, A C E Sandilford, F D Schofield, B O Scott, J C Sherris, C H Smith, P S Smith, W E Smith, J M Starks, J C Stephens, R H Symons, J Symons, Mary J L Taylor, W K Taylor, M Thomas, R H Thorp, S Tull, G M Turner, S S Walcott, T C P Warner, P R Westall, J W Weston, E C B White, H P B White, J N P L Wildy, T R Williams, N L Yap.

### Diplomas

#### DIPLOMA IN PHYSICAL MEDICINE—F S Cooksey

Diplomas in Public Health (4), Psychological Medicine (7), and Laryngology and Otology (5) were granted, jointly with the Royal College of Surgeons of England, to the candidates whose names appear in the report of the meeting of the Royal College of Surgeons of England in the *Journal* of July 29 (165) and Diplomas in Anaesthetics (34) to those whose names appear in the report of the meeting in the *Journal* of June 17 (p 830).

### ROYAL COLLEGE OF SURGEONS OF ENGLAND

#### F.R.C.S. IN OPHTHALMOLOGY

The following letter has been sent by the President of the Royal College of Surgeons of England to the Council of British Ophthalmologists:

'The Council of the Royal College of Surgeons have given careful consideration to the request of the Council of British Ophthalmologists that they should grant a special diploma of Fellow of the College as a higher diploma in ophthalmology. They agree with the view that a special examination would be more suitable than the usual final examination for the Fellowship of the College for those specializing in this important branch of practice. It is also clear to the Council that the present regulations for the 'F.R.C.S. with Ophthalmology' are too exacting, in that candidates for this diploma are required first to have passed the usual final examination of the Fellowship. The Council therefore agree that there should be a special final examination for the Fellowship of the College for those specializing in ophthalmology, and that, since the standard of this examination would be comparable with that of the usual final examination, successful candidates should rank as Fellows of the College and that there should be no distinction in regard to status

or privileges between Fellows thus admitted and those admitted under the present regulations. The Council have no right under the existing Charters to make this arrangement, but they are prepared to seek powers to grant a diploma of F.R.C.S. in Ophthalmology to candidates who have passed the primary examination for the Fellowship and a special final examination on the lines submitted by the Council of British Ophthalmologists. It is anticipated that two ophthalmic surgeons would be required on the Examining Board, and it is proposed that they should be Fellows of the College and additional members of the Court of Examiners. Two other surgical members of the Examining Board would be selected from the general surgeons on the Court of Examiners and they would take part in some of the oral parts of the examination."

#### ROYAL COLLEGE OF OBSTETRICIANS AND GYNAECOLOGISTS

The quarterly meeting of the Council was held in the Medical Institution, Liverpool, on July 29, with the President, Mr. Eardley Holland, in the chair.

Mr. Eardley Holland was re-elected President to take office in October next, and the following officers were also elected: Vice-Presidents, Prof. William Gough and Prof. D. Dougal; Hon. Treasurer, Dr. J. P. Hedley; Hon. Secretary, Mr. G. F. Gibberd (Mr. W. Gilliat was appointed deputy honorary secretary in the absence of Mr. Gibberd on active service); Hon. Librarian, Mr. F. Roques; Hon. Curator of Museum, Mr. A. W. Bourne.

The following were elected to Fellowship: Dr. Leonard Colebrook, Prof. Leonard G. Parsons; and the following candidates were elected to Membership: J. N. I. Emblin, J. P. Erskine, A. H. MacLennan, Agnes M. Stewart, Elsie M. Terry, Irene M. Titcomb.

Christina McD. McTaggart was admitted to the Membership *in absentia*.

## Medical Notes in Parliament

### Parliamentary Medical Group

The Parliamentary Medical Group have held three meetings during the week ended July 29. Among other subjects they are exploring the possibility of postgraduate facilities being made available in medical schools and universities in this country for selected Indian medical graduates after the war. At their last meeting they received representations from associations concerned with the treatment of tuberculosis, concerning the difficulties resulting from the shortage of domestic and nursing staff of institutions caring for tuberculous patients.

### India's Population and Nutrition

Mr. PETHICK LAWRENCE opened on July 28 a debate on India. He said that if the population of India increased at the present rate famine might recur. Col. ELLIOT said that in the East it took four families on the land to feed one family in the town. In the West one family on the land fed four families in the town. India raised only enough food to keep half her population alive after the age of 22, yet her population was going up at the rate of 1,000,000 every two months.

Prof. A. V. HILL said that in India food was two-thirds of what would be necessary for a decent standard of life. Disease and malnutrition so worked together that any internal strife and disorder, or any epidemic like that of 1918, might produce a major catastrophe. If health measures improved and food production and distribution were bettered, the increase would become 7,000,000 or 9,000,000 per annum. How could food supplies catch up with so riotous an urge to reproduce? That problem required complete co-operation all round, with hard thinking and hard work. Sir STANLEY REED said the growth of the Indian population was now out of control. There had been famine in 1891; famine in 1899 with plague; later the great influenza epidemic. In the following 20 years there were none of these disturbances. Good administration swept away the forces which had kept the population within reasonable proportions.

Mr. AMERY said the causes of the Bengal famine and of the epidemics which followed were to be investigated by a Commission with Sir John Woodhead as chairman and with Dr. Aykroyd, Director of India's Nutritional Research Laboratory, among its members. This investigation would cover the problem of famine and its prevention all over India. In Bengal last year 700,000 human beings died directly from starvation or from endemic diseases which broke out on a large scale where there was malnutrition. The Health Survey Development Committee under Sir Joseph Bhore was studying

public health, nutrition, maternity and child welfare, housing, water supply, and malaria and other endemic diseases. It was expected to report this year.

### Riboflavin Content of Beer

On Aug. 2 Mr. KEELING asked the Lord President of the Council the grounds on which the Advisory Committee on Alcohol, appointed at his request by the Medical Research Council, decided that alcoholic beverages were not significant sources of any of the known vitamins, in view of the statement in Nutrition Bulletin No. 8 that the rarity of symptoms of deficiency in the British people was partly attributable to the presence of riboflavin, vitamin B<sub>2</sub>, in beer. Mr. ATHERTON replied that the committee originally appointed by the Control Board (Liquor Traffic), and later reconstituted by the Medical Research Council at the request of the Home Office produced the book *Alcohol: Its Action on the Human Organism* many years before knowledge of riboflavin was available. Information on the point mentioned was not available even in 1938, when the latest edition of the book was published. Recent publications indicated that riboflavin was present in beers, but it was clearly impossible to say with assurance what extent the rarity of symptoms of deficiency in the British people was in fact due to beer drinking, particularly since there was no evidence of a general deficiency of this vitamin in non-beer-drinkers.

### Pneumoconiosis: Preventive Measures

On Aug. 1 Mr. J. GRIFFITHS asked the Minister of Fuel and Power whether, having regard to the considerable increase in the numbers of men who were being certified as disabled from pneumoconiosis, he would make a statement of the steps now being taken to prevent this disease, and at how many collieries effective preventive measures had been adopted. Major LLOYD GEORGE circulated the following reply: In the coal faces the most effective measure so far developed is usually the application of water—in quantity which, to avoid other dangers, must be carefully controlled—either by infusion under pressure through boreholes into the coal before it is worked, or by "wet cutting," in which a jet of water is directed on to the pick as the coal-cutting machine works along the face. These two methods have been developed and applied in South Wales. Special arrangements have been made to ensure to the collieries on a high priority basis the large quantities of water piped required. In hard-heading work the older methods of wet drilling or collecting the dust produced by dry-drilling continue to be employed, and mist sprays are used to suppress dust caused by blasting.

### Food Supplies in Greece

On Aug. 1 Mr. HARVEY asked the Parliamentary Secretary to the Ministry of Economic Warfare whether he would give the latest available information on the position of the civilian population in Greece in regard to food supply and the measures being taken to relieve grave malnutrition. Mr. FOOR replied: The harvest has just been gathered, so there has been a recent improvement. Nevertheless, it would be misleading to generalize about the food situation in Greece as a whole, since conditions vary widely between the larger cities, the provinces, especially those areas where there is active guerrilla warfare, and the islands. In those areas which are the scene of active conflict, food supplies remain a very serious problem. In certain districts conditions have been aggravated by the action of the German authorities in destroying or seizing native produce. Moreover, military operations and the requisitioning of lorries involve considerable interference with transport and distribution. Conditions of acute shortage continue among a large part of the island population, owing to the great difficulty of sending supplies. The House is already aware that relief foodstuffs are being shipped to Greece at the rate of approximately 32,000 tons a month. In addition, arrangements have recently been made for supplies to be sent in Turkish coastal vessels to Mitylene and Chios, and the first cargo has been delivered.

### Notes in Brief

The Royal Assent was given on July 27 to the Food and Drugs (Milk and Dairies) Act.

Between July 1, 1943, and June 30, 1944, 4,762 applications were received by the Medical Board under the Coal Mining Industry (Pneumoconiosis) Scheme. Of these, 1,323 were certified and 1,163 were refused certificates. The number still undecided by the Medical Board on June 30 was 2,235.

No surplus olive oil is available from Italy. There is enough olive oil in the United Kingdom to meet requirements under medical certificates, but no more.

No. 29

## INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended July 22.

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year, for: (a) England and Wales (London included) (b) London (administrative county), (c) Scotland, (d) Eire, (e) Northern Ireland.

Figures of Births and Deaths, and of Deaths recorded under each infectious disease, are for: (a) The 126 great towns in England and Wales (including London), (b) London (administrative county), (c) The 16 principal towns in Scotland, (d) The 13 principal towns in Eire, (e) The 10 principal towns in Northern Ireland.

A dash — denotes no cases; a blank space denotes disease not notifiable or no return available.

Disease	1944					1943 (Corresponding Week)				
	(a)	(b)	(c)	(d)	(e)	(a)	(b)	(c)	(d)	(e)
Cerebrospinal fever ..	46	3	20	3	2	44	3	22	—	3
Deaths ..	—	—	—	—	—	—	—	—	—	—
Diphtheria ..	471	23	132	74	14	591	35	136	62	16
Deaths ..	4	1	—	1	1	12	—	1	3	—
Dysentery ..	151	7	91	—	—	105	15	139	—	—
Deaths ..	—	—	—	—	—	—	—	—	—	—
Encephalitis lethargica, acute ..	3	—	—	—	—	6	1	—	—	—
Deaths ..	—	—	—	—	—	—	—	—	—	—
Erysipelas ..	—	—	36	5	2	—	—	37	7	2
Deaths ..	—	—	—	—	—	—	—	—	—	—
Infective enteritis or diarrhoea under 2 years ..	40	7	17	4	—	46	6	7	34	11
Deaths ..	—	—	—	—	—	—	—	—	—	—
Measles* ..	2,401	90	55	135	20	2,486	135	41	16	10
Deaths ..	1	—	—	—	—	1	—	—	—	—
Ophthalmia neonatorum ..	82	7	12	—	—	77	4	14	—	—
Deaths ..	—	—	—	—	—	—	—	—	—	—
Paratyphoid fever ..	4	—	1(B)	—	—	9	1	1	—	—
Deaths ..	—	—	—	—	—	—	—	—	—	—
Pneumonia, influenza† ..	374	18	—	—	5	445	24	2	—	3
Deaths (from influenza) ..	13	1	—	1	—	5	—	—	1	—
Pneumonia, primary ..	—	—	159	18	4	—	—	166	6	8
Deaths ..	—	25	—	—	—	—	—	19	6	—
Poli-encephalitis, acute ..	2	—	—	—	—	—	—	—	—	—
Deaths ..	—	—	—	—	—	—	—	—	—	—
Poliomyelitis, acute ..	6	—	3	—	—	5	1	3	3	—
Deaths ..	—	—	—	—	—	—	—	—	—	—
Puerperal fever ..	2	12	—	—	—	3	14	—	—	—
Deaths ..	—	—	—	—	—	—	—	—	—	—
Puerperal pyrexia‡ ..	143	7	9	2	2	152	13	18	2	3
Deaths ..	—	—	—	—	—	—	—	—	—	—
Relapsing fever ..	1	—	—	—	—	—	—	—	—	—
Deaths ..	—	—	—	—	—	—	—	—	—	—
Scarlet fever ..	1,461	56	178	24	54	2,099	211	189	44	34
Deaths ..	—	—	—	—	—	—	—	—	—	—
Smallpox ..	—	—	—	—	—	—	—	—	—	—
Deaths ..	—	—	—	—	—	—	—	—	—	—
Typhoid fever ..	21	1	3	14	—	10	—	—	14	—
Deaths ..	1	—	—	—	—	2	1	—	—	—
Typhus fever ..	—	—	—	1	—	—	—	—	—	—
Deaths ..	—	—	—	—	—	—	—	—	—	—
Whooping-cough ..	2,157	139	38	50	8	2,081	121	53	25	53
Deaths ..	15	—	1	—	—	6	—	—	1	—
Deaths (0-1 year) ..	289	31	64	24	15	275	42	55	42	34
Infant mortality rate (per 1,000 live births) ..	—	—	—	—	—	—	—	—	—	—
Deaths (excluding stillbirths) ..	3,971	756	606	161	110	3,613	536	521	175	101
Annual death rate (per 1,000 persons living) ..	—	—	13.9	10.4	5	—	—	11.7	11.5	5
Live births ..	7,500	768	956	390	289	6,677	774	1,005	368	313
Annual rate per 1,000 persons living ..	—	—	19.4	25.3	5	—	—	20.5	24.2	5
Stillbirths ..	212	17	35	—	—	195	18	28	—	—
Rate per 1,000 total births (including stillborn) ..	—	—	35	—	—	—	—	27	—	—

\* Measles and whooping-cough are not notifiable in Scotland, and the returns are therefore an approximation only.

† Includes primary form for England and Wales, London (administrative county), and Northern Ireland.

‡ Includes puerperal fever for England and Wales and Eire.

§ Owing to evacuation schemes and other movements of population, birth and death rates for Northern Ireland are no longer available.

## EPIDEMIOLOGICAL NOTES

## Discussion of Table

In England and Wales during the week the incidence of most infectious diseases fell; whooping-cough returns were 166 fewer than last week, measles 135, acute pneumonia 63, and diphtheria 20. There were 67 more cases of scarlet fever than last week, and 13 more of typhoid.

The small increase in scarlet fever was general throughout the country. The incidence of whooping-cough fell particularly in Kent, Yorks West Riding, and London, where respectively 61, 45, and 42 fewer cases were reported. Increases of 48 and 23 were recorded in Carmarthenshire and Glamorganshire. The decline in measles notifications was most pronounced in the south, Kent reporting 70 fewer cases than last week, Wiltshire 57, Middlesex 44, and London 40. Durham had 82 more cases than last week, and Southampton 86; in Portsmouth C.B. the cases rose from 21 to 88.

Two fresh outbreaks of dysentery were reported during the week: Wiltshire, Amesbury R.D. 15, and Dorset, Wareham and Purbeck R.D. 25. The only other large return was Surrey 15 (Epsom and Ewell M.B. 9). The totals for London and Lancashire were the very low figures of 7 and 6 respectively.

Twenty-one cases of typhoid were notified, the largest weekly total since January, 1942. The cases were distributed throughout eleven counties; the largest return was that of Cambridge, M.B. 5.

In Scotland there was an increase of 43 in the incidence of diphtheria, and of 23 in that of dysentery. The greatest local rise in diphtheria was in the City of Glasgow, from 22 to 48. The rise in dysentery was due to an increase in existing outbreaks; the chief centres of infection were Glasgow 25, Edinburgh 18, Lanark County 22.

In Eire a case of typhus was reported from Galway, Oughterard R.D.

## Week Ending July 29

The notifications of infectious diseases in England and Wales during the week included: scarlet fever 1,530, whooping-cough 2,151, diphtheria 461, measles 2,352, acute pneumonia 450, dysentery 149, paratyphoid 11, typhoid 18.

## Medical News

A sessional meeting of the Royal Sanitary Institute will be held at the County School, adjoining the Town Hall, High Road, Tottenham, on Friday, Aug. 18, at 3 p.m. The programme consists of notes by the Borough Engineer and Surveyor, Medical Officer of Health, and Chief Sanitary Inspector, on (1) the replanning of Tottenham, (2) the health services in a replanning scheme, and (3) reconstruction and maintenance of houses as an immediate post-war problem. A Town Planning Exhibition will be on view in the Town Hall before the meeting.

The Ministry of Food announces that the monthly allowance of dried bananas made to approved cases of coeliac disease has been reduced from 14 lb to 7 lb. In the light of experience the Ministry's medical advisers consider this quantity of dried bananas is adequate. Applications for the allowance supported by a detailed medical certificate should be made to the local Food Office.

The Minister of Health has sent the following message to hospital staffs: "I have been much impressed during the past few weeks by the smooth efficiency with which the hospitals and casualty services of the Emergency Scheme have carried out their duties. These have included the reception, transport, and treatment of casualties arriving in this country from the battle area in Western Europe and of civilians injured by the flying bombs, in addition to the casualties arriving from other theatres of war and the various other categories of patients for whom the Emergency Medical Services are responsible. This reflects the utmost credit on the medical, nursing, and other staffs, and also on the administrative officers. Many of them have carried out their duties as mobile surgical teams and reinforcements under difficult circumstances, while others have shouldered heavy extra burdens in order that these reinforcements might be released for service where they were most required. The country owes a deep debt of gratitude to all members of hospital staffs for contributing so much in this and other ways to the success of the Emergency Hospital Scheme during this important phase of the war. The signal service they have given and the public spirit they have shown, often under conditions of difficulty, are especially gratifying to me as Minister of Health. I am most grateful to all concerned."

Major-Gen. W. H. Ogilvie has been appointed a director of the Clerical, Medical and General Life Assurance Society to fill the vacancy caused by the death of Sir Cuthbert Wallace.

Diabetics living in safer areas are asked by the Ministry of Health to offer billets to diabetic children and other fellow-sufferers eligible for evacuation from London and Southern England areas exposed to flying bomb attacks. As their lives depend upon a regulated diet and daily insulin injections, it is not possible without grave risk to include diabetic children or adults in officially organized parties. Householders with experience of diabetic cases who would accommodate and look after a diabetic child alone or with its mother are asked to send their offer to the Diabetic Association, 9, Manchester Square, London, W.1. Similar accommodation is needed for elderly and infirm diabetics who have lost their homes through bombing. Persons offering accommodation are asked to state the age and sex of those they are willing to receive. Others members of the evacuation priority classes who, because of their diabetic condition, cannot find accommodation with relatives or friends should notify either the hospital or clinic they attend or the Diabetic Association.

## Letters, Notes, and Answers

All communications with regard to editorial business should be addressed to THE EDITOR, BRITISH MEDICAL JOURNAL, B.M.A. HOUSE, TAVISTOCK SQUARE, LONDON, W.C.1. TELEPHONE: EUSTON 2111. TELEGRAMS: *Apology Western*, London. ORIGINAL ARTICLES AND LETTERS forwarded for publication are understood to be offered to the *British Medical Journal* alone unless the contrary be stated.

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### ANY QUESTIONS?

#### Elephantiasis after Plaster

**Q.**—A woman of 40 has elephantiasis of one leg due to application of plaster-of-Paris for 14 weeks some three years ago. Her renal function tests are satisfactory. What form of treatment will improve this complaint?

**A.**—It is probable that this condition could have been prevented if elastic compression had been applied to the limb as soon as the plaster was removed—starting 3 years late is a severe handicap. An attempt should be made, however, to get rid of as much of the swelling as will subside after rest in bed for a few days with the leg elevated, and then an Unna's (zinc gelatin) paste bandage should be applied from the webs of the toes to the upper limit of oedema. This or a similar supporting bandage should be worn continuously till the leg no longer swells beneath it—that is, till active muscular movement has restored the circulation—a process which may take some months to complete.

#### Repairing Torn Perineum

**Q.**—Will you please describe the U.C.H. method of "repairing the perineum" at childbirth?

**A.**—The perineum is not repaired until after the birth of the placenta except in cases of operative delivery, when repair is carried out as soon as the child is delivered and while the patient is still under the anaesthetic. In all other cases local analgesia is used. The patient is placed in the lithotomy position, and a syringe, preferably of 20 c.cm. capacity, is charged with a solution containing 1/2% procaine and 1:200,000 adrenaline. Commencing posteriorly, this solution is injected under the margins of the tear at both sides through the whole of its length, extending up the vaginal wall as far as necessary. A swab moistened in this solution is placed on the raw surface and an interval of five minutes is allowed for the analgesic to take effect. A self-retaining retractor is now inserted (Gelpi's pattern is useful) so as to give a good exposure of the posterior vaginal wall. The vaginal mucosa is now united with interrupted catgut sutures down to and including the mucocutaneous junction. The retractor is now removed, and two or three deep catgut sutures are inserted into the muscles of the perineum. The perineal skin is now united with interrupted silkworm-gut or nylon sutures. These are inserted so as to take in the superficial part of the muscle layer. It is important to leave no dead space. These sutures are loosely tied, to allow for the oedema which is likely to occur; the ends are left long and knotted together. To complete this small operation, a rectal examination is made to ensure that there has been no damage to the rectum and that no sutures have been inserted through the rectal mucosa. A further important point in extensive tears is that, before repairing the perineal muscles, it is essential to look for damage to the external sphincter ani. This is

often torn, usually to one side of the midline. The ends should be found and brought together with one or two mattress sutures of catgut. All perineal tears that exceed half an inch in length should be sutured. It is impossible to repair such tears adequately with one stitch. When the perineum is torn for a distance of half an inch or more the vaginal wall is almost always torn for an equivalent, or even greater, distance. This must be exposed and properly sutured.

#### Treatment of Whooping-cough Paroxysms

**Q.**—Is ether of value in severe paroxysms of whooping-cough apart from convulsions? What are the recommended doses for the intramuscular and rectal routes at 1 month and 1 year? Which route is considered the best? Is there any danger of sloughing by the intramuscular route?

**A.**—There is no evidence to prove that ether is of any value in controlling the paroxysms of whooping-cough, and its use has been abandoned in fever hospitals. The intramuscular route is painful and occasionally gives rise to abscess formation; 0.5 to 1 ml. every second day are suitable doses at 1 month and 1 year respectively. Rectal injections of 10% ether in olive oil in doses of 10 to 30 ml. twice a day are safer. Luminal, 1/12 gr. and 1/4 gr. respectively twice a day, is a much more effective remedy, and free from risk provided cumulative effects are watched for and avoided.

#### Shock Treatment

**Q.**—Has insulin injection in small amounts been used and found effective in the mild depression phase of mild psychosis?

**A.**—This treatment is of no use in this condition except to improve nutrition and for its suggestive effect. If the diagnosis is correct, then electrical convulsion therapy would be effective in such a case. On the other hand, if the condition is mild, it may clear up very soon anyhow.

#### Tug-of-War for Girls

**Q.**—At a grammar-school sports day I asked why the senior girls should not have a tug-of-war. The teachers were horrified. They said, "It wouldn't be safe for girls." I had no proper evidence to answer this objection, and could only say that girls were to-day doing work as railway porters, farm labourers, heavy lorry drivers, and heavy load lifters, all without any apparent harm. I should like to know what is the opinion of those fit to judge.

**A.**—As girls have seldom engaged in these, there is no direct evidence that tugs-of-war would be harmful to them. As a physician who was once an athlete, I regard the objection to this form of exercise for girls as reasonable. Having taken part in many tugs-of-war I regard them as being, from the medical standpoint, the least desirable form of athletics commonly undertaken by adolescent boys. The comparatively long periods of stasis with contracted muscles and fixed thorax and the absence of rhythmic movement suggest that the cardiac strain involved is probably greater than in more mobile exercises. The female muscles, seen at their best in more graceful athletics such as the back crawl in swimming, would, I think, be less adapted to tug-of-war. I should unhesitatingly support the teachers' objection on medical as well as aesthetic grounds. Tug-of-war is certainly the least graceful of all sports.

#### Chronic Vasomotor Rhinitis

**Q.**—What is the approved treatment for chronic vasomotor rhinitis with obstinate nasal obstruction, especially at night? Relief with ephedrine or benzedrine is only temporary.

**A.**—The usual treatment for this condition is to cauterize the inferior turbinates under a local anaesthetic. A deep linear burn is made from behind forwards, along the medial aspect of the bone. This results in a scar, which binds the spongy tissues down to the bone. If the posterior ends of the turbinates are much enlarged, they should be removed by snare under general anaesthesia.

#### Cause and Treatment of Urticaria

**Q.**—What is the modern treatment, local and general, for severe and intractable cases of urticaria in adults?

**A.**—The treatment of urticaria is: (a) To inject subcutaneously 5 minims of adrenaline chloride solution (1:1000), and if the case is a severe one to repeat the injection of another 3 minims 1/4, 1/2, 1, 2, 4, and 8 hours later, as there will be a tendency for the symptoms to reappear when the temporary effect of the adrenaline has worn off. The adrenalinic action may be sustained by injecting slow of adrenaline (1/2 to 1 c.cm. of adrenaline (1:500) in an oil, gelatin, or glycerin base). (b) To give ephedrine hydrochloride 1/2 gr. 4-hourly until the rash is clear for 48 hours, and luminal 1/2 gr. night and morning to lessen the itching. (c) To relieve local irritation by warm alkaline baths, dusting the skin with an orris-root-free talcum powder containing 1/2% menthol, or employing a calamine lotion or cream containing menthol 1% and phenol 1%. (d) To clear the gastrointestinal tract by giving an emetic early, or saline aperients, castor



oil, or calomel later (e) To reduce the food intake, forbid alcohol, and force fluids

To prevent recurrences the cause should be determined, and a careful history, the use of skin tests, and the employment of eliminative measures in the environment and diet are essential. Certain substances may cause urticaria in any individual—the injection of certain drugs (histamine, morphine, and derivatives), the eating of decomposed foods, the bites and stings of certain insects and jelly-fish, but such attacks are probably only occasional and the cause can be readily recognized.

Intractable urticaria is usually an allergic manifestation in an allergic subject. The allergic causes include (a) inhaled substances (feathers, down, animal hairs, pollens, house or occupational dusts, insecticides, moulds, and fungi), (b) ingested substances, ordinary foods or common drugs (aspirin, quinine, phenolphthalein, sulphonamides), (c) injected substances, such as an overdose of allergen following serums, blood transfusions, the bites and stings of insects, or following injected drugs, vaccines, endocrine substances, or gland extracts, (d) infectant substances from bacteria, intestinal parasites, or mycotic infections; (e) contactant substances—the touch or lick of various animals, or the use of their products in clothing or furnishings, the handling of certain foods (flour, fish) or plants (primula), the use of cosmetics, dyed clothes, or even adhesive plaster, (f) physical agents such as light, heat, cold, and trauma.

In chronic cases the first thing to do is to stop all previous medication, as drugs play such a large part in its causation. Inhalant factors are the next commonest cause, especially when cases are worse in bed, during the night, or on waking, due to a sensitivity to feathers, down, or horsehair in the bedding. During the day house and occupational dusts play an important part, and desensitization is necessary. Foods are the least commonest specific cause, but most patients suffer from flatulent indigestion, and 20 minims of a 1% hydrochloric acid B.P. in a wineglassful of water at the beginning of each meal is helpful. The raising of the basal metabolism by adequate doses of thyroid extract is often necessary. If the cause cannot be determined or removed, the withdrawal of 10 ccm of blood from the vein at the elbow and its injection intramuscularly into the buttock on six occasions at intervals of five days is usually more efficacious than other methods of treatment recommended, such as vaccines, histaminase, peptone, calcium, or milk, or wholesale surgery, the sequential removal of teeth, tonsils, appendix, gall-bladder, or tubes.

Urticarial outbursts often follow emotional storms, anger or fright, in states of fatigue, or after exertion. Such incidents utilize any available protective adrenaline and so render the sufferer more susceptible to some offending allergen acting during this adrenalo-depletion or exhaustion state.

### Trophic Ulcers

Q.—I should be grateful for suggestions as to the treatment of painful trophic ulcers of the legs in a lady of 70 with very longstanding Raynaud's disease.

A.—The question does not give sufficient information about the situation and character of the ulcers. At the age of 70 arterio-sclerosis can be assumed to be present and operations on the sympathetic nervous system are not advisable. Prolonged recumbency is also contraindicated by the age, and ambulant treatment with some form of occlusive dressing such as elastoplast would be preferable.

### Shooting Pains in the Head

Q.—A patient aged 65 has for the last three months had a shooting pain in the right side of his head if he sneezes, strains, or stoops. Clinical examination is negative, B.P. 114/60. The pain lasts about 5 minutes and is never there unless started by a strain or sneeze. What might be the cause of this, and what treatment can be suggested?

A.—There is really too little evidence in this case upon which to establish a diagnosis. The most common cause is raised intracranial pressure, such as may be associated with a cerebral tumour. Tumours in the neighbourhood of Meckel's cave might cause such pain as is described, but they are usually accompanied by sensory loss in the corresponding trigeminal area. A lumbar puncture and examination of the CSF might give a pointer to the diagnosis. Until this is established, treatment should be by simple analgesics.

### Exposure to Blast

Q.—What should be done if one is about to be exposed to bomb blast? Should one open one's mouth or close it, hold one's breath or breathe easily? Close the ears and nose with the fingers and close the mouth? Or what should one do to diminish the probability of concussion to the lungs?

A.—Open or Closed Mouth—Blast does not affect the lungs by way of the mouth. On the other hand it may, at high pressures, affect the nasal mucosa and possibly the pharyngeal. On general principles, therefore, but not because of the lungs, keep the mouth

shut. At the beginning of the war there was a widespread belief that one ought to bite on something during an air raid. I could never find the basis for this belief, and its most reasonable basis appears to be to prevent people from biting their tongue when they "jump" at the explosion. I can see no use in the practice.

Hold One's Breath or Breathe Easily—There is no empirical answer to this question, for we have not been able, in experiment, to disentangle the concussion effects on the inflated and deflated lungs. The general theory deriving from experiments suggests, however, that an "airless" lung would be less affected than one inflated. Since this is impossible to achieve, "Don't bother".

Close the Ears with One's Fingers—Yes, definitely. Close the Nose—In spite of the knowledge we have that at high pressures the nasal mucosa can be hurt, I should say no. Keeping the ears, mouth, and nose shut would seem to me a slightly difficult manoeuvre.

In general the best advice therefore would be to lie flat on one's belly, behind, if possible, some stout cover, even in the gutter up against a pavement—with one's mouth shut and one's fingers in the ears. Indoors keep away from glass, and take what cover one can to prevent being hit by flying debris or of being buried under debris—e.g., get into a Morrison shelter if available, or under the stairs, etc. The real danger of flying bombs is not the direct effects of blast on the chest, but the danger of being hit by bits and pieces thrown about by the blast. The direct effects are not likely to be experienced, or to be serious, except very close to the burst, where precautions of the kind referred to are unlikely to help anyway.

### Transmission of Cancer by Transfusion

Q.—Is it possible for cancer to be transferred from one person to another by means of a blood transfusion? If it is possible for malignant cells to be carried in the blood stream from one part of the body to another, I cannot see why they should not be transferred from one person to another unless the blood were stored long enough to render the malignant cells non-viable. Are there any recorded cases of this occurring, and is there any evidence as to how long malignant cells would survive under normal storage conditions?

A.—Malignant cells are carried in the blood stream from one part of the body to another, but it is probable that only a proportion of such cells survive and form new metastases. If such cells were present in transfused blood the chances of survival of the cells in another heterozygous person would be so small as to be negligible. There are no recorded cases of transference of cancer by blood transfusion. Malignant cells would probably survive 2 to 3 days under normal storage conditions. Hence the reply to the lay questioner would be: In view of (a) the well known difficulty of transplanting cancer successfully from one human being to another, even when masses of living cancer cells are grafted, (b) the probable lack of viability of a proportion of circulating cancer cells even within the body of the cancer patient himself, (c) the much greater lack of viability of cancer cells in another heterozygous human host, (d) the rarity of blood from a cancer patient being used for transfusion because (e) escape of cancer cells into the blood stream is a phenomenon associated with advanced cancer, it is justifiable to answer "No".

## INCOME TAX

Deductions under "Pay as you Earn": Cost of Assistant's Rooms

A S employs an assistant "at a salary of twelve guineas a week, all found." Each month the assistant receives two cheques, one for salary and one for payment of rooms. Should tax be deducted from the latter payment?

\* Yes. Both cheques are in respect of emoluments falling within the class to which "pay as you earn" is applied, and the assistant is liable to tax on the full twelve guineas.

### Amount of Tax Payable

W D inquires what tax is payable monthly on a salary of £525 by a single man paying £3 18s 4d life assurance premium a year.

\* The calculation for 1944-5 is as follows:

Earnings		£525	0	0
Deduct Personal Allowance				
Earned Income		£50	0	0
		£525	10	0
		£132	10	0
Taxable Income				
		£392	10	0
Tax at 6s 6d on £165	0	0		
10s 0d on £227	10	0		
		£53	12	6
		£113	15	0
		£167	7	6
Less Life Assurance Relief £3 18s. 4d at 7s 6d.				
		£1	11	2
Net tax payable for the year				
		£165	16	4

The monthly deduction should therefore approximate to 1/12th of £165 16s 4d—i.e., £13 16s.



**"Pay as you Earn"**

A. P. is employed by two authorities, one of which usually pays the fees two or three months after they are earned. In consequence some fees earned before April 5, 1944 (and therefore part of the income already assessed for 1943-4) were paid after that date and suffered deduction of tax under "pay as you earn." What is his remedy?

It has to be borne in mind that "pay as you earn" is a system of collection of tax; the old assessment procedure still operates, though on the basis of the current year instead of the preceding year. The tax payable by A. P. for 1943-4 has been reduced by 7/12ths "cancellation," but the precise amount to be cancelled is governed by special rules and apparently has not yet been calculated; further cancellation is subject to certain conditions compliance with which may remain uncertain until Nov. 5. But sooner or later A. P. will receive a statement from the inspector of taxes setting out the full facts, and he can safely wait for that statement to be sent to him. It may perhaps be added that unless the authority in question expedites its dates of payment he will not suffer deduction of tax in 1944-5 on more than a year's fees.

J. L. W. retired in 1937. During 1942-3 he received fees amounting to about £500 for examining patients. He inquires (1) whether he comes under the P.A.Y.E. system and (2) whether he is entitled to travelling expenses.

(1) The first point to decide is whether J. L. W. is assessable under Schedule E—i.e., whether he is in "employment." The answer to that depends on whether the arrangement or contract under which he works establishes the relationship of "master and servant." If it does, he is assessable under Schedule E and his earnings come under P.A.Y.E.; if J. L. W. is his own master the fees are assessable under Schedule D and P.A.Y.E. does not apply. *Prima facie* the former is the case. (2) The expense of travelling from one's residence to the place of employment is not deductible. But an exception has been made to meet wartime changes of residence, etc., subject to a maximum deduction of £10.

**Sale of Practice: Expenses**

N. P. has sold his practice and stored his furniture until he sets up practice again. Is any part of the expense of removal and storage of the furniture allowable?

No; such expenses are not incurred in carrying on the profession, but after the professional activity has ceased.

**LETTERS, NOTES, ETC.****An Argentine looks at British Plastic Surgery**

To see ourselves as others see us is always an interesting—if at times a mortifying—experience. In a paper from the Instituto de Clínica Quirúrgica, the leading surgical clinic in South America, an Argentine surgeon describes from personal observation the treatment of fractures of the middle third of the face in British civil and military practice (*Día méd.*, 1944, 16, 361). The author, Dr. R. Castro O'Connor, recently completed a study of plastic surgery in this country as a British Council scholar, and his careful and detailed survey of a particular aspect of this subject would seem to indicate that he employed his time to very good purpose. For convenience, he "divides" the face into upper, middle, and lower thirds. The middle third includes the superior maxilla and the nasal, ethmoid, and malar bones. The mode of production, diagnosis, and treatment of fractures of this region are reviewed at considerable length, and different techniques used by individual British plastic surgeons are described. The author stresses particularly the importance of the closest collaboration between the plastic and the dental surgeon, and concludes with a very generous tribute to the "inimitable" Sir Harold Gillies, with whom he spent most of his time, and also to Prof. T. P. Kilner, Mr. A. H. McIndoe, and Mr. R. Mowlem, whose units he visited for varying periods. Anglo-Argentine relations are complex and fraught with difficulties at the present time, but it is good that medical science and practice should provide common ground for countries which are not closely linked at the political level. Whatever ideological or political divisions may embarrass or disturb international relationships, medical men of all countries are animated by the same fundamental aims and interests, and are heirs to a common tradition which is as old as civilization. In an age of competing millenarian solutions to human ills, it is well that medical men should remember this and jealously guard their right to the free exchange of views and experience with professional brethren not only of their own but of other nations.

**Sickness Records of Hospital Nurses**

Dr. W. NORMAN TAYLOR (Radstock) writes: Dr. Wilkie (May 13, p. 670) quotes figures to show that the health of non-resident hospital nurses is not so good as that of the resident ones, and uses these figures as an argument against the system of allowing nurses to live

out. He apparently does not realize that his figures could equally well be used by an advocate for this non-resident system. They merely show that resident nurses do not consult a doctor so often, not that they are less often sick—two very different things. In other words, they could as well be used to suggest that Dr. Wilkie's nurses are being discouraged from reporting sick when living under the eye of authority. Such a state of affairs is all too common in some of our hospitals. Surely our nurses can have the same privileges as the rest of the general population, and one of those is the privilege of going sick when one feels like it—and without asking permission.

**Army Council and Wounded Medical Officers**

Dr. F. C. DURBIN writes: It is now the policy of the Army Council to retain in the Service a medical officer who has been so severely wounded in action as to necessitate amputation of a leg, although the individual concerned may express a desire to be released in order to join the E.M.S. By becoming a civilian he would be enabled to acquire experience in hospital practice, while if retained in the Army he is liable to be posted as medical officer to a combatant unit in this country only. There, if he does not actually stagnate, he will fail to increase his knowledge of medicine to the maximum advantage. I feel that such individuals should be given the best possible opportunities for starting afresh, particularly as most have joined up soon after qualification. Their places could easily be filled by some of the many hundreds of young men still in the E.M.S. who have been so employed since the beginning of the war. I consider it a shameful policy to utilize a disabled man in the Services against his wish. It would seem that the Army is determined to extract more than its pound of flesh.

**The D.P.M.: A Minimum Requirement**

D. F.-R. (Lanes) writes: I refer to your correspondent's observations upon the above (July 15, p. 102), and as I have been a teacher and tutor for this diploma over a period of years my remarks may be of value to him, and to other officers contemplating obtaining it. I agree that the standard of the examination has required improvement, but actual preparation time remains about the same, as much obscure psychology and physiology has been eliminated or has at least ceased to figure in the actual tests. In Part II the psychiatric examiners are, by their writings and practice, acknowledged as experts in all phases of mental disorder, keep well within the scope of the prescribed syllabus, and maintain a very fair balance between the various subdivisions of the specialty in their questions. I am convinced most holders of the Diploma wish to feel they are recognized to advise expertly in the widest conception of psychological medicine, and not in the limited mode your correspondent suggests. Undoubtedly the standard in neurology is especially high, but as more and more of us are wont to describe ourselves as neuro-psychiatrists, it is well this designation is not assumed, unless our ability is well proven. With reference to general practitioners and the Diploma, I can state that I have coached many while they have been carrying on their practices, and their pass record has been most creditable. My chief complaint about the examination concerns Part I, which is still far too academic, of no value to the candidate for his future practice, and is a real deterrent to those of more mature years contemplating the course of instruction. I strongly recommend your correspondent to have a "stab" at the examination as soon as possible: I am sure he will find many of his "notions" ill founded.

**Warts**

Dr. T. C. GIPSON (Pinhoe, Devon) writes: In "Any Questions?" of July 22, under the heading "Warts," the advice given for treatment of a doctor's child for wart on the knee is to apply formalin for fifteen minutes daily. Surely this is unnecessarily protracted in a doctor's household. A very much quicker method is: Surround the wart with a trace of vaseline or ointment, and apply concentrated nitric acid with a match so as to leave a definite bead of wet fuming acid on the wart; keep the child with the leg up until the acid has dried off; a little smarting will be felt after five minutes. Next day the top of the wart is cut off with an old razor blade until the roots show unstained yellow; another application with a match-stick, which will sting for ten minutes, and the wart is finished. N.B.—In cutting off the dead wart it is important to stop before bleeding occurs because this dilutes the acid on the second application. Incidentally, it is painless as long as the wart is deeply stained.

**Correction**

We apologize for the error which crept into the annotation on "Nutrition and the War" published in the *Journal* of July 15 (p. 84). Dr. Sydenstricker did not observe that it was "a pity that the pregnant woman does not get her unborn child's ration book as soon as she is pregnant instead of ten months later." Since July 25, 1943, the pregnant woman has in fact been entitled to her unborn child's ration book as soon as pregnancy is established and she makes application to the Food Office.

# BRITISH MEDICAL JOURNAL

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## SCURVY: A SURVEY OF FIFTY-THREE CASES

BY

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Between Aug. 1937, and Feb. 1944, inclusive, 53 patients with scurvy—48 males and 5 females—were admitted to medical wards in an Edinburgh municipal general hospital. The annual number of cases, and the percentage they formed of all medical admissions, are shown in Table I.

TABLE I

Year (Aug.-July)	Cases of Scurvy			Nos. all Medical Admissions			% Incidence Scurvy		
	M	F	Total	M	F	Total	M	F	Total
1937-38	3	—	3	1,055	767	1,822	0.28	—	0.16
1938-39	6	1	7	833	583	1,416	0.71	0.17	0.49
1939-40	5	—	5	649	459	1,108	0.77	—	0.44
1940-41	8	1	9	378	246	624	2.11	0.41	1.44
1941-42	15	2	20	368	283	651	4.59	0.71	3.07
1942-43	8	1	9	459	360	819	1.74	0.28	1.09
1943-44	—	—	—	682	599	1,281	—	—	—

The patients ranged in age from 41 to 82 years. Including the 5 women, 43 were aged 65 or over. Eight of those under 65 were admitted in 1941-2. Fifty-one lived alone (single 27, widowed 17, separated 7), two were married and lived at home. Lodging conditions were: working men's hostels, 28, private houses, 13, furnished rooms, 8, living with relations, 3, lodgings with board, 1. Forty-eight cooked for themselves, this total including one of the married men who kept house for his wife, who worked and had her main meal out daily. Fifty gave satisfactory details about income. Thirty-four were dependent on an old age pension plus a supplementary allowance which increased with the rising cost of living, giving totals varying from 13s to 22s 6d a week. Thirteen were dependent on private pensions varying from 5s house-free to 39s 3d a week, 10 of them having 25s a week or more. Three were in gainful employment with 60s to 80s a week. From details given regarding expenditure on lodgings (30 to 40% of incomes under 25s a week), clothing, tobacco, and alcohol (heavy in three instances only), the income remaining for food per week was calculated. Twelve had 8s a week or less, 13 of whom 7 were admitted before Aug. 1940, had from 8s to 10s a week; 25, admitted with one exception after Aug. 1940, had 10s a week or more. Eighteen had not sufficient to buy a diet adequate in proteins, fat, calories, and vitamins, assuming 8s a week to be necessary for this until July, 1940 and 10s a week thereafter (Orr, 1937). Dietary histories showed that the intake of potatoes and vegetables was low in all cases and very low in some. Approximately two-thirds ate fruit—most of them irregularly—when it was obtainable. Patients from this group were naturally admitted in great numbers after 1940 and provided the bulk of the cases seen. They had mainly adequate food incomes. One patient ate regularly in a British Restaurant; six others did so very spasmodically. A few in 1941-2 complained of the high cost of vegetables. Two men who were working said that the shops were closed when they were free to shop. Many complained of lack of cooking facilities in their lodgings. One individual—the remaining married man—had been carefully adhering to a vitamin-deficient diet which had been prescribed for him for

a gastric condition. Physical or mental defects were present in six instances, but in four these coexisted with food incomes of 8s a week or less.

### Clinical Notes

The disease developed most commonly in June, then came May, March, and April in that order. No case began in July, and few in the remaining months of the calendar year 1941-2 showed an unusual feature with admissions in Nov. and Dec., 1941, and Jan. and Feb., 1942. The time elapsing between the first sign or symptom and admission to hospital was less than one month in 80% of cases. Few arrived within one week, and only one after 18 months. The disease, by the usual standards, was mild in 2 instances and moderate in 51. All patients had skin petechiae. In two these were the only sign. Fifteen had deeper haemorrhages in one leg, 23 in both legs, and 13 in both arms and legs. Where teeth existed spongy and infected gums were very common. Bleeding gums were noted on 8 occasions, being present only in association with gross changes elsewhere. The onset and progress of the disease were typical, it appeared first in one leg, then the other, and finally the arms. Discomfort was usually mild at first, but became progressively more severe, within a month most patients were crippled, and were pleased to be allowed to rest in bed. One patient had epistaxis, another intestinal colic with melaena and three of the most severe had histories of intestinal colic alone. Frank lower-bowel haemorrhage or haematuria was never encountered. "Lumbago" was experienced by three individuals just before the leg symptoms were noted. One female developed a large haematoma of the forearm after a Hess cuff test had been done. Poor wound-healing was noted and reported elsewhere (McMillan, 1943). None of the patients had clinically evident cataracts. Fractional test meals were carried out on 10 patients. The results and the blood findings are given below. In 50 patients the haemorrhages appeared spontaneously. In 3, trauma, by causing grossly excessive bruising, drew attention to the deficiency. One individual, who developed the disease after being confined to bed for six weeks, had haemorrhages on the buttocks only, the legs being unaffected.

Multiple neuritis (3 males) and pellagra (2 males and 1 female) were also recognized clinically. Hyperkeratosis perifollicularis was very common but not universal.

### Chemical and Other Tests

1. *Cuff Test*—Positive-pressure cuff tests—Hess (Hess, 1920) or Gothlin (Falk *et al.*, 1932)—were done on 40 patients before and after saturation with ascorbic acid. Of 22 tested by Hess's method 14 were positive before and negative after saturation, 4 positive before and after, and 4 negative before and after. Of 18 by Gothlin's method, 7 were positive before and negative after, 2 positive before and after, and 9 negative before and after. Neither test was diagnostic, but the Hess method gave a higher percentage of the usually expected result. The results by either method were unrelated to the plasma ascorbic acid level or the saturation requirements.

2. **Vitamin C Content of Urine** (using the dichlorophenol-indophenol indicator).—The urine passed by the patients during their first 24 hours in hospital was collected, stored with due precautions, and examined. The vitamin C content varied from 1.5 to 16 mg., averaging 7 mg. Thirty of them were then tested for deficiency by one of three methods ((a) Abbasy *et al.*, 1935; (b) Eddy and Dalldorf, 1941; (c) Harris and Abbasy, 1937). All were deficient. Further ascorbic acid was then given, in the manner recommended, until saturation was achieved. The results are shown in Table II. There was no steady relationship between the saturation requirements and the clinical extent of the disease.

TABLE II

Method	Amount (g.) Ascorbic Acid required for Saturation								Average (g.)
	2-2.4	2.5-2.9	3-3.4	3.5-3.9	4-4.4	4.5-4.9	5-5.4	5.5-5.9	
(a) ..	1	2	4	4	1	—	—	—	3.18
(b) ..	—	—	1	1	2	—	—	3	4.5
(c) ..	—	1	—	2	—	5	1	—	4.1
Total	1	3	5	7	3	6	2	3	3.85

3. **Plasma Ascorbic Acid Content.**—This estimation was made on 22 patients within 48 hours of admission. All had levels compatible with clinical scurvy—e.g., eight had 0 to 0.04 mg. %; two, 0.05–0.09 mg. %; five, 0.10–0.14 mg. %; four, 0.15–0.19 mg. %; two, 0.20–0.24 mg. %; and one, 0.25–0.29 mg. %. An inconstant relation existed between these figures and the clinical picture, but not to the saturation requirements.

4. **Blood Tests.**—Bleeding time (Dukes's method), 1½ to 3 minutes. Coagulation time (capillary tube with normal control), 3 to 9 minutes, but never longer than the control. Platelet count (dry smear), 120,000 to 340,000 per c.mm.

#### Blood Picture

A complete blood examination was conducted on 38 males and 2 females within 48 hours of admission. Red cell counts ranged from 1,730,000 to 5,220,000 per c.mm., with 65% of all counts above the 3,000,000 level. Two males had no oligocythaemia. Haemoglobin ranged from 38 to 85% (Sahli), and from 5.3 to 11.9 g. per 100 c.cm. The mean corpuscular haemoglobin (M.C.H.) varied from 16 to 38γ. White blood cell counts ranged from 2,800 to 12,000 per c.mm. Erythrocytes were mainly normal in size and shape, anisocytosis being noted in approximately 20% of smears and being much more common than poikilocytosis. Ring staining was observed on three occasions. Nucleated red cells were never seen. Reticulocytes ranged from 0.5 to 1.5% with one exception, in which they were 4%, the patient actively losing blood from haemorrhoids. The morphology of the leucocytes was not specially noted. The sternal marrows of 6 patients were examined: five were normoblastic, one megaloblastic. Two of the former showed a few megaloblasts. The presence of megaloblasts was associated with achylia gastrica in two instances and a low free HCl in another. One patient with a markedly macrocytic anaemia and a normoblastic marrow had normal test-meal findings (Case 3, Table IV). Short details relating marrow and blood pictures are given in Table IV.

A morphological classification of the various anaemias was made, using the red cell count and the M.C.H. of each case. The placing allocated to the 6 fully investigated cases was then checked, and it was found that only one had been placed wrongly—as "slight simple microcytic" instead of "moderate normocytic." With this error corrected the table is reproduced below (Table III), and it is submitted that any error in it lies in the existence of an inflated "simple microcytic" group at the expense of the "normocytic" group.

TABLE III.—Morphological Classification of the Anaemias in 40 Scurvitic Patients (after Wintrobe, 1942)

Type	Degree	No.	Type	Degree	No.
Macrocytic	Slight ..	0	Simple microcytic	Slight ..	4
	Moderate ..	2		Moderate ..	10
	Severe ..	0		Severe ..	0
Normocytic	Slight ..	10	Hypochromic microcytic	Slight ..	4
	Moderate ..	8		Moderate ..	2
	Severe ..	0		Severe ..	0

The anaemia present bore no constant relation to the extent of haemorrhages or to the plasma ascorbic acid content or saturation requirements of the patients. It was varied in type, being mainly normocytic, rarely hypochromic microcytic, and more rarely macrocytic.

#### Treatment

This was dictated at times by experimental needs. The administration of ascorbic acid in addition to the ordinary hospital diet always resulted in quick improvement. Appetite improved, pain and stiffness in the legs disappeared, and within a week the patient felt very well. This change was commented upon by some of the sufferers, who said they "had not been so well for years."

Particular attention was paid to changes in the blood picture during treatment. Six clinical experiments were designed to elucidate certain points. To save space the observations made have been condensed as much as possible. The blood pictures and the results of treatment of the 10 patients who form the basis of experiments 3 to 6, inclusive, however, were considered interesting enough to be given (see Table IV). Reference to this table is made in the text which follows. It will be noted that the columns for red cell count, Hb, etc., have been subdivided into five. Findings, at any one time in any case, are given in the correspondingly numbered sub-column—e.g., the blood picture in Case 1 on admission can be obtained by reading all the figures in sub-columns 1, and so on. The experiments were consecutive, and the final blood figures in experiment 3, shown in sub-column 2, are the initial figure for experiment 4, the final figures for which are shown in sub-column 3, and so on. Lastly, in order that the duration of each clinical test could be shown, bracketed figures, giving the time in days, have been placed above the red cell counts.

**Exp. 1.**—Four patients with anaemia ranging from 2,490,000 R.B.C. per c.mm. and 42% Hb to 3,350,000 R.B.C. per c.mm. and 62% Hb were placed on the ordinary hospital diet containing a calculated vitamin C and iron content of 15 mg. and 14 mg. daily respectively. Red cell and Hb regeneration began immediately, a reticulocytosis of 4% being noted in two of the cases.

**Exp. 2.**—Eleven patients with anaemia ranging from 2,200,000 R.B.C. per c.mm. and 40% Hb to 4,670,000 R.B.C. per c.mm. and 85% Hb were given the same diet (approximately) plus 500 mg. of ascorbic acid daily by mouth until saturated, and thereafter a maintenance dose of 100 mg. daily. Red cell and Hb regeneration again began immediately, and continued until the anaemia was cured. Reticulocytes never rose above 2% in any instance. Over all, the response was as good as in the case of the four who were not given ascorbic acid. In general, the more severe the anaemia the more rapid the rate of red cell and Hb regeneration: Falling M.C.H. values in a number of cases suggested that extra iron would have been advantageous.

**Exp. 3.**—Ten patients, details of whose blood pictures are given in sub-columns 1 of Table IV, were placed on a vitamin-C-free diet. This consisted of well-cooked meat, tripe, rabbit, chicken or fish, fried bacon, powdered egg, porridge, boiled rice, semolina or custard, bread, margarine, cheese, cocoa or tea. No soups or vegetables, or foods cooked with vegetables, were permitted, and the 4½ pint daily milk ration was heated to 100° C. for 20 minutes and cooled before issue. Extra vitamins were added by giving 1 drachm Halibol and 6 pulvules of Betalin Co daily by mouth. Clinical experience of this diet indicated that it contained little or no vitamin C. Its calculated iron content was 6 mg. daily.

The blood pictures of these patients after periods ranging from 9 to 14 days on this diet are given in column 2 of Table IV. Briefly, 5 patients showed increase in red blood cells and Hb, the rate of improvement varying considerably. The remaining 5 showed no change in their red cell count, the Hb also remaining stationary in all but one, in whom it rose 10%. Reticulocytes rose to 4% in one of the patients showing improvement; the others never rose above 1.5%.

**Exp. 4.**—Six of these patients (Nos. 1, 2, 3, 4, 6, and 7 in Table IV) were kept on the vitamin-C-free diet for further periods, with the addition of 18 gr. of ferrous sulphate daily by mouth, ac. hydrochlor. dil. m. 60 i.i.d. with meals being given also to those with achlorhydria. The blood pictures at the end of this test are shown in sub-columns 3 of Table IV. The red cell count rose in five but remained stationary in one. The Hb rose in all. The patient whose

\* Represent vitamin A 60,000 I.U., vitamin D 10,000 I.U., thiamine 6 mg., riboflavin, 1,998 gammas, nicotinic acid 12 mg., pyridoxine 1,200 gammas, plus other factors of vitamin B complex from liver-stomach concentrate and a negligible amount of anti-anæmic factor.

d cell count remained stationary had shown improvement on the previous diet. Two now improving were doing so for the first time, but, as one had a peak reticulocytosis of 3.5% three days after iron was added, the improvement was judged to be a delayed response to the earlier treatment. In the other it may have been likewise. Reticulocytes, except as above, remained below 2%.

Exp. 5.—The same 6 patients were used in this test, their treatment being altered only by the administration of 500 mg. of ascorbic acid daily by mouth until saturated and thereafter a maintenance dose of 100 mg. daily for the remainder of their varying test periods. Their final blood pictures are given in sub-columns 4 of table IV. The red cell count rose in five and the Hb in four. As the cell count and Hb in those not improving (Cases 1 and 2) were already high when the test began it was thought that they had already reached their maxima. The individual whose blood picture had improved and then remained stationary in the two previous tests now showed a marked improvement, and had a 4% reticulocytosis on the sixth day. Reticulocytes otherwise remained under

the diet. Second was apathy leading to neglect of the same items because they required preparation and cooking. Third was poverty, making it impossible to buy an adequate diet or live anywhere but in the worst type of lodging with poor cooking facilities. The first was not so significant in peacetime, as many countered it by eating fruit. Wartime scarcity of fruit without a compensatory increase in the intake of potatoes and vegetables resulted in such individuals developing scurvy. This group, often younger and better off than the usual scorbutic, was responsible for most of the increase in the disease in 1940-1-2. What probably happened was that those dependent on fruit developed scurvy quickly and were admitted in 1940-1. Those less dependent developed it more slowly and were not admitted until 1941-2, appearing out of the usual season in many instances. This group was the greater, and 1941-2 had many more admissions than 1940-1. In 1942-3

TABLE IV

Case No.	R.B.C. per c.mm. $\times 10^6$					Hb%					M.C.V. ( $\mu\mu$ )					M.C.H. (%)					M.C.H.C.					Test-meal Findings	Marrow Smears
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5		
1	3.08	4.34	4.55	4.9	—	55	80	85	85	—	91	83	81	79	—	25	26	26.3	24.2	—	28.5	28.5	32.2	31.5	—	Low free HCl	Normoblastic; few megaloblasts
2	3.63	4.51	4.60	4.6	—	70	80	85	85	—	89	85	85	85	—	27	27	26	26	—	30.5	30.5	30.5	30.5	—	Normal	Normoblastic
3	2.03	2.50	2.50	3.6	—	55	57	60	80	—	95	90	92	88	—	37.8	32	33.5	31.2	—	38.5	35.5	36.5	35.7	—	"	"
4	2.46	3.38	3.93	4.6	—	65	70	75	98	—	83	85	85	85	—	37	29	27.8	29.7	—	35	33.6	33.5	34.2	—	Achlorhydria	Normoblastic; few megaloblasts
5	3.20	3.60	—	—	4.04	45	52	—	—	75	—	—	—	—	—	19.8	20	—	—	26	—	—	—	—	—	—	—
6	2.89	2.83	3.44	4.6	—	55	50	60	75	—	83	85	81.4	80	—	26.8	24.7	24.3	23.0	—	32	29.2	30	28.5	—	Low free HCl	Normoblastic
7	1.54	1.90	2.20	4.2	—	50	50	55	85	—	97.5	92	91	86	—	38	37	35	28.5	—	39	36.8	38.5	34	—	Achlorhydria	Megaloblastic
8	2.61	2.60	—	—	4.04	60	61	—	—	75	—	—	—	—	—	32	32.8	—	—	26	—	—	—	—	—	—	—
9	3.02	3.04	—	—	3.64	77	77	—	—	78	—	—	—	—	—	36	36	—	—	32	—	—	—	—	—	—	—
10	3.98	3.95	—	—	3.89	60	70	—	—	70	—	—	—	—	—	21.2	25	—	—	29	—	—	—	—	—	—	—

\* Duration of each test in days, shown thus:  $\overbrace{10}^{10}$   $\overbrace{15}^{15}$

2%. Absolute blood findings were by now normal or nearly so. The original megaloblastic marrow was now normoblastic.

Exp. 6.—Four patients (Nos. 5, 8, 9, and 10, Table IV), originally on the vitamin-C-free diet and referred to in experiment 3, were given, at the end of that experiment, ascorbic acid by mouth in saturating doses as detailed before, and thereafter the usual 100 mg. daily maintenance. Their blood pictures at the conclusion of this test are shown in sub-columns 5, Table IV. The red cell count rose in three and remained stationary in one. The Hb rose in all—slightly in one showing a good red cell rise. Improvement began only after two or three days, and was slow initially, accelerating later. Reticulocytes never rose above 2%. The patient whose red blood cells failed to rise (No. 10) later resisted liver injections, thyroid, etc., and the opinion was formed that his marrow was hypoplastic.

As no patient on the C-free diet showed a drop in either red cell count or Hb, regeneration, however slow, must have been going on. Lack of vitamin C alone in the diet did not prevent blood formation. In most individuals its presence accelerated regeneration. For this action little seemed to be required, as it was supplied by an ordinary mixed hospital diet. Iron lack was not a serious factor in the majority of cases investigated.

The anaemias investigated were nutritional in origin. The main causal factor was contained in the vitamin-C-free diet. Lack of vitamin C alone was not the cause of the anaemias, although it might have helped in their development. Iron lack played a minor part.

#### Discussion

The disease observed was typical "bachelor" scurvy. There were three root causes. First and most important was ignorance, mainly in males, of the need for potatoes and vegetables in

two patients only of this type were seen, and as a result the total for the year was low. The inference was that a lesson was being learnt and that such individuals were eating more potatoes and vegetables, so that vitamin C intake, which deteriorated in the two years after 1940, when shortages and rationing first became apparent, was improving. As this seemed important an attempt was made to define the position in Edinburgh and Glasgow by obtaining from the Municipal General Hospitals and the Royal Infirmary, Edinburgh, and the Municipal General Hospitals and the Western, Royal, and Victoria Infirmarys, Glasgow, the number of scorbutics treated by them over the same period. The results (Table V) showed the same rise and fall as in the local observation, and it is suggested that the same reason also holds.

TABLE V

Aug.-July, Year	Col 1: Edinburgh			Col 2: Glasgow	
	Scurvy Nos.	% Medical Admissions	Rate per 100,000 Pop.	Scurvy Nos.	Rate per 100,000 Pop.
1937-38	11	0.11*	2.35	24	2.14
1938-39	23	0.25*	4.89	36	3.19
1939-40	13	0.16*	2.75	28	2.48
1940-41	27	0.36	6.55	40	3.83
1941-42	45	0.61	10.52	66	6.31
1942-43	26	0.35	6.03	50	4.78

Note.—Percentage incidence of scurvy to medical admissions in Glasgow hospitals not shown, as data of total medical admissions could not be obtained.

\* Cf. 0.14% in Boston City Hospital over the period 1930-9 (Faulkner, 1941).

The close similarity between Edinburgh and Glasgow is capable of explanation by the fact that both have approximately the same intake of vitamin C per head of the population (personal

communication from the Ministry of Food). This intake is much below the average for all towns in Britain, and therefore the figures for vitamin C nutrition elsewhere are presumably better. The percentage incidence of scurvy of all medical cases in Edinburgh is much lower than in the hospital in which the investigation was made. This hospital serves mainly the elderly poor, whose vitamin C nutrition is probably lower than that of other classes of the population.

The improvement noted must be credited to the activities and propaganda of the Ministry of Food. Nevertheless it is suggested that so long as the scarcity of fruit exists the concessions at present enjoyed by children and expectant mothers should be extended to the elderly. Scurvy, which is only one evidence of faulty nutrition among the aged poor, will need more than propaganda for its abolition, and it is suggested that the provision for them of clean cheap lodgings, with canteen facilities and very discreet supervision, is one which local authorities might consider as the most practical step.

Clinically the only unusual complaint was lumbago, which it is suggested was the result of small deep haemorrhages in the muscles of the back, and indicates an unusual cause for this complaint in poorly nourished individuals.

The anaemias in the cases investigated showed no new factors so far as the peripheral blood was concerned. Although in no patient was the blood picture completely normal, in some it was very nearly so, and agreement is reached with the opinions of others that (a) anaemia and scurvy need not coexist in man (Crandon *et al.*, 1940); (b) when they do coexist the anaemia often bears no relation to the extent of the haemorrhages or the plasma ascorbic acid content (Croft and Snorf, 1939); and (c) the anaemia is varied in morphological type, being mainly normocytic (Parsons and Smallwood, 1935). The marrow findings were also similar to those recorded by others. These earlier findings were: (a) a gelatinous mass with failure of erythropoiesis (1 case) (Harris, 1927-8); (b) moderate hyperplasia with scattered small groups of erythroblasts and no fibrosis (1 case) (Mettier *et al.*, 1930); (c) one normal marrow, and one megaloblastic marrow associated with macrocytosis and achylia gastrica (Jennings and Glazebrook, 1938); and (d) one normal marrow and two showing diminished erythropoiesis (Israëls, 1943). The change from a megaloblastic to a normoblastic type with only dietary replacements was interesting. This has been noted in non-scorbutics with nutritional anaemia with (Groen and Snapper, 1937) and without (Napier *et al.*, 1938) free HCl in their gastric juices. The inference is that the marrow changes in scurvy are not specific.

As regards the cause of the anaemia of scurvy many views have been expressed. In 1930 it was thought confidently that there was a specific anaemia due to vitamin C deficiency (Mettier *et al.*, 1930). Since then, however, many observations have been made. The following are noteworthy: (a) vitamin C lack will not affect blood formation (Crandon *et al.*, 1940); (b) Hb and red cell regeneration with reticulocytosis occurs in scorbutics on a vitamin-C-free diet (Lozner, 1941; Ungley, 1938); (c) ascorbic acid has failed to cure an anaemia in experimental scurvy which did react to germinated oats (Aron, 1939); (d) vitamin C was necessary in one deficient individual to prevent the progress of the anaemia (Vaughan, 1934); (e) vitamin C is necessary in some deficient individuals before the anaemia will respond to treatment (Kenney and Rapoport, 1939; Dyke *et al.*, 1942). Belief in the need for vitamin C has therefore dwindled, and it has been suggested that the anaemia of scurvy is due to lack of other factors (Croft and Snorf, 1939). The present experience confirms points a, b, and e.

Lastly, as the anaemia of scurvy is due to a complex deficiency, with vitamin C acting only as an adjuvant, and as it is usually moderate in degree, the often-observed absence of reticulocytosis is not surprising. To obtain it, even where the anaemia is severe enough for a good reticulocyte response to be expected, it would be necessary to supply all deficient factors at once—a form of treatment rarely given.

#### Summary

The social and economic backgrounds in 53 adults with scurvy are detailed, with clinical features including blood changes and biochemical findings.

The causes of scurvy of this type are assessed as ignorance, apathy, and poverty.

The incidence of scurvy in the series is compared with the percentage for the main hospitals in Edinburgh and Glasgow for each year from mid-1937 to mid-1943. The significance of the figures is discussed.

A morphological classification of the anaemia of scurvy is made. The type of sternal marrow in six cases is indicated broadly. The anaemia is shown to be nutritional in origin and to be capable of alleviation in the absence of vitamin C, which is, however, thought to act as an adjuvant to the regenerating factors.

Suggestions are made for the elimination of scurvy.

We wish to acknowledge our indebtedness to Dr. W. G. Clark, medical officer of health, City of Edinburgh, for permission to publish this paper on patients in hospitals under his control; to the medical superintendents of the Edinburgh and Glasgow hospitals named in the text for their co-operation and active help in obtaining statistics; to Sir Jack Drummond, Scientific Adviser, Ministry of Food, for very useful confidential information on present-day vitamin C nutrition; and to Miss Agnes Hughes, ward sister, Eastern General Hospital, Edinburgh, for supervising the majority of patients and controlling the experimental diets.

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## URTICARIAL REACTIONS AND DESENSITIZATION IN ALLERGIC RECIPIENTS AFTER SERUM TRANSFUSIONS\*

BY

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While a great deal of research has been done on the haemolytic and the pyrogenic transfusion reactions, less attention has been paid to the so-called "allergic reactions." They are said to occur in about 1% of transfusions (Wiener *et al.*, 1941; Hoxworth and Skinner, 1941), and the incidence seems to be the same whether blood or plasma or serum is administered.

Immunologically the word "allergy" covers the changes in reaction towards increased and reduced sensitivity due to the presence of acquired antibodies. Clinically, however, the term "allergic transfusion reaction" is used, in a more restricted sense, for the occurrence of such phenomena as urticaria, angioneurotic oedema, bronchial asthma, and, in rarer instances, shock. It is commonly assumed that the cause of these syndromes lies in the transfusion of blood from the allergic donor to the normal recipient (*Lancet* editorial, 1941; Colonel, 1943). Scarcely any attention has been paid to the role of the allergic recipient in the production of transfusion rashes, and only one case report of an allergic recipient developing a transfusion rash was found in the literature (Stewart and Bates, 1938). Neither is it yet established whether the first transfusion sensitizes or desensitizes the reacting recipient for subsequent transfusions with human material. Whereas Gyorgi and Witebsky (1929), Wiener *et al.* (1941), and Kilduffe and De Baey (1942) believe in the development of an allergic supersensitivity in the interval between repeated transfusions, Young (1942) reported apparent desensitization.

\* A report to the Medical Research Council from the S.W. London Blood Supply Depot.



The chief purpose of the present research was therefore to investigate the response of the allergic recipient to injection of human serum and to observe his behaviour to repeated transfusions. The investigations have been carried out in two sections. The first deals with skin tests by allergens and serum, the second with serum transfusions.

One type of human allergy, "atopy," has been investigated in regard to transfusion reactions. The term "atopy" has been introduced by Coca *et al.* (1931) to separate a certain group of allergic manifestations from the hypersensitiveness of infection and horse-serum disease. The term designates such forms of hypersensitiveness as urticaria, bronchial asthma, and vasomotor rhinitis, which have a hereditary basis and in which the hypersensitivity is characterized by special antibodies, the reagins. Reagins are present in the circulating blood, and are capable of sensitizing mucous membrane and skin in such a way that the minute vessels quickly produce an urticarial reaction on contact with the atopens. The best-known atopens are pollen, dust, milk, and egg. Reagins are transferable to normal individuals, sensitizing their skin and their mucous membranes.

### Cases

The subjects were divided into three different groups.

**Group I: Cases of Bronchial Asthma and Hay-fever (Atopic Types).**—A family history of allergy was usually present. The patients, whose ages ranged from 11 to 43 years, gave positive skin reactions to one or more of the tested atopens. Reagins could be determined by passive transfer.

**Group II: Cases of Bronchial Asthma (Non-atopic Types).**—That this group is distinct from the first is shown by the usual lack of an allergic family history, the higher age group of the patient, negative tests with atopens, no determination of reagins, and the high incidence of chronic respiratory-tract infection.

**Group III: Normal Controls.**—These subjects gave no allergic family history and did not complain of any atopic symptoms. Atopic tests were negative.

Persons with latent allergy were excluded in this study—i.e., subjects with positive skin reactions but with no clinical history of allergic phenomena.

### Part I: Skin Tests

**Method.**—Dried pooled human serum was reconstituted to normal strength with distilled water and filled into sterile test-tubes of approximately 2 c.cm. content. These test-tubes were kept frozen at 5° F. till required. On the day of use one or more of these tubes were thawed out and a sterile tuberculin syringe was charged with the fluid. To avoid any risk of contamination each tube was discarded after having been opened. Each syringe was used for one tube only, and after use was cleansed in chromic acid and resterilized. For the test, two intracutaneous injections, each of 0.05 c.cm. of the reconstituted serum, were made into the skin of the back in parallel with extracts of mixed inhalants and food in appropriate concentrations and 0.5 c.cm. of carboll saline. Whenever it seemed necessary, single atopic extracts were used.

**Estimation of the Skin Reaction for Serum.**—The intradermal injection of 0.05 c.cm. of serum produced a raised bleb of 0.8 cm. diameter in each person immediately. A bright flare of about 2 in. diameter occurred around this site of injection and faded after 10 to 15 minutes. A slight wheal formation was often noted as a semilunar swelling of the injected bleb. A reaction of this kind was recorded as negative. The reaction was regarded as positive when the erythema covered a larger area and was still present after twenty minutes, and when, simultaneously, the wheal developed in the whole circumference of the bleb. The size of the wheal was measured after 30 minutes by pressing a glass slide against the skin, and the outlines thus demarcated were arbitrarily recorded as:

Reaction	.. ..	Largest diameter of wheal:	(1-5 cm.
.. ..	.. ..	.. ..	1.5-2 cm.
.. ..	.. ..	.. ..	more than 2 cm.

It should be made quite clear that a positive reaction was estimated by a quantitative difference and not by a qualitative variation. The method was not found reliable enough to estimate fine gradations, as even with careful work a different reaction was sometimes obtained from two equal injections. Two to three hours after the injection the wheal turned brownish. It usually disappeared within 24 hours. Late reactions in the form of distinct papules were observed rarely when working under strictly sterile conditions.

### Results

**Series I: Sensitiveness to Reconstituted Dried Pooled Human Serum (Table I).**—Group I: Of 52 atopic patients 40 (77%) gave positive serum tests, 3 of them being ++, 12 +, and 25 -. Group II: Of 25 persons only 5 (20%) showed positive

serum reactions; they were of the low grade. Group III: Of 50 persons 10 (20%) gave positive serum reactions, all of them being of the low grade.

TABLE I.—Skin Reactions to Intradermal Tests with Reconstituted Dried Pooled Human Serum

	Group I: Br. Asthma, etc., Atopic Type	Group II: Br. Asthma; Non-atopic Type	Group III: Normal
No. tested	52	25	50
Negative reactions	12	20	40
Positive reactions	25 12 } 40 3 }	5 — } 5	10 — } 10

It will be noted that there was a striking contrast between the atopic and non-atopic subjects in their susceptibility to serum tests.

**Series 2: Sensitiveness to Fresh Unpooled Human Serum (Autoserum and Iso-serum).**—Blood was collected into sterile centrifuge tubes from 36 donors and kept at 4° C. for one day. The serum was then pipetted off after centrifugation. It was kept frozen solid until used for testing, which was usually done two days after bleeding. Thirty-six subjects of the atopic and non-atopic types were tested with their own fresh serum (autoserum), with three or four fresh sera from other individuals—also of atopic and non-atopic groups (iso-sera)—and with one pool of dried serum. Autoserum did not cause a reaction in any of the 36 recipients. Iso-sera, on the other hand, did give reactions in some cases, which also reacted to pooled serum. These positive cases were, as before, in the main atopic subjects. In any one person the reactions to various individual sera were not all equally strong. Furthermore, a single serum which gave the strongest response in recipient X. did not necessarily do so in recipient Y., and vice versa. Positive reactions were not obtained more often with sera from atopic donors than with sera from non-atopic subjects.

**Series 3: Sensitivity to Fresh Human Sera of the Four Main Blood Groups.**—Three sets of sera were obtained in the same way as in Series 2. A set consisted of four sera—one each of the four main blood groups, AB, A, B, O. For testing each set 12 recipients (both atopic and non-atopic) were chosen, so that there were three individuals of each of the blood groups. Some of the recipients, especially of groups B and AB, were used for testing more than one set, but on different days. Positive reactions occurred in 11 recipients—1 out of 6 AB, 4 out of 12 A, and 6 out of 12 O. The sensitive individuals gave more or less strong positive reactions with all four sera of the main blood groups. The results therefore show no relation between the blood groups of donors and recipients. Of the 11 serum-sensitive recipients 9 suffered from bronchial asthma and hay-fever.

### Part II: Transfusions

The fact that 80% of atopic individuals were positive to serum tests suggested that urticarial rashes after serum transfusions might occur more often in such subjects than in other persons.

**Method.**—Two pools of dried serum, each consisting of about 60 bottles, were used so that a number of atopic subjects and non-atopic controls could be transfused with the same serum. One bottle was reconstituted to normal strength with 400 c.cm. of distilled water. The serum was administered as soon as the dried powder had dissolved completely. Adjustment of the duration of the transfusion to 25 to 30 minutes was aimed at, but in patients who were known to have a high degree of atopic sensitiveness the first transfusion was given at a much slower rate. Whenever a rash appeared during the administration of serum the transfusion was stopped immediately. All persons transfused had been tested previously (Part I). If possible, the test injection of pollen, dust, etc., was avoided on the day of the transfusion, whereas serum tests were frequently applied simultaneously with the transfusion. The transfused persons were under constant observation during the transfusions, and were seen at least two to three times in the next three hours. The temperature and pulse were recorded half-hourly. No transfusions were administered during attacks of bronchial asthma.

**Estimation of the Transfusion Reaction.**—Up to half a dozen solitary small wheals occurred so often during or after transfusion that they were not considered to be a transfusion reaction. The features of what was regarded as a positive transfusion reaction were a large number of solitary white wheals surrounded by red flares, or many wheals occurring in large erythematous areas. Sometimes the wheals ran together and formed large white oedematous zones. The wheals tended to occur on the back, round the neck, and on the face. It was often noted that the first whealing appeared in areas in which the skin was subjected to pressure. The wheals were usually preceded by itching, which increased in intensity so long as fresh wheals were forming in the skin. In some patients running of the nose, streaming of the eyes, and tightness of the chest



occurred simultaneously. The general condition of the patient was in the majority of cases not affected by the transfusion reaction and no adrenaline was necessary to control the symptoms. Attacks of bronchial asthma were rare, but they were observed even in subjects who had previously suffered only from allergic rhinitis. Very occasionally the rash was accompanied by a marked fall of blood pressure and increase of pulse rate. This state of collapse was successfully treated with adrenaline. The transfusion reactions were recorded as:

Reaction	+	..	Erythematous patches and 6 to 20 isolated wheals
"	++	..	Erythema and more than 20 isolated wheals
"	+++	..	Erythema and numerous confluent wheals
"	++++	..	Collapse in conjunction with rash

The time of onset of a transfusion reaction was in distinct relation to the severity of the attack, the strongest rashes occurring after the shortest incubation period. The majority appeared 10 to 30 minutes after the end of the transfusion, but in a few cases the outbreak was observed one to two hours later. The most severe reactions came on during the administration of the fluid. The duration of a weak reaction was not longer than half an hour, but stronger rashes lasted one to two hours. Rigor and rise of temperature occurred independently of the rashes.

TABLE II.—*Urticarial Reactions after Injection of Reconstituted Dried Serum*

Case No.	Age	Reaction to Skin Tests with				Reactions to Transfusions		
		Known Atopens			Serum	1st	2nd	3rd
		Inhalants		Ingestants				
		Pollen	Dust, Feathers, etc.					
Gp. I:								
1	26	—	++	++++	+	++++	+	±
2	43	—	—	—	+	++++	+	—
3	16	—	+++	+	+	++++	+++	—
4	20	—	+++	++++	++	++++	+	—
5	11	++	+++	+	±	++++	+	++
6	22	—	+++	+	+	+++	—	—
7	23	—	++	++++	++	++	—	—
8	39	++	—	—	++	+	—	—
9	26	—	+	—	+	+++	—	—
10	25	—	++	—	+	++	—	—
11	35	—	++	—	+	++	—	—
12	19	+++	++	++	++	+++	—	—
13	18	+++	++	+	+	++	—	—
14	35	+++	—	—	+	+	—	—
15	22	++	—	—	—	—	—	—
16	27	—	++	—	—	—	—	—
17	30	—	++	—	++	—	—	—
Gp. II:								
18	—	—	—	—	—	—	—	—
19-23	—	—	—	—	—	—	—	—
24-26	—	—	—	—	—	—	—	—
Gp. III:								
27-28	—	—	—	—	—	—	—	—
29-38	—	—	—	—	—	—	—	—

### Results

**Series 4: Reactions to First Transfusions (38 Cases, Table II).—**17 atopic subjects of Group I, 9 patients of Group II, and 12 persons of Group III were transfused each with 400 c.cm. of reconstituted dried pooled serum. **Group I:** Of the 17 patients 14 developed an urticarial rash (2 + + + +, 5 + + +, 4 + +, 3 +). Only two of the recipients had reactions of the violent type. One occurred in a boy aged 10, with bronchial asthma, who was sensitive to dust and related inhalants. The urticarial rash developed during the transfusion, after 300 c.cm. had been administered. The boy shortly afterwards complained not only of an attack of asthma but of severe abdominal cramps. These were accompanied by a den fall of blood pressure. The reaction was controlled by renaline. The other alarming incident occurred in a young woman aged 26. She suffered from bronchial asthma and was extremely sensitive to egg. After 100 c.cm. of serum had been given her eyelids started to itch and swell. The transfusion was stopped, but the patient became deeply cyanosed. The pulse was 140 and the blood pressure 80/50. She recovered from the atopic shock after treatment with adrenaline and cardophyllin, but suffered from an asthmatic attack for the next three hours. Both these cases had only moderately strong positive serum skin reactions, whereas other persons with much more pronounced skin reactions produced general manifestations of a weaker degree. **Groups II and III:**—Twenty-one subjects were transfused, and no rash was observed in any of the cases.

**Series 5: Reactions to Subsequent Transfusions (22 Cases, Table II).—**The same pool which had been used for the first transfusion was administered on a second and a third occasion. The interval between the transfusions was usually a fortnight. **Group I:**—A second transfusion was given to 14 patients, 11 of whom had

developed a rash on the first occasion. After the second treatment 10 out of these 11 showed definite signs of desensitization: 6 subjects had no reaction at all, 4 got a slight rash, and only 1 reacted in the same way as on the first occasion. A third transfusion was given to 8 subjects, all of whom had produced urticaria when transfused for the first time. Of these cases 7 demonstrated the decrease of sensitivity—5 did not react at all, and 2 showed some erythematous areas but no wheals. Only one boy, aged 11, again developed a rash. Three patients who had been desensitized by repeated transfusions of serum from the same pool were re-transfused with serum of other pools. No reaction occurred. Thus desensitization had been established not only for the pool which had been given during the course of transfusions but also for others. Three patients who did not respond to the first transfusion were equally negative on re-transfusions. **Groups II and III:**—Eight cases were re-transfused and were negative as on the first occasion.

The marked decrease of urticarial rashes in sensitive individuals on repeated transfusions demonstrated the desensitizing power of serum transfusions.

**Skin Tests Before and After Transfusion.**—Two tests were made with pooled serum. The first was carried out in the recipient 20 minutes before starting the transfusion, and the second was performed towards the end. There was hardly any difference in the reaction in those cases which failed to produce a rash. In those individuals, however, who subsequently developed a rash, the second reaction was about five times as large as the first. It was formed not only by increase of the original bleb but also by coalescence of small wheals which developed in the area of the erythema. This phenomenon, when observed, preceded a general reaction by 10 to 30 minutes.

### Discussion

The occurrence of urticaria after transfusion is accepted mostly, without further comment, as an allergic reaction, but the validity of such an assumption seemed doubtful. The literature on this subject is extremely vague. First, skin tests with human serum, which have been carried out occasionally in cases of transfusion rashes to support the allergic theory, usually lack the necessary controls. Secondly, only single cases of transfusion rashes have been reported, and no experiments on a larger scale are found in the literature. Thirdly, hardly any evidence has been published regarding the changes of reaction towards increased or reduced sensitivity after serum transfusions. The results of the present investigations throw some light on the following points.

1. **Local reactions** caused by intradermal injections of serum are indistinguishable in their features of wheal and erythema from those occurring after tests with the known atopens. It seemed plausible, therefore, that this reaction could be looked upon as evidence of allergic sensitiveness, but it had to be kept in mind that not all urticarial reactions are manifestations of allergy. The visible reactions to many substances like histamine, peptone, atopens, and serum are extraordinarily similar. Their relation lies in the common point of attack—the capillary wall. In their mechanism they differ profoundly. Histamine and peptone, as representatives of one group, act directly on the capillary wall. They act in any person. The atopens, on the other hand, produce vasodilatation indirectly as a sequel to their union with their reagins. Thus they react only in sensitized tissues. The present investigations produced evidence in favour of the assumption that local serum reactions are an atopic manifestation. It was shown that positive serum reactions were seldom obtained in normal subjects, but frequently in those individuals who gave positive reactions to the known atopens.

2. The general urticarial reactions following serum transfusion are related, in the similarity of the clinical features, to the condition caused by intravenous injections of atopens—e.g., pollen. The onset of the rash is sudden and the duration short. It may be accompanied by rhinitis, bronchial asthma, severe headaches, intestinal spasms, and fall of blood pressure. The same considerations, however, as discussed for the local reaction hold true for the general eruption. Not all attacks of urticaria, asthma, etc., are manifestations of atopy, and the clinical features alone are therefore not sufficient evidence for the atopic aetiology of the transfusion rashes. It was shown by this study that the serum rashes after transfusions most probably constitute atopic phenomena, as they were not observed in the normal controls, but only in the known atopic subjects.

Thus it seems likely that the atopic sensitiveness of the recipient is the cause of these serum reactions, and it is

surprising that the majority of case reports in the literature refer only to the allergic donor (*Lancet* editorial, 1941). Although the role of the allergic recipient is mentioned sometimes in discussions on allergic transfusion reactions (Polayes and Lederer, 1932, Kilduffe and De Bakay, 1942) only one case report of an allergic recipient developing a transfusion rash was found in the literature (Stewart and Bates, 1938). Bottner (1924), Brem *et al* (1928), and Price (1934), considering the sensitiveness of the recipient as the cause of transfusion reactions, do not refer to urticaria and related syndromes, but to febrile reactions. Duke and Stofer (1924), who are also frequently quoted as having observed an allergic reaction in a sensitive subject after transfusion, do not describe a typical allergic syndrome, but a coma.

Nothing is known of the character or source of the atopic substances in human serum. The fact is notable that fresh autoserum failed to react even in highly serum sensitive subjects, and positive skin reactions were observed only with isosera or with serum from pools. The same observation was made by Chant and Gay (1927) in a fairly large series of cases. This may indicate that the reacting substances are foreign to the human body. Furthermore, it is interesting that a serum-sensitive person does not respond equally strongly to different human sera.

Levine and State (1942) claim that the soluble A and B substances produce the positive serum reaction and the serum rashes. No confirmation of their observations has yet been published. Nor was it obtained by the results of the present skin tests with A and B sera.

There is some reason to believe that the presence of extraneous atopens—e.g., food or inhalants—in the transfused serum may be the cause of the serum reactions in sensitive subjects. In this respect Walzer's and Freeman's researches are noteworthy. Walzer (1927) sensitized small areas of normal skin passively with serum from persons who were highly food-sensitive. When the normal recipients, on the following day, ate the corresponding food, the sensitized site responded promptly by producing a wheal and an erythema. This proved the absorption of food atopens from the non-allergic digestive tract. The absorption of pollen atopen from the non-allergic mucous membrane of the nose was shown by Freeman (1925) in a similar way.

**3. Desensitization**—In the present series 10 out of 11 serum sensitive subjects, after recovery from a transfusion rash, showed a condition of desensitization on re-transfusion. Thus, on repetition, the administration of serum caused no urticaria or only the slightest rashes in subjects who had reacted previously. The reaction to the first serum transfusion cannot be due to nervous excitement, as several cases had preliminary saline transfusions without reaction. The refractoriness may only be temporary. It was, however, still present in several cases transfused three months after desensitization had been established. The refractory state of transfused atopic subjects resembles the desensitization in anaphylaxis, since sensitive animals surviving a sufficiently strong dose of their antigen do not react to a second dose of the same antigen. That the desensitizing effect can also be produced by whole blood was shown by Young (1942). She investigated the reactions of three subjects who responded with a transfusion rash when receiving blood for the first time. When blood of another donor was used for repetition of the transfusion a rash developed again. On the other hand, when using the same donor's blood for a second time no reaction occurred. Apart from these cases no definite reports on desensitization by transfusion could be found in the literature. Concurrently with the change of reaction to serum there occurred in bronchial asthmatics a marked improvement of the general condition and a decrease of or even a freedom from asthmatic attacks. This may be due to immunological changes. On the other hand, it may be due entirely to psychological factors, as it cannot be denied that transfusion with "normal serum" means in practice for every patient some psychological impression.

#### Summary

Pooled human serum, dried and then reconstituted, when used for skin tests gave positive reactions in 77% of atopic subjects, but in only 20% of non-atopic. Sera from single individuals also gave

positive reactions in the same recipient. Autoserum failed to react. The skin reacting properties of serum were independent of the group specific substances.

On transfusion, such serum caused "allergic" reactions in 14 out of 17 atopic recipients, but in none of the 21 non-atopic.

On repeated transfusion in 14 atopic and in 14 non atopic cases no sensitization occurred.

On repeated transfusion, desensitization was observed in 10 out of 11 serum sensitive atopic cases.

In the course of the follow up of patients who received serum transfusions a number of cases of homologous serum jaundice were observed. In some of the cases the hepatitis was mild (Loutit *et al*, 1944), in others as yet unreported acute hepatic necrosis occurred. Further attempts at desensitization of allergic patients with human serum, therefore, are not at present advised in this country.

I wish to thank Dr. A. N. Drury for suggesting this line of research and Dr. J. L. Livingstone and other members of the E.M.S. medical staff of Sectors 8 and 9 for their co-operation in investigations of patients under their care. I am especially indebted to Dr. J. Loutit, Director of the S.W. London Blood Supply Depot, for his great help and interest at every stage of this study.

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## INCIDENCE OF BLEEDING GUMS AMONG R.A.F. PERSONNEL AND THE VALUE OF ASCORBIC ACID IN TREATMENT

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Reports appearing in medical journals recording good results obtained by the treatment of various forms of gingivitis with ascorbic acid led to a very large consumption of that substance in the Royal Air Force for the treatment of all forms of bleeding gums. An investigation was therefore carried out between October, 1941, and May, 1942, to discover the incidence of bleeding gums in the R.A.F. and to assess the value of ascorbic acid in the treatment of this condition.

#### Experiment 1

This experiment took place at three R.A.F. stations during October and November, 1941. At each station all personnel available were examined, except those already taking ascorbic acid, those being treated for acute ulcerative gingivitis stomatitis and those with no teeth. About two-thirds of those examined were airmen, the remainder were airwomen and soldiers, with a few officers, sergeants, and naval personnel. The majority of subjects in this and later experiments were between the ages of 18 and 25. All those included in this experiment had been living on Service rations for six months or more. An estimation was made of the ascorbic acid content of the airmen's food during the experimental period and in the early spring of 1942.

## Methods

The gums of the lower jaw were examined for bleeding after digital massage. Three degrees of bleeding were recognized and noted: (a) bleeding just perceptible at one or two points after firm massage; (b) bleeding more easily produced or bleeding from several points; (c) bleeding apparent on inspection or at the slightest touch. Where gums showed bleeding, ulceration and redness were also looked for, being classified as "absent," "present," or "marked."

Alternate members of the group with bleeding gums were given ascorbic acid tablets and dummy tablets flavoured with tartaric acid. The dose of ascorbic acid was 200 mg. daily for 7 days, followed by 100 mg. daily for 14 days; the dummy tablets were similar in appearance and taste, and were given in similar numbers. Distribution of the tablets was conducted under the supervision of section N.C.O.s, to whom each man had to report daily. The tablets had to be chewed and swallowed in the presence of the N.C.O.s, who kept records of attendances. The dental officer at each station was supplied with a list of those in the experimental group and was asked not to carry out any dental treatment on them during the period of the test.

At the end of the experimental period of three weeks all subjects given ascorbic acid and dummy tablets were re-examined. The original notes were not available to the examiner, so that he could not be influenced by his previous observations or by a knowledge of which tablets had been given. After examination each individual was asked whether he had noticed any improvement or deterioration during treatment. For various reasons not connected with the experiment about 27% of the subjects were not available at the second examination.

The ascorbic acid content of the food as served to the airmen in the messes was determined by the dichlorophenol-indophenol technique (Harris and Oliver, 1942) during one week of the experimental period at each station. The average weight of each item consumed by the personnel in their messes at each of the 28 meals served during the week and the ascorbic acid content per unit weight of each of these items at the time of serving were determined. The average intake of ascorbic acid per airman at each station was calculated from these data. This determination of the ascorbic acid intake was repeated at the same stations in March, 1942, in order to discover the degree of seasonal variation.

## Results

The total number of personnel examined at the three stations was 1,791, and 344 of these had some degree of bleeding of the gums—a percentage of 19.2. The incidence varied between the stations and between different classes at the same station, but not to any significant extent (Table I).

TABLE I.—Incidence of Bleeding Gums at the Various Stations and in the Different Classes of Personnel. (Experiment 1)

Station	Number Examined	Number with Bleeding Gums	Percentage with Bleeding Gums
1	521	101	19.4
2	708	111	15.7
3	562	132	23.5
Total	1,791	344	19.2

Class of Personnel	Number Examined	Number with Bleeding Gums	Percentage with Bleeding Gums
Airmen	1,191	215	18.0
Airwomen	271	57	21.0
Sergeants	68	22	32.4
Officers	10	3	30.0
Army	215	45	20.9
Navy	36	2	5.5
Total	1,791	344	19.2

Of those with bleeding gums 250 completed the test—119 receiving ascorbic acid and 131 dummy tablets. Table II summarizes the effects of the two treatments on the bleeding, ulceration, and redness of the gums. There was no significant difference between the effects

TABLE II.—Effect of Treatment with Ascorbic Acid on Bleeding, Ulceration, and Redness of Gums. (Experiment 1)

	Treated with Ascorbic Acid				Treated with Dummy Tablets			
	Im- proved	No Change	Deterio- rated	Total	Im- proved	No Change	Deterio- rated	Total
Showing No bleeding	43	61	15	119	53	64	14	131
Showing % ulceration	36	51	13	100	40	49	10	99
No. showing redness	3	19	1	23	10	14	1	25
No. showing redness	36	42	8	86	51	33	8	92

produced by ascorbic acid and by the control tablets; the apparent better effect of the latter tablets was probably due to chance.

Ulceration developed during the experiment in 5 of the 119 treated with ascorbic acid and in 9 of the 131 given dummy tablets; redness developed in 6 of the ascorbic acid group and in 9 of those receiving dummy tablets. The effects of the treatments were worked out for each station and for each class of personnel, but as the results showed no significant difference the details have been omitted. Subjective feelings of improvement usually bore no relation to the objective signs, but when there was any marked change in the degree of bleeding this had usually been noticed when the teeth were being cleaned.

The results of the estimations of ascorbic acid intake are summarized in Table III. The average daily intake of the airmen was about 26 mg. each during the autumn and 17 mg. during the early spring.

TABLE III.—Average Daily Intake of Ascorbic Acid by Airmen in their Messes at Three R.A.F. Stations. (Experiment 1)

Station	First Series of Tests (Autumn)		Second Series of Tests (Spring)	
	Test Period	Ascorbic Acid Intake (mg. per man daily)	Test Period	Ascorbic Acid Intake (mg. per man daily)
1	8/10/41 to 15/10/41	25.5	3/3/42 to 9/3/42	19.0
2	21/10/41 to 28/10/41	27.0	11/3/42 to 17/3/42	15.2
3	5/11/41 to 12/11/41	24.8	19/3/42 to 25/3/42	16.3
Average:		25.8		16.8

The main cause of the difference between the ascorbic acid intake in the autumn and that in the spring was the ascorbic acid content of the potatoes. Potatoes contributed an average of about 11 mg. of ascorbic acid per man daily in the autumn, but only about 6 mg. in the spring. Potatoes were the most important source of ascorbic acid in the autumn, but in early spring greenstuffs provided the largest amount. Taking the two test periods together, potatoes and greenstuffs contributed about equal amounts, and between them supplied about three-quarters of the total ascorbic acid, the remainder being derived from root vegetables, the small amounts of fruit served, jam, and a number of less important sources.

## Experiment 2

At another R.A.F. station 571 airmen were examined and treated for bleeding gums during April, 1942. The same methods were used as in experiment 1, except that special note was made of the presence of "sponginess" of the gums and that the dosage of ascorbic acid was slightly different. In this second experiment 150 mg. was administered daily for 20 days. The dietary history of the personnel of this station differed from that of the personnel of experiment 1, as the men had received Service rations for periods of only one to six weeks before the beginning of the experiment; previously they had lived in civilian billets and received civilian rations.

## Results

The number with bleeding gums was 122—an incidence of 21.3%. The effects of the treatments on all cases of bleeding gums are given in Tables IV and V. Those with and without "sponginess" of the gums have been separated into two groups, and the effects of the two treatments have been worked out for each group. Six of those with bleeding gums failed to complete the experiment.

TABLE IV.—Effect of Treatment with Ascorbic Acid on Bleeding Gums. (Experiment 2)

Treatment	Improved		No Change		Deteriorated		Total
	No.	%	No.	%	No.	%	
Ascorbic acid	17	25	37	54	14	21	68
Dummy tablets	22	46	14	29	12	25	48

TABLE V.—Comparison of Effects of Treatment on Bleeding Gums with and without "Sponginess." (Experiment 2)

Treatment	"Sponginess" Present						"Sponginess" Absent					
	Improved		Deteriorated or no change		Total		Improved		Deteriorated or no change		Total	
	No.	%	No.	%	Total		No.	%	No.	%	Total	
Ascorbic acid	9	33	13	67			18	44	23	56		
Dummy tablets	8	47	9	53	17		23	74	8	26	31	

Again the dummy tablets were rather more effective than the ascorbic acid, but the difference was not statistically significant. Improvement was shown by a significantly larger proportion of those having no "sponginess" compared with those with "sponginess" present, but the better results were independent of the form of treatment.

### Experiment 3

This experiment was carried out during April and May, 1942, at the same station as experiment 2, as part of a more general nutritional survey. Six hundred airmen, other than those taking part in experiment 2, were examined three times at intervals of three weeks, and at each examination the presence or absence of bleeding gums was noted. After the initial examination the men were divided into several groups which were given different vitamin supplements and control tablets.

### Results

The incidence of bleeding gums on initial examination was 20.3%—a figure similar to those found in the two previous experiments. The results of treatment with ascorbic acid and other vitamin supplements showed no significant difference. It therefore seems justifiable to consider the observations made on the 600 airmen as a whole.

There was almost exactly the same percentage showing bleeding gums at each examination, and the distribution of the degrees of bleeding was similar on each occasion (Table VI). On the other hand, only 57 of the 122 who showed bleeding at the initial examination did so at each of the two subsequent examinations.

TABLE VI—Number with Bleeding Gums at Three Examinations of 600 Airmen at Intervals of Three Weeks (Experiment 3)

	Degree of Bleeding*			Total	
	a	b	c	Number	% of 600
1st examination	45	50	19	112	20.3
2nd "	42	53	16	111	18.5
3rd "	52	53	13	118	19.7

\* The degrees are defined in the account of experiment 1.

At the second examination the gums of 48 subjects (19% of the original 122) had stopped bleeding entirely—about the same percentage as showed improvements in experiments 1 and 2—but at the same time 37 of the rest of the 600 had started to bleed. Similarly, at the third examination 34 had stopped bleeding, while 41 had started. It is thus apparent that there is a considerable normal variation irrespective of treatment.

It was observed in this experiment, as in experiment 2, that those gums with "sponginess" tended to remain unchanged from one examination to the next. The majority of those who showed improvement during the test period had fairly firm, pale gums with only a little bleeding on massage. Neither type showed greater improvement with any particular treatment.

### Discussion

In frank scurvy, swollen spongy bleeding gums are a characteristic sign. Most investigators who have treated bleeding gums with ascorbic acid have reported improvement in at least a portion of those affected, and have inferred that bleeding gums may be an early sign of ascorbic acid deficiency (Roff and Glazebrook, 1939; Campbell and Cook, 1941, 1942; Blockley and Baenziger, 1942; Stuhl, 1943; Kent, 1943).

There is no evidence from the early descriptions of scurvy (Hakluyt, 1600; Lind, 1753) that the gums began to bleed before the other signs and symptoms were seen, and during the investigations on experimental human scurvy by Crandon, Lund, and Dill (1940) the gums did not become swollen and haemorrhagic before other signs of scurvy appeared. Work by Burrill (1942) showed no relationship between low blood plasma vitamin C levels and the presence of gingivitis, and McNece and Reid (1942) found patients with sore bleeding gums to be no more "unsaturated" than others.

In the present experiments estimation of the intake of ascorbic acid showed that even in the autumn, when it might be expected to be high, the amount in the food served to the airmen on three R.A.F. stations was about 25 mg daily, or slightly less than the amount considered desirable by the Health Organization of the League of Nations (30 mg daily). The ascorbic acid intake during the spring was little more than half that recommended. Subsequent experiments on other stations have

confirmed that the average between these spring and autumn figures is representative of the average figures throughout the year on most R.A.F. stations. It might reasonably be expected, therefore, that if gingivitis were an early sign of ascorbic acid deficiency a noticeable proportion of those with bleeding gums would have shown improvement with ascorbic acid treatment.

In all three experiments the gums of those treated with ascorbic acid showed no greater improvement than those of the control groups, and the incidence of bleeding gums was remarkably constant (about 20%), although the subjects of experiments 2 and 3 had been living on civilian rations in billets until a short time before those experiments. The opinions of patients as to the efficacy of the treatments were found to bear no relation to the objective signs. Those gums which were not "spongy" tended to improve more than those with "sponginess," but the improvement was irrespective of the type of treatment.

Observation of 600 subjects in whom there was a 20.3% incidence of bleeding gums at the first examination showed that there is a large normal variation in the condition of gums, although the total incidence of bleeding gums remains very constant. This may well be the explanation of the apparent success in treatment with ascorbic acid which has been so often reported.

It seems justifiable to conclude that in Royal Air Force personnel in this country ascorbic acid is valueless in the treatment of bleeding gums, and the incidence of bleeding gums is not related to the ascorbic acid intake. This does not exclude the possibility that other subjects living under different dietary conditions might benefit from treatment with ascorbic acid.

### Summary

The average amount of ascorbic acid present in the food served to airmen at three R.A.F. stations was 25.8 mg per man daily during October and November, 1941, and 16.8 mg during March, 1942.

On examination of 2,962 personnel, 588 (19.8%) were found to have some degree of bleeding of the gums, a similar incidence being found in the autumn and spring and at each of the four stations where the investigations were carried out.

No greater improvement in the gum conditions was obtained by treatment with ascorbic acid than with dummy control tablets.

Observation of 600 personnel over a six weeks period showed that there was a large normal variation in the degree of bleeding of the gums, irrespective of treatment.

Those having "sponginess" as well as bleeding of the gums showed no greater improvement with ascorbic acid treatment than with dummy tablets, although there was less normal variation in their condition.

Patients' personal opinions as to the efficacy of treatment bore no relation to the objective signs.

We are indebted to Dr Bradford Hill for the statistical analysis of the results, and wish to thank the officers, airmen, and other personnel at the stations where the experiments were carried out for their co-operation.

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Several English cities are likely to benefit from Mr William Eichholz's £100,000 legacy for the development of the Alfred Eichholz Memorial Clinic in London and of the blind professional masseur generally. The National Institute for the Blind, which administers the clinic, hopes to use some of the money to open similar clinics in provincial centres. When the Institute founded the Eichholz Clinic in 1931 Mr Eichholz paid all the cost of its establishment and equipment as a memorial to his late cousin, Dr Alfred Eichholz of the Board of Education. He became an enthusiastic admirer of the ability of his blind staff. All the new clinics in the Provinces will be staffed by blind physiotherapists trained at the Institute's school. This was enlarged last year to meet the training needs of war casualties in the Forces and among civilians.

# INCIDENCE OF GINGIVITIS IN THE ROYAL AIR FORCE

BY

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In the course of an inquiry into gingivitis in the Royal Air Force, initiated by Air Marshal Sir H. E. Whittingham, Director-General of Medical Services, the incidence of this condition was determined at four Royal Air Force stations.

## Classification

Since the various forms of gingivitis are not clearly defined, it was decided to adopt a classification which would avoid ambiguity and which was based on naked-eye appearances. The gums of those examined were assigned to one or other of the following categories.

### A. Normal.

B. *Gingivitis without Ulceration*.—In this group the gums and the interdental papillae are swollen, bluish red in colour, frequently bleed on pressure, and, adjacent to the teeth, may have a smooth shiny appearance with absence of the normal stippling. Such gums are often sensitive when touched with a probe. The lesion most frequently occurs in the region of the lower incisors. When viewed through the corneal microscope the normal cornified layer may be seen to stop short about 2 to 3 mm. from the crest of the gum. Between this point and the crest the gum is swollen and oedematous, and the capillaries lie in long loops, like hairpins, whereas in the normal gum, and in the region where the cornified layer is still present, they are convoluted. Purely local patches of hyperaemia due to obvious trauma or to toothbrush abrasions were not regarded as this type of gingivitis.

C. *Healed Gingivitis*.—The interdental papillae are missing and the gums are pale, but thickened and rolled in appearance. There is no evidence of existing inflammation; it is clearly a healed condition. Those who have suffered previously from gingivitis and have undergone treatment often have gums of this type.

D. *Chronic Ulcerative Gingivitis*.—Cases in this group usually resemble Type B gingivitis with a superadded chronic ulceration, frequently at the tip of one or more interdental papillae. The ulceration may occur more deeply, between the gums and the necks of the teeth; the appearance is then of an early periodontitis.

E. *Acute Ulcero-membranous Gingivitis and Gingivostomatitis*.—This can be subdivided into two groups: (i) arising on apparently healthy gums; (ii) arising on gums which show evidence of pre-existing inflammation. Types E i and E ii constitute the entity known as trench mouth, and often the presenting symptom is pain. This can be of two varieties: (a) pain of an aching character, localized to the region of the affected gum—throbbing may occur if the lesion is acute; (b) dull aching pain, like toothache, situated deeply and not well localized. Foetor oris is always present, and, contrary to some teaching, may be noted by the patient. Bleeding of the gums usually occurs with mild trauma, as from tooth brushing, but it can arise spontaneously, and may be the presenting symptom. The lymph glands which drain the affected area may be swollen and painful. The lips are often crusted, the lower lip and the angles of the mouth being most frequently affected. The tongue may be swollen and show marginal indentations from pressure of the teeth. The gums are swollen, hyperaemic, and turgid in appearance; the normal line of demarcation between the pale mucous membrane of the gum and the redder mucous membrane of the gingivo-labial fold is absent.

Two types of ulceration may be present, concurrently or separately. In the more acute form a narrow serpiginous band of ulceration, with apparent membrane formation, extends round the necks of the teeth; it is confined to the region of the alveolar crest. This process may stop abruptly if a gap due to previous dental extractions exists between the teeth. Rarely, ulceration occurs on that part of the buccal mucous membrane in contact with the affected gum. Ulceration may also occasionally extend on to the mucous membrane of the fauces and soft palate. The other type of ulceration does not seem to be so acute, and it is confined to the tips of some of the interdental papillae. Both types of ulceration occur about the incisor teeth, but the lesions may be generalized or they may be confined to other regions of the mouth.

The chief general disturbances are lassitude and mental depression, but these may be entirely absent. The temperature is usually normal, but it may be slightly raised. There is no characteristic blood picture, but occasionally a slight polymorphonuclear leucocytosis may occur.

## Method of Investigation

At each of the stations concerned a random sample of the personnel was taken from the nominal roll. These were ordered to attend for examination. If, owing to leave, sickness, or other cause, any of those selected could not be present, the reason was stated by the section concerned. At the first station to be examined the random sampling was carried out by Dr. Bradford Hill. Each subject, when examined, was required to give details of age, sex, Royal Air Force or Women's Auxiliary Air Force trade, civilian occupation before joining the Service, and date of joining. The gums were then classified into one or other of the above groups.

## Results

Tables I to IV show the incidence of the various types of gingivitis at the four R.A.F. stations.

TABLE I.—Incidence of Gum Lesions among Personnel at  
Fighter Station I

Age:	R.A.F.					W.A.A.F.					Sum Total
	-25	26-30	31-35	36+	Total	-25	26-30	31-35	36+	Total	
Gums:											
Normal...	42	19	4	9	74	41	2	0	0	43	117
Type B...	14	9	8	11	42	12	1	1	0	14	56
Type C...	1	0	2	2	5	1	1	0	0	2	7
Type D...	1	0	2	16	19	2	1	0	0	3	22
Edentulous	0	2	4	10	16	0	1	0	0	1	17
Total...	58	30	20	48	156	56	6	1	0	63	219
% Normal	72.4	63.3	20.0	18.7	—	73.2	—	—	—	—	—

TABLE II.—Incidence of Gum Lesions among Personnel at  
Fighter Station II

Age:	R.A.F.					W.A.A.F.					Sum Total
	-25	26-30	31-35	36+	Total	-25	26-30	31-35	36+	Total	
Gums:											
Normal...	41	17	17	11	86	45	5	0	0	50	136
Type B...	20	11	14	13	58	17	4	1	0	22	80
Type C...	0	2	1	7	10	0	0	0	0	0	10
Type D...	1	1	2	2	6	3	0	0	0	3	9
Type E i	0	1	0	0	1	0	0	0	0	0	1
Edentulous	0	1	5	10	16	0	0	0	1	1	17
Total...	62	33	39	43	177	65	9	1	1	76	253
% Normal	66.1	51.5	43.6	25.6	—	69.3	—	—	—	—	—

TABLE III.—Incidence of Gum Lesions among Personnel at  
R.A.F. Bomber Station III

Age:	R.A.F.					W.A.A.F.					Sum Total
	-25	26-30	31-35	36+	Total	-25	26-30	31-35	36+	Total	
Gums:											
Normal...	90	50	36	20	196	33	2	0	0	35	231
Type B...	39	18	25	17	99	13	1	0	0	15	114
Type C...	2	2	7	3	14	0	0	0	0	0	14
Type D...	5	4	8	6	23	3	0	0	0	3	26
Type E i	1	0	1	0	2	0	0	0	0	0	2
Edentulous	2	8	14	14	38	0	1	0	0	1	39
Total...	139	82	91	60	372	49	4	1	0	54	426
% Normal	64.8	61.0	39.6	33.3	—	67.4	—	—	—	—	—

TABLE IV.—Incidence of Gum Lesions among Personnel at  
R.A.F. Bomber Station IV

Age:	R.A.F.					W.A.A.F.					Sum Total
	-25	26-30	31-35	36+	Total	-25	26-30	31-35	36+	Total	
Gums:											
Normal...	74	26	21	10	131	30	2	6	2	40	171
Type B...	24	13	20	8	65	20	6	0	0	26	91
Type C...	2	0	3	3	8	1	0	0	0	1	9
Type D...	2	0	3	3	8	3	0	0	0	3	11
Edentulous	0	5	2	16	23	1	0	0	0	1	24
Total...	102	44	49	40	235	55	8	6	2	71	306
% Normal	72.5	59.1	42.8	25.0	—	54.5	—	—	—	—	—

These results have been summarized in Table V. From the figures given therein edentulous subjects have been excluded since they are not normally susceptible to gingivitis.

TABLE V.—Incidence of Gingivitis in Personnel with Teeth at Stations I, II, III, and IV

Age:	-25		26-30		31-35		36+	
Gums:	Norm.	Ging.	Norm.	Ging.	Norm.	Ging.	Norm.	Ging.
Station:								
I ..	83	31	21	12	4	13	9	29
II ..	86	41	22	19	17	18	11	22
III ..	123	63	52	25	36	42	20	26
IV ..	104	52	28	19	27	26	12	14
Total ..	396	187	123	75	84	99	52	91
..	67.9	32.1	62.1	37.9	45.9	54.1	36.3	63.7

Table VI shows the proportions of the various types of gingivitis at the four stations where the survey was carried out. About 75% of all subjects with gingivitis have a Type B lesion. A chronic ulcerative gingivitis is present in about 15%, but the proportion varies greatly at different stations. That at Fighter Station I is significantly higher than the proportion at Fighter Station II or at Bomber Station IV. This is chiefly due to variations in the numbers of older personnel examined at each of the stations. Only 3 subjects suffering from acute ulcero-membranous gingivitis were found.

In subsequent analyses all types of gingivitis have been grouped, since the numbers of all but Type B are too small to be subdivided, and since most authorities agree that in a large proportion of cases chronic ulcerative gingivitis (Type D) is an extension of Type B.

TABLE VI.—Proportions of Various Types of Gingivitis at Four R.A.F. Stations

Station	Type of Gingivitis						Total
	B	C	D	Ei	Eii		
Fighter I ..	56 (65.8)	7 (8.2)	22 (26.0)	0	0		85 (100)
Bomber II ..	40 (89.0)	10 (21.0)	9 (9.0)	0	1 (1.0)		100 (100)
Bomber III ..	114 (72.2)	14 (9.0)	26 (16.7)	0	2 (0.1)		156 (100)
IV ..	91 (82.0)	9 (8.1)	11 (9.9)	0	0		111 (100)
Total ..	341 (75.4)	40 (8.9)	68 (15.0)	0	3 (0.7)		452 (100)

Figures in parentheses represent percentages.

The social status of 540 airmen taken at random from those examined was arrived at from their pre-Service civilian occupation (Medical Research Council, 1944), and the percentage of those with normal gums (edentulous subjects excluded) in each social grade was determined. Table VII shows these results.

TABLE VII.—Gingivitis and Pre-Service Social Status

Gums	Social Class					Total
	1	2	3	4	5	
Normal	7	62	203	35	11	315
Gingivitis ..	2	33	136	43	11	225
Total ..	9	95	336	78	22	540
.. Normal	77.7	65.3	59.5	44.9	50.0	—

The incidence of gingivitis of all types (edentulous subjects excluded) in the different R.A.F. trades is shown in Table VIII. The figures therein have been corrected for age differences in the following manner. The age distribution of the whole of the population was first determined, and this was taken as a standard (Table IX). The incidence of gingivitis among those susceptible in each age group of each trade was then found, and was applied to the respective age group of the standard population. The results in each trade were added, the figures shown in Table VIII being obtained. This correction was necessary because of the vastly different age distribution in different trades and because of the relation of the incidence of gingivitis to age, which can be seen in Table V.

TABLE VIII.—Gingivitis in R.A.F. Trades, corrected for Age Differences. (Edentulous Personnel excluded)

Trade	% Gingivitis
Air-crew ..	22
Cooks, butchers, batmen, waitresses ..	60
Group I trades ..	34
II ..	45
IV ..	40
V ..	44

Cooks and butchers, batmen, and waitresses have been excluded from their respective trade groups. Too few personnel in Group III and "M" were examined for an adequate comparison to be made. In general, Group I contains the more skilful and more highly paid workers.

TABLE IX.—The Age Distribution of the Standard Population. (This was obtained from the Average Age Distribution of all Four Stations)

Age Group	No. of Persons
-25 ..	52.7
26-30 ..	17.0
31-35 ..	17.4
36+ ..	12.9
	100.0

Table X shows the incidence of gingivitis among susceptible subjects grouped according to length of service. These figures have been corrected for differences in age distribution in the same way as those obtained for the various R.A.F. and W.A.A.F. trades.

TABLE X.—Incidence of Gingivitis, corrected for Age, according to Length of Service in the R.A.F. (Edentulous Personnel excluded)

Length of Service (mths.)	No. Examined	% Gingivitis
0-11 ..	122	41.14
12-23 ..	160	35.82
24-35 ..	275	40.22
36+ ..	152	36.11

### Discussion

**Sex Incidence.**—Tables I, II, III, and IV show that only at Bomber Station IV was the incidence of gingivitis among airwomen different from that among airmen of the same age group. At this station the difference is statistically significant ( $P=0.03$ ), the airwomen being worse. Furthermore, the incidence among airwomen at this station is just significantly higher than that among those at the other three stations ( $P=0.05$ ). The reason for these differences is not known, but it would seem that there is usually no difference in the incidence of gingivitis among the two sexes.

**Age Incidence.**—Table V shows clearly that the incidence of gingivitis is greater in the older age groups. It is necessary, therefore, to apply a correction for age distribution when the incidences of gingivitis in two different groups are to be compared. The method of carrying out this correction has already been described; it has been applied to the different stations examined, and the corrected incidence of gingivitis so found is shown in Table XI.

TABLE XI.—Incidence of Gingivitis in the Susceptible Population of Each of Four R.A.F. Stations, Corrected for Age to the Standard Population

Station	% Gingivitis
I ..	43.6
II ..	42.4
III ..	40.0
IV ..	39.9

**Incidence compared with Other Groups.**—It is difficult to compare the incidence of gingivitis found in the R.A.F. with that found by other investigators among other groups of subjects, since the standards of diagnosis are so variable. During the last war Semple, Price-Jones, and Digby (1919) found that 29.5% of one unit had gingivitis. Whittingham (1932), during an extensive investigation into the aetiology of tonsillitis, examined the gums of nearly 3,000 R.A.F. and Army apprentices between the ages of 16 and 19. Table XII shows the results he obtained.

TABLE XII

R.A.F. Army	No. Examined	% Gingivitis
..	2,085	16.9
..	655	34.4

Considering the difference in age, it is seen that the incidence found in R.A.F. apprentices is similar to that found in the present investigation for air-crew, while the incidence for Army apprentices is similar to that for other R.A.F. trades. The boys who became aircraft apprentices in 1930 were of much the same social class as those now volunteering for air-crew duties, whereas people who became Army apprentices were similar to those who now enter the other R.A.F. trades. More recently, Roff and Glazebrook (1940) found the incidence in naval trainees to be 17.6%. This figure again is close to that obtained in the R.A.F. apprentices, and it is probable that both groups were recruited from similar sections of the population.

MacDonald (1943) examined 614 naval personnel and found the incidence of gingivitis to be 28.5%. In this figure, however, no correction has been made for age (although the author shows



that there is an increase in the incidence of gingivitis with increase in age), and edentulous subjects—who, as he points out, are not susceptible—are included in the total. Exclusion of the latter brings the incidence to 30.5%, but this figure is uncorrected for age. For those under 30 years the incidence was 17.7%. In the present investigation the incidence of gingivitis among airmen and airwomen under 30 years (including edentulous subjects for the sake of comparison) was found to be 32.7%. The age-corrected incidence of gingivitis among those susceptible in the R.A.F. is approximately 40%.

**Influence of Social Status.**—The figures in Table VII show that there is a correlation between the incidence of gingivitis and pre-Service social status, the condition being less prevalent in the higher-income groups. It is beyond the scope of this paper to discuss the reason for this, but both dietetic factors and differences in personal hygiene may be involved.

**Incidence in Various R.A.F. Trades.**—The incidence of gingivitis among air-crews is significantly less than that among the rest of the R.A.F., due correction having been made for age differences; but it should be noted that only specially selected air-crew personnel were posted to the stations which were examined. On the other hand, the incidence among those engaged in messing and in the preparation of food is significantly higher than among the remainder, excluding air-crew. If the condition is infectious this finding is obviously important.

Whether the differences in the incidence of gingivitis among personnel engaged in the different R.A.F. trades are due to specific working conditions it is difficult to say; but the fact that different trades recruit their members in different proportions from the various social classes must certainly play a large part in producing the variations which have been found. This supposition is supported by the fact that there seems to be no relation between the incidence of gingivitis and length of service in the Royal Air Force.

### Summary

A survey of the gums of random samples of airmen and airwomen from each of four Royal Air Force stations has been carried out.

The incidence of gingivitis was approximately 40%. It was higher among those susceptible in the older age groups and in those recruited from the poorer social classes. Length of service in the R.A.F. did not seem to influence the incidence of gingivitis. Significant differences were found among the various trade groups, the incidence being lower among those who were more highly paid.

The reasons for these differences have been discussed.

Thanks are here recorded to Air Marshal Sir H. E. Whittingham, who initiated the investigation and who allowed the extensive facilities necessary for carrying it out; to Air Commodore T. McClurkin, Director of Hygiene, for his help and encouragement; to Dr. Bradford Hill, for advice concerning the sampling and for his assistance in the analysis of the results; and to Dr. B. S. Platt for much information, help, and encouragement. Thanks are also recorded to the commanding officers, medical officers, and dental officers who were concerned in the organization of the experiments.

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## RUPTURE OF AORTIC ANEURYSM INTO THE DUODENUM

BY

J. EDGAR MORISON, M.D., B.Sc.

Lecturer in Morbid Anatomy, Queen's University; Pathologist, Belfast City Hospital

One of the rarest causes of fatal intestinal haemorrhage is rupture of an aortic aneurysm into the gut. Howland and Sprockin (1943) reported a case and found 4 similar cases recorded since 1936, when Kampmeier (1936) discovered 9 cases in the literature and contributed another. These 15 cases are included in their summary of 520 cases of abdominal aneurysm recorded up to Dec., 1942. Four aneurysms of the abdominal aorta—two rupturing into the retroperitoneal tissues, one into the duodenum, and a small asymptomatic one—have

been seen. The present case of haemorrhage into the duodenum is worthy of record, and the diagnosis was suggested before necropsy.

### Clinical History

The patient, a housewife aged 64, complained of aching referred to both sides of the abdomen and of frequency and scalding on micturition. These symptoms, of two to three months' duration, were not incapacitating. On examination a mass the size of a cricket ball was felt to the left of the umbilicus. This was slightly fluctuant and somewhat tender, and pulsated with the heart-beat. Special examinations failed to contribute further to the diagnosis, especially as between a pancreatic cyst and an abdominal aneurysm. The urine contained *B. coli*, the blood Wassermann reaction was negative, and a fractional test meal revealed complete achlorhydria. A radiograph of the abdomen disclosed no abnormality, and with a barium meal there was no deformity of the stomach and the meal passed normally through the intestine. A urinary diastase index of 10 was normal. After rest and treatment for cystitis for three weeks the patient went home. Ten weeks later she had a very severe haematemesis and was readmitted in extreme collapse. After transfusion of three pints of blood her blood pressure rose from 60 to 85 mm. Hg systolic, but she continued to vomit blood and died in seven hours.

### Pathology

Bright red blood, often in large clots, filled the greater part of the stomach and small intestine and reached to the hepatic flexure. Where its horizontal part passed into the ascending part the third part of the duodenum was lifted forwards by a globular mass adherent to its posterior aspect and to the left side of the aorta. Even after fixation this measured 6.5 by 6.5 by 4 cm. At the same level there was a vertical tear with dark red and slightly everted edges in the mucosa of the posterior duodenal wall measuring 1.5 by 0.5 cm. and communicating with the aorta through the cavity of the globular mass. This was filled with blood-clot, some of which was old and laminated, though little of it was organized. The walls were in few places more than 0.5 cm. in thickness, but there was considerable fibrosis in the surrounding retroperitoneal tissue. The entrance to this sac from the aorta was round and 1.5 cm. in diameter, while the wall of the aorta up to the very margins of the defect appeared free from stretching or scarring. The orifice of the inferior mesenteric artery was carried into the lower margin of the entrance of the sac, but its lumen contained no thrombus. The renal arteries lay above the sac and were not involved. From about an inch above the aneurysmal sac to its iliac bifurcation the intima of the aorta showed confluent hyaline plaques containing very little calcium and no grumous material. There was no intimal scarring in the region of the arch, nor adventitial thickening.

Numerous sections of the aorta showed only a little adventitial thickening and a very occasional infiltration by mononuclear cells around the vasa vasorum. The elastica of the media, even at the edge of the aneurysm, was not demonstrably altered by the fibrosed atheromatous plaques. Near the margin of the aneurysmal defect the adventitial fibrous tissue increased, and distinctive infiltrations of mononuclear cells, including plasma cells, occurred around thickened vasa vasorum and extended inwards into the media. In the disorganized wall opening into the aneurysmal sac itself the changes were less specific, plasma cells were numerous, but proliferating fibrous-tissue elements and large mononuclear cells, some containing haemosiderin, were also present, and elastic elements had almost entirely disappeared.

Complete routine histology from all organs revealed nothing of further interest apart from portal cirrhosis which was not actively progressive; the absence of the lesions of Banti's disease from the spleen, and the non-specific nature of bilateral apical lung scars.

Probably almost all these aneurysms are due to syphilis. Specific changes may be limited to small areas of the aorta, and only after very detailed study can atheroma, acute bacterial aortitis without focus elsewhere (Rappaport, 1926), or aortitis of undetermined origin (Sprout and Hawthorne, 1937) be considered. Atheroma was not unusual or excessive in the present case. The plaques were largely fibrosed, and, while the changes in the wall at the actual site of the aneurysm cannot now be known, it is reasonable to believe that the mural defect was secondary to changes in the vasa vasorum similar to those noted in the thickened adventitia and in the media at the margin of the aneurysm. Syphilitic aortitis is often the cause of an aneurysm; atheroma is much more common, and yet it is difficult to obtain evidence that it is ever responsible.

In 900 necropsies on patients over 30 years of age with complete histology of all organs, 15 thoracic and 4 abdominal aneurysms were found to be due to syphilis and only 3 were dissecting aneurysms secondary to medial necrosis. In the same material a further 29 cases showed changes which justified

diagnosis of syphilitic aortitis. These changes were infiltrations by a few plasma cells around the vasa vasorum and often a little adventitial fibrosis. This gives an incidence in our material of 2.1%, for syphilitic aortic aneurysm, and 5.3% for syphilitic aortitis. These figures would be approximately halved if all necropsies at all ages and those limited to the cranium were included. An incidence of 1.7% and 2.7% is given by Bryant (1903) and by Osler (1905) respectively for aortic aneurysm, but reviews of the subject ignore the age composition of the necropsy material. The negative Wassermann in the present case need occasion no surprise for in just over half the recorded cases the reaction was negative.

#### Summary

In 900 complete necropsies on patients over the age of 30, 15 thoracic and 4 abdominal syphilitic aneurysms and 29 cases of syphilitic aortitis were found. A case of rupture of an abdominal aneurysm into the duodenum is reported.

I wish to thank Dr F. M. B. Allen for clinical notes on this case.

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## Medical Memoranda

### Rupture of Rectus Abdominis as a Complication of Pregnancy

A paper by Mr. Rufus Thomas in the *Journal* of July 31, 1943 (p. 136), and a letter from Dr. Nora Keevil published on Aug. 21, 1943 (p. 245) drew my attention to the rarity of rupture of the rectus abdominis as a complication of pregnancy. I therefore thought that it might be worth while publishing the record of a case which I treated before joining the Forces.

Mrs. A., aged 37, was admitted to hospital at 9.25 p.m. on May 14, 1941. She was a para 6, whose five previous pregnancies had ended in two premature labours (both infants alive and well) and three abortions. Present pregnancy L.M.P. Oct. 10, 1940 (31 weeks duration at time of admission). She had been well, apart from some chronic bronchitis until four hours before admission, when she was seized with a sudden pain in the upper right quadrant of the abdomen. The pain remained constant. She vomited once. There was no vaginal haemorrhage or discharge. Her doctor had sent her to hospital with a diagnosis of ? ovarian, ? fibroid, ? appendix.

When examined in hospital the uterus was found to correspond to a period of amenorrhoea. There was a hard tender mass to the right of, and separate from the uterus. It was deep to the rectus muscle, and was all above the umbilicus. T 99° P 104 R 28. Laparotomy was decided upon. Diagnosis: acute abdomen. Nature of tumour not diagnosed.

Under general anaesthesia a right paramedian incision revealed a large haematoma in the sheath of the right rectus muscle and deep to the muscle. The muscle fibres were torn opposite the tip of the ninth costal cartilage and the terminal branches of the deep epigastric were torn across. The clot was evacuated and the bleeding vessels secured. The peritoneum was opened and found normal, it was then closed. A corrugated rubber drain was put into the rectus sheath and the wound closed. Apart from some vaginal bleeding the day after operation, convalescence was uneventful. She was discharged on June 13—30 days after operation. She reported to the antenatal department on June 24, and was found to have bronchitis and albuminuria. She was readmitted to hospital and remained there till full term. She had a normal delivery of a female infant weighing 6 lb 10 oz on July 21. She was finally discharged on Aug. 1. Mother and infant were both well.

S. WILBERFORCE LIGGETT, M.B., F.R.C.S. Ed.,  
M.R.C.O.G.

Medical and surgical self adhesive plasters now contain a proportion of synthetic rubber. Their life continues to be adequate for all reasonable requirements, but they cannot be guaranteed to withstand storage over long periods. The Medical and Surgical Plaster Makers' Conference advises dealers to rotate their stocks regularly to eliminate the possibility of goods lying on shelves. Stock which has not been turned over may deteriorate and cannot be replaced, or credited by the manufacturers.

## Reviews

### NUTRITIONAL DEFICIENCIES

*Nutritional Deficiencies: Diagnosis and Treatment*. By John B. Youmans, M.D., assisted by E. White Patton, M.D. Second edition (Pp. 359, Illustrated 30s.) London: J. B. Lippincott Company.

This book was written essentially for clinicians, and during the 18 months between the appearance of the first edition and the preparation of the second, little work applicable clinically has appeared. The additions to the book include the changes in the eye in vitamin A deficiency and the use of blood vitamin A determinations. The chief parts rewritten are those concerning the diagnosis of thiamine, nicotinic acid, vitamin C and other possible nutritional deficiencies. The table of the recommended allowances of calories, protein, calcium, iron, vitamins A, B<sub>1</sub>, C, D, riboflavin and nicotinic acid of the Food and Nutrition Board of the National Research Council has been added. Though it was recognized that these were probably generous, it was also recognized that in clinical medicine a liberal factor of safety is desirable. A most valuable summary of the vitamins and the laboratory diagnosis of deficiency diseases is given at the end of the book. Section 1 gives a tabular summary of the vitamins A, B<sub>1</sub>, nicotinic acid, riboflavin, C, D and calcium, E and K, their nature, function, dietary source, pathology, clinical expression, diagnosis, treatment, and common units of measure. Section 2 gives the principal dietary sources of the essential food factors (including the vitamins, calcium, iron, iodine, and protein). Section 3 deals fully and practically with the diagnosis of deficiency diseases by laboratory methods. The book is well printed and strongly bound.

### SPANISH MEDICAL MONOGRAPHS

*Diagnóstico y Tratamiento de la Epilepsia Genuina*. By J. J. López Ibor. Colección Española de Monografías Médicas. Barcelona, 1943.

*Enfermedades no Ulcerosas del Duodeno*. By F. Gallart Monés and E. Vidal Colomer. Colección Española de Monografías Médicas. Barcelona, 1944.

These two publications are Nos. 31 and 32-3 in a series of monographs on special medical subjects under the general editorship of Dr. J. Puig Sureda. The first, by Prof. López Ibor of the Cajal Institute, is a short survey of present knowledge of true epilepsy and its various manifestations. The author refers with a certain reserve to the diagnostic value of electroencephalography. Methods of treatment are briefly summarized in the last chapter. Although the author has evidently read widely in his subject and cites many other writers, no references to sources are given, and this detracts from the value of an otherwise useful and concise work. The second monograph, on non-ulcerative diseases of the duodenum, opens with discussions of anatomical and physiological considerations, radiological technique, and the normal duodenum. The following conditions are then considered: duodenitis, duodenal stenosis, chronic duodenal stasis without stenosis, periduodenitis, duodenal diverticulosis. There follow chapters on pathological anatomy, atypical placement, deformities of extrinsic origin, tumours, syphilis, and tuberculosis.

A novel feature of this series of monographs is that each one contains an appendix of signed "Practical Notes on Diagnosis and Treatment." The reviewer surmises that the main object of these is to lead the eye of the reader to the interleaved advertisements, which do not appear in the monograph itself.

### ASPECTS OF INDUSTRIAL MEDICINE

*Industrial Medicine: The Practitioner Handbook series* (Pp. 202, 16s.) London: Eyre and Spottiswoode, 1944.

General practitioners should visit factories so as to be able to understand more clearly the working conditions of their patients, and it is for such that this book has been published. But the title is misleading: it is not a comprehensive survey of the field of industrial medicine, but rather a series of essays skimming lightly with certain aspects of the problem, for which the price is rather on the high side. In an introduction Sir David Munro rightly stresses the need for collaboration between practitioners and factory doctors, and the succeeding chapters, each written by a separate author, give the practitioner some insight into the work of the industrial medical officer.

H. M. Vernon briefly describes industrial poisons, but, as he points out, few of these will be found in any one factory. The difficult question of skin disease is skilfully approached by Alice Peters, but "contact" is a word neither used nor readily understood by those without experience of Royal Ordnance factories. In a helpful chapter chest diseases are discussed by A. J. Amor. Ethel Browning writes about toxic-anaemia, which was recognized as a notifiable occupational disease only in 1942. But it is a sign of editorial lack of knowledge of industry that a separate chapter is given up to a technical discussion on back strain; on the other hand, the short contribution by D. C. Norris on malingering constitutes one of the best chapters in the book. T. Bedford writes on ventilation and heating in a simple yet fully informative style, and lighting problems are discussed by E. W. Murray. One major criticism is the lack of illustrations, to which a book such as this specially lends itself: for example, this takes away much of the value of P. Pringle's contribution on the works ambulance room. The final chapter—one perhaps that might have been put first in the series—is by A. I. G. McLaughlin on factory law in relation to health and welfare. As he points out, the principles of industrial medicine need legal backing to ensure that comparable preventive measures are practised in all factories throughout the country.

### PHARMACOLOGY IN BRIEF

*An Introduction to Pharmacology and Therapeutics.* By J. A. Gunn, M.D. Seventh edition. (7s. 6d.) London: Oxford University Press.

Writers of short textbooks which while being short are accurate perform a most important service to medical education. There can be no doubt that Prof. Gunn, by this small book, has done a great deal to enable the harassed medical student to achieve some grasp of a subject the importance of which is growing. In many medical schools there is still no department of pharmacology; the student attends a few lectures by someone primarily occupied in clinical work, and for his examination is usually recommended to struggle with a large textbook. The result is that the student learns little of a fascinating subject which forms an excellent approach to the investigation of clinical problems. The first need is a simple book. Prof. Gunn has supplied this in an admirable form, for it is clearly written, in an interesting style, and surprising in the amount of matter it actually contains. Those who complain that it is incomplete should make sure of their ground by examining the book to see what information is missing. They will be surprised to find how little. If those treating patients are thoroughly familiar with this book alone it is certain that they would be on sure ground in the knowledge of how to use drugs.

### Notes on Books

Parts IV, V, and VI complete the third edition of *Surgery of Modern Warfare*, edited by Mr. HAMILTON BAILEY (E. and S. Livingstone; 15s. each volume). They cover wounds of the central and peripheral nervous system, the trunk, the hand and foot, the eye and orbit, and the ear and air passages, and deal with surgery in subtropical countries and with administration and transport of the wounded. Part VI concludes with an appendix in which are viewed recent important papers on war surgery which have appeared while the earlier parts of this edition were in the press. In the earlier parts these later ones show evidence of much vision and include a number of new illustrations. The last illustration in the book, Fig. 1128, page 1077, is a photograph of Richard Lewisohn, now consulting surgeon to Mount Sinai Hospital, New York, to whom a well-deserved editorial tribute is paid, for to him we owe the citrate method of blood transfusion, which he announced in 1915 and which is now so universal. The modifications in the various editions of this work provide a key to the evolution of surgical practice in modern warfare, and to that extent is a history of surgery between 1939 and 1944. The third edition is the best that has yet appeared.

In *They Gave me a Crown* (Herbert Jenkins; 15s.) Dr. I. G. Higgs has written his reminiscences of life as a ship surgeon, as an army medical officer, and as a doctor to a "world-famous industrial organization." The author's criticisms of the R.A.M.C. are too gentle and ill informed to make pleasant or useful reading. The latter part of the book is taken up with case histories of men justly suffering from mental strain or malingering. The interest these from a medical point of view is diminished by the absence of end-results: all trace is lost of the many men who "work their

ticket" out of the Army, usually after having given endless trouble to the authorities. The author designates mental examiners of such cases as "psycho-blokes." His book is more for the lay public than for the medical profession. We can imagine the former will find it amusing and entertaining so long as they do not take what he calls "sheer stupidity in the Army" too seriously.

*It Came to Pass*, by SIDNEY FAIRWAY (Stanley Paul and Co.; 9s. 6d.), is a medical novel that tells the story of a village boy whose ambition from his earliest years was to be a doctor. The time is the first half of the nineteenth century when modern scientific medicine was born. After service with an apothecary, the hero of the tale, Rufus Belden, becomes apprenticed to a doctor and later enters Guy's Hospital as a student. His subsequent professional career was dramatic and colourful enough to make an exciting story with a love thread running through it. The book includes a good account of the medical muddle in the Crimean War. The tale is well told and has been compiled from authentic sources such as *The Life of Florence Nightingale* and *The Biographical History of Guy's Hospital*. It is worth reading, and it emphasizes the striking progress that has been made in the care of the sick and wounded during the past hundred years.

The Cancer and General Research Committee of the Middlesex Hospital has sent us a folder containing collected papers by members of the staff published in various journals during the years 1942-3 and 1943-4. These reprints are prefaced with four classified tables of contents. The collection may be seen in the B.M.A. Library at Tavistock Square.

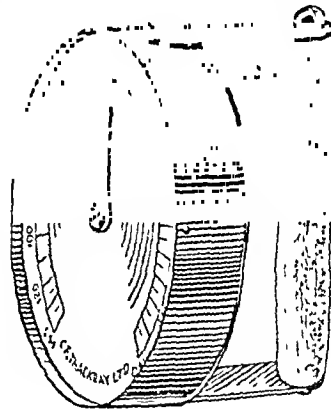
The book *Pathology and Therapy of Rheumatic Fever* by Leopold Lubitz, which was noticed in the *Journal* of July 29, will be issued in this country by William Heinemann (Medical Books), Ltd., early in September at 2s.

## Preparations and Appliances

### A GONIOMETER FOR MEASUREMENT OF SUPINATION AND PRONATION

Mr. JAMES PATRICK, F.R.C.S., orthopaedic surgeon, Glasgow Royal Infirmary, writes:

The instrument shown in the illustration has been devised for the measurement of supination and pronation movement of the forearm, as there does not appear to be any goniometer suitable for this purpose on the market. The pointer of the instrument is fastened on a spindle running through the axis of the drum, and inside the drum a weighted lever is fixed on the spindle in a position diametrically opposite to the pointer. As the drum and the scale rotate, therefore, the pointer remains vertical.



To use the instrument, the patient grasps the handle and stands against the wall with the elbows flexed to a right angle and the forearms tucked in to his sides. Zero position is taken where the handle of the instrument is in line with the humerus. The surgeon gently holds the patient's wrists in order to guide the arm movements. The range of supination is read off on the affected side, and the instrument is then transferred to the normal hand and the supination range again measured. The limitation of supination is noted as minus x degrees. The same two measurements are then made for pronation and the limitation written down as minus y degrees.

This method of recording the measurement is a reliable one because supination and pronation movement is identical in range in either forearm in any normal individual. Simple direct measurement of the supination and pronation range on the affected side alone will not reveal when full movement has returned, and is useless for comparison of end-results between different patients because the rotation movement may vary enormously from one person to another.

By rotating both forearms simultaneously the patient is less likely to lean over to one side and so falsify the measurement, but in any case it is important to see that he remains standing erect. In performing pronation the patient has a tendency to bring the elbow away from the side, and this source of error must also be guarded against.

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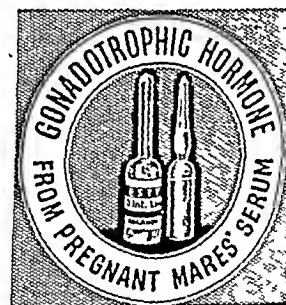
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SATURDAY AUGUST 19 1944

## SCOTLAND'S HEALTH

That a satisfactory level of national health was maintained in Scotland during the fourth year of war is shown by the Summary Report by the Department of Health for Scotland for the year ended June 30, 1944. Progress in maternity and child welfare was reflected in the rates for stillbirths (36 per 1,000 total births), maternal mortality (3.7 per 1,000 total births), and infant mortality (65 per 1,000 live births). These rates were the lowest ever recorded in Scotland, but there is much leeway to be made up yet; infant mortality is still high. Slightly over half of the infantile deaths in 1943 were due to diseases peculiar to early infancy—congenital debility, premature birth, malformation, etc. Of the remaining deaths one-third were attributed to pneumonia and one-fifth to diarrhoea. Maternity accommodation was extended during the year. At the end of June, 1944, 2,178 beds were available in maternity institutions—an increase of 333 on the preceding year, and 718 more than in 1938. A high neonatal death rate due to infections was experienced in both home and hospital—a problem now being thoroughly probed.

The deaths from the principal infectious diseases were 889 more in 1943 than in 1942—a rise due to an increase of 213 in the deaths attributed to whooping-cough and of 845 in deaths from influenza. The deaths from the other causes under this heading declined, and the totals for diphtheria, 59, and scarlet fever, 22, were the lowest ever recorded in Scotland. The incidence of dysentery of a minor type continued to increase; the notifications for 1939–43 were 1,132, 1,888, 2,429, 2,515, 3,425. Scarlet fever has also been more prevalent; the notifications rose from 13,792 in 1942 to 15,108 in 1943. Diphtheria notifications for the four years 1940–3 were 15,069, 12,395, 9,474, 9,255—a notable fall. The drive for immunization against diphtheria has slackened: fewer than 46,000 children were inoculated in 1943, and of these the 30,000 under 5 years of age comprise only one-third of the number of children who each year reach their first birthday. Propaganda should be intensified. The attack rate from diphtheria was four and a half times greater among the non-immunized than among the immunized, and the case fatality was nine times higher in non-immunized than in the immunized group of children: that is, the chance of dying from diphtheria was about 40 times greater among the non-immunized than among those protected by diphtheria prophylactic.

Tuberculosis mortality fell slightly: 3,959 deaths during 1943, compared with 3,998 in 1942 and 4,174 in 1941. But the number of new cases continued to increase, the notifications of pulmonary tuberculosis having steadily gone up from 4,657 in 1939 to 7,215 in 1943, and of non-pulmonary tuberculosis from 2,440 to 2,873. Returns submitted by local

authorities showed that by the end of March, 1944, over 1,400 persons were awaiting admission to tuberculosis institutions, of whom over 1,200 had diseases of the lung. The difficulty of finding room for them is one of staff rather than of beds: an additional 180 beds could be brought into use if the staff were available. This shortage of staff is a more serious problem in sanatoria and mental hospitals than in general hospitals. During the year over a thousand more nurses of all grades were employed in Scottish hospitals, but the Ministry of Labour's returns showed nearly 2,000 vacancies: the paucity of domestic workers made the situation worse.

The returns of first attendances at venereal disease clinics show that the large rise in incidence which began in 1941 has been checked. Compared with 1942 both syphilis and gonorrhoea declined by 500 cases in 1943, but the numbers of new cases—4,841 of syphilis and 5,437 of gonorrhoea—are large, and are 83% and 27% above the 1939 totals. The returns, however, are not an exact index of new infections, since not all infected persons attend treatment centres. Under Defence Regulation 33B there were 43 sources of infection named by two patients, and in only one case was it necessary to prosecute to compel attendance at a clinic. Efforts were made to persuade the 784 sources of infection named by only one person to be examined and treated.

The various social services were maintained. Expenditure on sickness and disablement benefits paid under the National Health Insurance scheme again showed an increase on that of the previous year. In the absence of an analysis of the various factors contributing to this increase it is not possible to state to what extent a rise in sickness has been responsible for it. The Supplementary Medical Service, which provides a thorough medical examination for ailing industrial workers and, if necessary, an investigation in hospital or treatment in a convalescent home, dealt with 4,655 workers during the year, 2,074 of whom were admitted to hospital and 1,033 to convalescent homes. The total number of pensions under the Contributory Pensions Act increased during the year by 11,748 to a total of 427,186. In January of this year 91,743 persons were receiving poor relief—7,387 fewer than in the previous year, and 15,158 fewer than two years ago. The rehabilitation centre for disabled miners established at Gleneagles at the request of the Ministry of Fuel and Power and the Miners' Welfare Commission has given treatment to 937 miners, but has not been fully used. The centre has accommodation for 200 men, but the average number in residence was only 80, and so the admission of patients other than miners is being considered.

Despite the present difficulties, progress has been made for a post-war attack on the unsatisfactory housing conditions in Scotland. The construction of 50,000 permanent houses during the first two years after the end of the war is aimed at, and, according to the report, the local authorities have now sufficient land for 56,000 houses. During the year reviewed only very slight damage to houses resulted from enemy action. In previous air raids over 70,000 houses were slightly, and 5,500 seriously, damaged, but all except 250 of the latter have been made habitable: 2,186 houses were completed and 2,837 were under con-



struction during the year reviewed. If the housing problem is tackled vigorously then the task of the Scottish Council for Health Education after the war will be eased.

### SULPHONAMIDE SENSITIVITY

With the widespread use of the sulphonamides the problem of drug sensitivity has arisen in an urgent form, and it has been so serious a matter for the Army that a caution<sup>1</sup> has been issued against the indiscriminate use of the sulphonamides in infectious skin diseases. For this reason it is a welcome advance to be able to describe some of the circumstances which favour the development of sulphonamide sensitivity and to point to one or two ways in which it may be avoided. Fever, a rash, and conjunctivitis are the chief manifestations of sensitivity after oral administration of sulphonamides. They appear more frequently during a second course of treatment than the first, and when they appear during the first they are seen not at the beginning but usually after the fifth day. The rash is variable in character. In many cases it is an erythematous macular eruption; in others it is an inflammatory exudate eruption on the face, arms, hands, and legs. With sulphathiazole lesions very similar to erythema nodosum may be seen. An irritating dermatitis is particularly likely to occur after the local application of sulphonamides to the skin in the treatment of skin diseases or minor injuries.<sup>2</sup> At first it is confined to the area under treatment ("primary eruption"), but in the majority of cases other regions, to which no sulphonamide has been applied, become affected later ("secondary eruptions"). One of the most distressing features of the trouble is its long duration. Treatment in hospital for as long as fifteen weeks may be necessary, and the photosensitivity which sometimes accompanies the eruption may prevent outdoor work for even longer periods. A patient once sensitized may remain so for as long as five years, and only a very small dose is needed to cause and excite a reaction.

The clinical features suggest that the signs—fever, rash, and conjunctivitis—have their basis in an allergic reaction of some type rather than a simple toxic action due to an accumulation of the drug, and the suggestion was strengthened when the opportunity came for Rich<sup>3</sup> to examine microscopically tissues from patients who had died after showing these signs. Then it was found that lesions were present in the vascular system which were like those seen in serum sickness in animals. This led to the hypothesis that the sulphonamides joined with a protein to form a hapten which sensitized the patient. There was already proof that sulphonamides form compounds *in vitro* with serum proteins, and Leftwich<sup>4</sup> in experiments designed to test the hypothesis has now demonstrated that there is present in the blood serum of patients who have received one of the sulphonamides for more than five days an antigen which will cause an allergic type of response after intradermal injection in sensitive individuals. Thus one step in the process of sensitization seems adequately identified. The test is simple and involves only the intradermal

injection of 0.05 c.cm. of serum from a suitable donor the skin of the flexor surface of the forearm, with a skin injection of the control serum from the same donor inches below it. Both injections produce wheals which increase in size, reaching maxima in about fifteen minutes and a positive reaction is defined as one in which the wheal has a diameter at least 4 mm. greater than control wheal. It is a test simple enough to become routine practice in those cases in which sulphonamide sensitivity is suspected, and its specificity appears good enough for it to be a reliable tool as well as a simple one. The fact that a result is obtained in a few minutes is a great practical advantage. Using patch tests with different sulphonamides and other compounds with related structures, Park<sup>5</sup> has begun the next stage in the investigation into the mechanism of the sensitivity. He has shown that some patients showing sensitivity give positive reactions with only one sulphonamide. Others give positive reactions with several sulphonamides and with sulphathiazole; as the radiolabel common to all these compounds  $\text{NH}_2\text{C}_6\text{H}_4\text{SO}_2$ —he claims that this is the part of the molecule responsible for the sensitivity. A third group react to procaine, which has the radiolabel  $\text{NH}_2\text{C}_6\text{H}_4$ —without a sulphononic group, and in these individuals the sensitivity is therefore less specific. These are interesting results and open up a line of attack which would repay energetic pursuit.

Several indications for the prescriber arise out of the experimental work and an analysis of case records.<sup>6</sup> In dermatological cases it is the recommendation of the Army Medical Department that a sulphonamide should not be applied locally or be given by mouth for more than one week, and if sulphathiazole is given by mouth it is recommended that the course be limited to four days because of its greater tendency to cause reactions. Reactions are less liable to occur if the drug is applied in the form of a thick paste (such as Lassar's) or a water-soluble cream.<sup>7</sup> Nicotinic acid is of no value in treating the lesions, though there may be a deceptive likeness to pellagra, but high doses of the vitamin B complex have seemed to help. Because eczematous subjects are particularly liable to sensitization, and some of them may show an allergic response with the first dose, sulphonamides should not be applied to their skins, and oral treatment should be used only after due consideration of all the factors in each case. When inquiry before beginning a course of treatment brings out the fact that a previous course was accompanied by a rash or fever, the sulphonamide of the second course should preferably be a different one from the first, for there is in some cases at least a very strict specificity.

### MORE QUESTIONS AND ANSWERS

Hard upon the results of the B.M.A.'s questionnaire come the details of two other attempts to probe opinion of medical services, the first addressed to medical students and the second to the public. The British Medical Students Association gave the lay press the results of its questionnaire last week, and unfortunately did not give the medical press

<sup>1</sup> Army med. Dept. Bull., No. 29, 1943, Nov., p. 3.

<sup>2</sup> Tate, B. C., and Klorfjan, *Lancet*, 1944, 1, 39.

<sup>3</sup> Rich, A. F., *Johns Hopk. Hosp. Bull.*, 1942, 71, 123.

<sup>4</sup> Leftwich, W. B., *ibid.*, 1944, 74, 26.

<sup>5</sup> Park, R. G., *British Medical Journal*, 1944, 1, 781.

<sup>6</sup> Dowling, H. F., and Lepper, M. H., *Amer. J. med. Sci.*, 1944, 207, 347.

<sup>7</sup> Peterkin, G. A. G., *Lancet*, 1944, 1, 646.

an opportunity to record and comment at the same time. Their questionnaire, published in this week's *Supplement*, was drawn up with the assistance of the British Institute of Public Opinion and distributed to students through the medical schools. Only a quarter of the students sent in replies, which shows either an apathy about the future of the profession for which they are training or a disbelief in the effectiveness of their opinion. The number of students replying was 2,588, and 51% of these declared that their reactions to the White Paper were on the whole favourable. But in answer to the question "Would you enter the National Health Service as it is described in the White Paper?" 43% said "No" and 41% said "Yes", 15% could not make up their minds. On the other hand, 49% think that the White Paper scheme would enhance the quality of the country's medical service, and a smaller proportion—36%—believe it would suffer. On the 100% issue 72% voted in favour, and 89% approve of the principle of Health Centres. It is interesting to note that in the view of 67% the White Paper "places doctors under clinical control of local authorities". The power of the Central Medical Board to require a young doctor to give his full time to the public service in the early years of his career in case of need is looked upon as reasonable by 53% and unreasonable by 45%. As to payment, a majority—53%—favour a small basic salary plus capitation fees. On other money questions, the sale and purchase of practices should be abandoned in the opinion of 50%, while 37% raise no objection to this procedure. Sixty-three per cent. observe it would not be possible to set up in practice without incurring a debt, and 77% believed that financial assistance would be required to enable larger numbers to enter the medical profession. A very large majority—90%—consider that the political rights of doctors entering the National Health Service should be safeguarded. The opening statement of this question was as follows: "Some people paid by the State are debarred from politics or standing for Parliament."

The *News-Chronicle* of August 9 gave an account of a Gallup Poll into "what the public thinks". According to the newspaper account 75% of the panel patients questioned wanted to see some such system as N.H.I. retained if a National Health Service is not to be organized. This is quite a handsome tribute to the insurance doctors of this country, and suggests that those propagandists who represent panel patients as seething with discontent are doing what we have long suspected them of doing—that is, misrepresenting the present state of affairs in order to achieve their own ends. To the question "On the whole, would you like the idea of a publicly run National Health Service, or would you prefer hospitals and doctors to be left as they are?" 55% voted for N.H.S., 32% said, "Leave things as they are", and 13% said, "Don't know." This is hardly evidence of an "overwhelming" public demand for a change, although it shows that change is expected by a majority. Another question read as follows: "Who do you think should have most to say about the way medical services are arranged—the doctors, or the public through the Government?" 25% voted for doctors, 35% for the public, 32% gave an equal share to each, and 8% said, "Don't know." Eighty-six per cent. of those questioned said they had their own doctor to whom to go in case of illness and 63% said they could get a doctor's treatment free, while 37% had to pay for it, one presumes, therefore, that 63% of those questioned come under N.H.I.

Another interesting example of public opinion was shown in the debate held on August 3 over the wireless between the Chairman of Council (Dr H. Guy Dain), Sir Arthur Rucker (Deputy Secretary of the Ministry of Health), and

the potential patient (Flight-Lieut. W. P. Matthews), who summed up the reactions of a number of people when he said: "Well, now, this White Paper on health—it's a good thing—on white paper." There seemed, at least to one hearer, a quick response on the part of the potential patient to the point of view put forward so admirably by the Chairman of Council. When Dr Dain remarked, "We don't want doctors responsible to the Government or to local authorities—we want them responsible to the patient," Flight-Lieut. Matthews soon followed up with this interesting statement: "Yes, I see what you mean. Now I must say I've been bothered myself at the idea I've heard of people going to a Health Centre and just taking whatever doctor happens to be on watch at the time. Then perhaps you go a second time and you get a different doctor, and a third time and a different doctor, and it seems all wrong to me."

### RENAL OSTEODYSTROPHY

Renal osteodystrophy is a new name suggested by Liu and Chu<sup>1</sup> for the disease commonly known as renal rickets. This disease, which also goes under the names of "renal infantilism," "renal dwarfism," and "renal osteitis fibrosa cystica," is characterized by rickets-like deformities, osteoporosis, dwarfism, albuminuria, anaemia, impaired renal function, and a high blood phosphorus. The pathogenesis of this disorder, the outstanding feature of which is osteodystrophy, is obscure. Because chronic renal insufficiency is responsible for the skeletal changes, which resemble those of rickets, the condition was originally known as renal rickets. This term identifies the bony changes with those of rickets, but they are not identical, although the radiographical appearances and gross skeletal deformities are similar in the two diseases. And rickets responds to vitamin D, whereas renal osteodystrophy does not. The terms "renal dwarfism" and "renal infantilism" are equally unsatisfactory because they emphasize a feature which is absent when growth is complete and do not indicate the osseous changes. Albright, Drake, and Suel<sup>2</sup> are inclined to consider osteofibrosis as the essential pathological skeletal lesion, and so introduce the descriptive term of "renal osteitis fibrosa cystica." Certainly rarefaction of bone and cystic absorption are the most prominent radiological features. Renal osteodystrophy, however, appears to be a good term, and at least consists of two words only. Metabolic studies by Liu and Chu on five patients confirm the low urinary output of phosphorus, the high level of serum phosphorus, and the renal failure, the phenolsulphonphthalein excretion through the kidneys averaged only 6% and the urea clearance only 10% of normal. Increased intake of phosphorus resulted in increased excretion into the gut, where it interfered with absorption of calcium, so that the patients were in negative calcium balance. Liu and Chu also demonstrated the existence of chronic acidosis, which in turn leads to a lowered blood calcium. In man and animals it has been shown experimentally that acidosis produces decalcification.<sup>3-6</sup> These observations provide a rational explanation of the pathogenesis of renal osteodystrophy. The disease has its origin in renal insufficiency; this hampers the urinary excretion of phosphorus, the blood level of which is raised. Increased phosphorus excretion into the gut interferes with calcium absorption, the calcium forming insoluble calcium phosphate. Renal insufficiency, by causing retention of phosphate, sulphate, and other acid

<sup>1</sup> *Medicine* 1943, 22, 103.

<sup>2</sup> *Johns Hopk. Hosp. Bull.* 1937, 60, 377.

<sup>3</sup> *J. clin. Invest.* 1931, 10, 221.

<sup>4</sup> *Curr. J. Physiol.* 1939, 14, 117.

<sup>5</sup> *J. exp. Med.* 1932, 56, 823.

<sup>6</sup> *J. Nutrit.* 1937, 14, 69.

metabolites, causes base to be taken up, with resulting acidosis, which in turn further limits absorption of calcium. The low calcium intake in the diet of patients studied by Liu and Chu aggravated the condition still more. All these factors contribute to produce a low blood calcium and finally skeletal decalcification.

Although vitamin D is specific in the treatment of true rickets and of osteomalacia, it is ineffective, even in massive doses, in renal osteodystrophy; in fact, it may make the condition worse by mobilizing phosphorus from the tissues. Liu and Chu found that A.T.10, or dihydrotachysterol, one of the products formed by the prolonged irradiation and hydrogenation of ergosterol, was remarkably effective in improving the intestinal absorption and retention of calcium and phosphorus in their patients. They were, however, unable to observe recalcification of the bones, possibly because treatment was not continued long enough. Since A.T.10 is also effective in true rickets, it can apparently mobilize calcium in the presence of renal insufficiency, whereas vitamin D cannot. There was some evidence that iron improved absorption of calcium in the patients studied, presumably by facilitating the excretion of excess phosphorus in the gut by the formation of insoluble iron phosphate. The administration of alkalis such as sodium bicarbonate or citrate also resulted in improvement, probably by preventing acidosis. The ultimate prognosis in patients with renal osteodystrophy is poor, but the treatment suggested by Liu and Chu—a limited-protein, low-phosphorus, and rich-calcium diet, alkalis, A.T.10, and iron—is certainly worthy of trial.

### DEHYDRATED VEGETABLES

Before the war vegetables were often regarded as accessories to the more fundamental foods such as meat, fish, bread, and milk and its products. To-day, however, the shortage of these basic foodstuffs and of imported fruits has brought into proper perspective the importance of vegetables—especially as sources of vitamins and mineral salts. It is, for instance, now generally accepted that during most of the year in wartime the greater part of our civilian population depends solely on vegetables for its supply of vitamin C (Harris and Olliver<sup>1</sup>). The importance of supplying vegetables to the fighting Services is also fully recognized. However, transport and storage of these foods provide a problem which, while significant in peacetime, assumes tremendous proportions in time of war. Green vegetables are especially difficult, as they readily wilt and lose both palatability and nutritional value. Moreover, they contain over 90% of water, and their transport and storage must therefore be regarded as an extravagant use of valuable shipping space. The answer to these problems was found in dehydration. Unlike the old-fashioned drying methods, dehydration is a scientifically controlled process by which colour, texture, flavour, and nutritional value of the raw vegetables are well maintained. Since ordinary drying methods have a damaging effect on some of the nutritive constituents, this aspect of dehydration has received special attention both in the United States and in this country. Tressler, Moyer, and Wheeler,<sup>2</sup> for example, working in America with factory-produced dehydrated vegetables, have shown that there is a high percentage retention of carotene on dehydration. Dehydrated cabbage was also found to retain nearly all its initial vitamin C and contained over 300 mg. ascorbic acid per 100 g. Similar data, much of them unpublished, have been collected for factory-produced material in this

country. Two important stages have also to be considered beyond the actual production—i.e., storage and reconstitution, which latter is the soaking and cooking of the dehydrated vegetables. As to storage, various factors such as moisture content, temperature of storage, and presence of oxygen have been shown to affect both culinary quality and nutritional value (Tomkins *et al.*<sup>3</sup>). These factors can be largely controlled by suitable packaging, and the use of cans is generally adopted. Nitrogen is also used for packing those vegetables likely to be affected by storage in air. Dehydration and storage processes can be controlled scientifically, but the colour, flavour, texture, and nutritional value of the reconstituted material all depend ultimately on the efficiency of the cook. This is of course equally true of fresh vegetables, and conditions of cooking have therefore to be identical when comparing the two materials. The effect of variation in such conditions upon the nutritional value of dehydrated vegetables has been studied by several investigators (Fenton *et al.*<sup>4</sup>; Allen and Mapson<sup>5</sup>), and it is generally agreed that reconstituted dehydrated vegetables have a high food value. Palatability is too closely linked with food value to be ignored, and the experience of Macrae<sup>6</sup> with the use of dehydrated vegetables in the R.A.F. must be regarded as of special importance. He found that the dehydrated foods not only had a higher content of ascorbic acid but were less likely to be left on the plate than were cooked fresh foods. Whatever, therefore, the post-war prospects of dehydrated vegetables, they are undoubtedly invaluable at the present time for the part they are playing in maintaining the health of men and women in the Services.

### PENICILLIN FOR CIVILIANS

As we announced in the *Journal* of July 22 (p. 119), a limited supply of penicillin will soon be available for the treatment of civilians. So that available quantities may be used to the best advantage the Ministry of Health has decided to invite the Medical Faculties and Schools of Universities to be responsible for its use and distribution. By allotting to each school an area corresponding in general to the Civil Defence Region in which it is situated the whole of the country should be covered. In the London Sectors the medical school that controls the Sector will be responsible for the Sector area, and if, as occurs in four of the Sectors, there is a second medical school, that school will be responsible only for the patients that normally seek admission to its associated hospital. Most of the cases that should have penicillin will be in-patients, and if the hospital is not one of those granted a supply it should apply to the medical school or the associated teaching hospital of the area, giving full details of the diagnosis. If apparently suitable it might still be necessary for the case to be transferred for further investigation to the teaching or other approved hospital, whichever is most convenient. If, however, the patient is not a hospital in-patient but is in private care the practitioner should arrange for his admission to hospital, which would then be responsible for the diagnosis and for the application for penicillin to the medical school or teaching hospital of the area. If any difficulty should occur in obtaining admission to hospital the practitioner could apply direct to the medical school, which would, in a suitable case, arrange for admission to an approved hospital. Supplies of penicillin are being sent to Scotland and Northern Ireland, which have arranged for their medical schools to be responsible for its use and distribution.

<sup>3</sup> *J. Soc. Chem. Ind.*, 1944 (in press).

<sup>4</sup> *Amer. J. publ. Hlth.*, 1943, 33, 799.

<sup>5</sup> *J. Soc. Chem. Ind.*, 1944, 63, 78.

<sup>6</sup> *British Medical Journal*, 1942, 2, 255.

<sup>1</sup> *Lancet*, 1943, 1, 454.

<sup>2</sup> *Amer. J. publ. Hlth.*, 1943, 33, 975.

## MEDICAL EXPERIENCES IN THE BURMA WARFARE

A correspondent in England sends two extracts from a long letter written to him on June 23 by his junior partner, who is anaesthetist in a mobile surgical unit. The first gives a vivid account of active service in Burma seen through medical eyes. The second puts the point of view of a young man who had not been long in general practice before the outbreak of war and who is concerned about his position after demobilization.

### First Extract from Letter

I am writing from Srinagar in Kashmir, where we are just finishing a fortnight's holiday. We have been staying in a houseboat and enjoying the most delightful weather and scenery it has been my fortune to experience. The journey here from Burma has been appalling, but Kashmir has justified our high expectations of it and has been a very pleasant break from jungle life. I now claim to be somewhat of a veteran in that mode of living, having completed nearly two years in the bush and frankly I am getting a bit tired of it, especially during the lulls in activity. It is difficult to know what to write to you about, but perhaps as an old soldier you may be interested in a few aspects of our type of warfare and in a few of the non-censorable episodes. I hope I can avoid histrionics.

As you know, our recent campaigns have been much more successful than the 1942-3 variety. We have, I think, brought jungle warfare right up to date and seem to keep on learning new tricks of our own, and have long since explored the depths of our opponents' ingenuity. At any rate it is a game in which you judge the results by the counted bag, and Burma, or at least the part I have been associated with, stinks to high heaven of Jap dead. Their philosophy of the honourable death reaps us a rich and handsome harvest. One cannot deny their courage. I don't think the blighters are afraid of anything, but they have not managed to put this virtue above the animal plane, and, instead of being an asset, as it was at one time in the early days of the war, it has become one of their biggest debits. They walk into death, usually in the form of a British or Indian soldier sitting quietly and obeying the dictum about not shooting or bayoneting until he sees the whites of their eyes. I remember the early days in Burma when we only had to hear of near-by Japs to feel our hearts flutter. The wondrous stories which we were told, and we told of what amazing tricks Nippon had up his sleeve had precisely that effect—good propaganda for exploiting the fear of the unknown. Now we recognize that he is a bitter fighter, and a fighter to the end, but as a simple mathematical proposition he is an inevitable loser. He is not easy to eliminate. It requires an abundance of courage on the part of our troops to undertake these battles to the death. There is no White Flag out here, and the British soldier—the average one—has a surplus of courage; the morale is absolutely terrific. All are extremely proud of our Command and Army, and faith in the leaders is not lacking.

As an example of what is being done at one time a group of us were cut off by the Jap for some weeks—we were a pretty good sitting target—and things were decidedly unhealthy. However, our air supplies arrived regularly on the dot, and the thing that impressed me most was our daily newspapers were dropped in adequate quantities and on the day of publication! And the powers that be did not forget to parcel in plenty of beer, and magazines, etc. for the wounded. Things never looked so bad after one had been able to glance at the paper and sip one's beer before turning in. During this particular 'do' L— and myself probably established a record for front line operating. We could actually see the wounded being wounded, and usually had them outside our theatre in 5 or 10 minutes. I think that on the balance between conditions of work and time we (I am not boasting, it is merely circumstances) saved more life and limb than we could ordinarily have done at any rate we got our abdominal figures up to 70-80 survival rate, and you can imagine what the peace and quiet for nursing was like. Fortunately our unit came out of this 'do' fairly intact (at one time we were virtually

captured), but we did have the misfortune to lose our Indian assistant surgeon, who was captured and later shot, having gone through a pretty brutal period in between. The Japs are, believe me, quite subhuman.

Our living conditions by force of Nature are pretty foul—I cannot imagine a worse climate—but we manage to make the best of them, and are being pretty successful in combating the many prevalent diseases. The troops are well educated in preventive medicine, which is a continual struggle alongside the other and major one, and once more we are winning the day. The old story of the medicals being a rope round the combatants' neck is not true out here, one is offered so much help and assistance from the other arms of the Service that one is continually and regretfully refusing aid! They told us at Crookham never to expect help without having to fight hard for it. Quite untrue!"

### Second Extract

"I am afraid I have lost interest in the 'White Paper'—soldiering and medical politics seem to clash a little—but have read the abbreviated official report and found it wordy and uninspiring. It does not give one much idea of what is to happen to a practice like ours, which, candidly, is all I am now interested in. I am more and more looking forward to getting settled down at work again and anxious to know if the Government is going to allow me. It seems a hell of a time to have been away from one's work, and impossible to guess when one may get back to it. What do you think will happen?"

## LONDON COUNTY COUNCIL

The London County Council proposes to participate in the scheme of the County Councils Association and the Association of Municipal Corporations (*Journal*, Aug 5, p 187) to set up a National Ophthalmic Research Council, and will contribute a sum up to £2,000 for a period of five years towards the funds of the council on the understanding that the scheme will then be reviewed in the light of the relevant circumstances.

It is proposed for the present not to fill the position of deputy medical officer of health and deputy school medical officer vacant by the resignation of Dr Andrew Topping. In the meantime Dr R C Harkness, one of the two principal medical officers will act for the medical officer of health during his absence, and a third principal medical officer will be appointed. It is also proposed to second to the central office staff of the County Council an experienced medical superintendent of one of the hospitals for a period up to six months in order that he may undertake the visitation of all the hospitals, make contact with the staff, gain information generally with regard to the hospitals service, and report on the desirability of any changes or improvements which may appear to merit consideration in relation to the proposed National Health Service.

The Mental Hospitals Committee of the LCC has been considering the question of medical staff in the mental hospitals service undertaking remunerated and unremunerated outside work, including work at voluntary hospitals. Full time medical officers at hospitals and institutions and at the central pathological laboratory will be encouraged to undertake outside work, such as occasional lectures to students or to societies, or to act as examiners to outside authorities, provided that permission of the medical officer of health is obtained for remunerated work in all cases, and that in the case of unremunerated work permission is obtained from the medical superintendent of the hospital or the director of the laboratory.

It was reported to the last meeting of the Council that the special scheme for transferring expectant mothers to emergency maternity homes outside London shortly before confinement, which has been in operation continuously since the summer of 1940, has now had to cope with a sudden and heavier demand, it has also been extended to 18 additional evacuation areas. The shortage of midwives has created a difficulty. The scheme, however, has operated successfully, and in the course of six weeks over 2,100 patients were sent to maternity accommodation specially reserved for them.

## BEIT MEMORIAL FELLOWSHIPS FOR MEDICAL RESEARCH

## Prof. T. R. Elliott's Retirement

Prof. T. R. Elliott had already served as a member of the advisory board to the Beit Memorial Trustees since 1922 when in 1930 he succeeded the late Sir James Kingston Fowler in the important work of the board's honorary secretary. During the fourteen years which have followed, his intimate experience of the working of the Trust, and the skill and labour he has devoted year by year to the applications and reports which have fallen to be considered, have been of the highest value to the work of his colleagues on the advisory board, and of the trustees to whom he has carried their recommendations. In 1935 he himself became a trustee. The continuity of the policy of the trustees and their advisory board, and the ease of its adjustment to changing conditions without any lowering of standards or narrowing of aims, have owed much to Prof. Elliott's enlightened enthusiasm for the work of the Trust, his pride in its achievements, and his vision of its possibilities. And he has acted as a friend and adviser to many of those whom he has helped to elect to Beit Memorial Fellowships, two to three decades and more after he had held one himself (1911-12).

When Prof. Elliott retired in 1940 from the professorship of medicine at University College Hospital Medical School he had intended to relinquish also his work for the Beit Advisory Board; but the successor to the secretaryship already nominated found that war demands claimed his whole time, and Prof. Elliott was persuaded by his colleagues to continue further his services to them and to the Trust. Now at length he has been obliged to claim a rest from duties carried so long and with such distinction. He hands on a fine tradition to his successor, Dr. A. N. Drury, director of the Lister Institute.

## CONTROL OF NARCOTIC DRUGS

The Permanent Central Opium Board held its 44th session in London at the end of July under the presidency of Sir Atul Chatterjee. The other members present were: Sir Malcolm Delevingne (United Kingdom), Mr. J. H. Delgorge (Netherlands), Dr. George Woo (China).

In a communiqué the Board states that it reviewed the statistical information recently received and also the measures of control over the trade in and manufacture of narcotic drugs which were under consideration by the competent authorities for countries which are to be liberated. Three months ago the Board issued a report containing recommendations as to the action which, in its opinion, should be taken to minimize the potential dangers in the present situation. The Board understands that its recommendations have received the attention of the military authorities concerned with Western Europe and that decisions have been taken which in substance are in accord with the Board's recommendations and which will be carried into effect as occasion arises. It hopes that decisions will be taken for the other theatres of war at an early date. The danger is not confined to Western Europe, and the Board emphasizes the importance of adequate measures to the same end being taken in all the other theatres of war, especially in South-Eastern Europe and in the Middle and Far East. For the full exercise of its supervisory functions, information should be available to the Board as to the steps progressively taken in the liberated areas—e.g., Italy—for the establishment of the national control.

## PRESTON HALL

In 1925 Preston Hall, the British Legion village at Maidstone, was taken over for the treatment and care of tuberculous ex-Service men. In 1934 Douglas House, near Bournemouth, was acquired for the treatment of chronic ambulant patients, and in 1943 the same council of management acquired Nayland Sanatorium, near Colechester, for the reception of cases of tuberculosis among Service and ex-Service women. The number of sanatorium beds at Preston Hall is 175, with 139 houses in the village for ex-patients, and the other two institutions have a further 290 beds. The medical director, Dr. J. B. McDougall, in his report for 1944, says that from the administrative

standpoint the greatest problem has been to preserve a balance between the medical and rehabilitation aspects of the war Orders for the industries which are carried on at all the places have come in at a rate which has overshadowed anything known in peacetime, but the temptation to overwhelm industries with orders has been resisted. Any tendency to expand the industrial aspect of the village settlement must never be allowed to prejudice its main function, which is care and treatment of tuberculosis. In the near future it is expected that 2,000 cases of tuberculosis from the various Service departments will have passed through the wards. Certain of the wards in an E.M.S. hospital have been allocated for their reception, and the collaboration with the military wing has been close and efficient.

## Correspondence

## Freedom to Publish

SIR,—The letter of the Secretary of the B.M.A. addressed voluntary hospitals and local authorities (*B.M.J. Supplement* Aug. 12) advocating that medical officers should be free to publish scientific material is much to be welcomed, but with the reservation that the letter does not go far enough. The inclusion in the last paragraph of the words "in other ways seems to acknowledge the need for some amplification."

The writer of the annotation in the same issue of the *Journal* (p. 219) is more definite; he says truly: "In the profession of medicine there are many matters of interest and importance to doctors that cannot be described by the words 'pure scientific and technical.'" The latter quotation is the phraseology of the L.C.C. amendment. In no way does it remove the censorship on publications—anything in the least critic that may offend the bureaucrat can still be censored as not sufficiently pure. Unfortunately the wording of the B.M.A. letter invites further such amendments or *ad hoc* resolutions of similar character.

The confusion that is occasioned by the term "scientific freedom" is well illustrated by the writings of Geoffrey Bourne who has developed in some twelve columns of the *Journal* the theme of the B.M.A.'s letter (see *B.M.J.*, Feb. 20, 1943; May 29, 1943; June 3, 1944). Thus, "No system is to be tolerated in which free speech on medical matters, free criticism of medical affairs, and free publication of scientific work are discouraged or in the slightest way impeded" (*B.M.J.*, Feb. 20, 1943); "Complete freedom of speech, criticism, and medical practice must be retained. Any member of a State service must have the right to speak his mind about his political or professional superiors on any question of medical science practice, or policy" (*B.M.J.*, May 29, 1943); "In any State Medical Service all medical men shall have full right of expression and criticism in medical matters" (*B.M.J.*, June 3, 1944). In spite of this consistency the three articles must leave any student extremely confused, for while advocating this active role of publication and criticism Geoffrey Bourne apparently wishes to keep quite free from politics: "Medicine and science must not be political" (*B.M.J.*, May 29, 1943). How can a medical man be free "to speak his mind about his political or professional superiors on any question . . . of policy" without being political? This contradiction is marked throughout the articles, and the confusion is in no way clarified by such phrases as "Politics can often be turned on like gas, but science cannot be turned on like water" (*B.M.J.*, May 29, 1943). In his hypothetical campaign for the exposure "of the scandalous tuberculosis services of Blimpshire" (*B.M.J.*, June 3, 1944) Geoffrey Bourne follows well-recognized political methods.

The truth is that scientific observation and publication have an influence on politics. Some scientific articles have a large political content, some have little. It would not be very political to-day to publish an article on the earth's movement in relation to the sun, but Galileo found it political enough. Why did Harvey delay publishing his observation on the circulation of the blood for so long? An article to-day on the technique of the Wassermann reaction has little political con-



tent, but many scientific articles bearing upon the diagnosis and control of syphilis could have a great deal.

What we need to establish is freedom to speak and write on matters that affect our profession whatever the political implications may be. This is the prophylactic against bureaucracy and would do much to ensure a democratic medical service. I emphatically agree with Geoffrey Bourne that "the democratic system of medical service is entirely compatible with State control" (*BMJ* Feb 20, 1943)—I am, etc.,

King's Langley Herts

TOM GARLAND

### The Kenny Treatment of Poliomyelitis

SIR,—In the *Journal* during the past two years there have been various references to the Kenny system of treating poliomyelitis. From these articles it would appear that a great deal of enthusiasm had been aroused, mainly in the popular press, but also in some medical centres of the United States. You published two critical reviews, and the conclusions seemed to be that the Kenny methods and theories did not justify the attention that was being paid to them in the United States, and comment was awaited from American authorities who could be trusted to give a sound view upon the matter.

It will interest you, I think, therefore, to have these extracts from a report of a committee of the American Orthopaedic Association, given to me in a personal letter and probably paraphrased.

1 "Muscle spasm." Stiffness in the neck and back has long been recognized, and it disappears spontaneously. There is seldom spasm in the extremities, and this has nothing to do with the final result.

2 "Mental alienation." To say that the flaccid muscle is normal is not true. It means a temporary paralysis or stretch paralysis, and was discussed by Jones in 1911.

3 "Co-ordination is disorganized." This is another term for muscle incoordination and was used in 1912.

4 "Paralysis." It is thought that the handling necessary for the Kenny treatment might make the patient worse. Putting the patient in the normal standing position has been recommended for the past 30 years. Heat has been used for many years. Hot packs do not always relieve the pain. The pain can easily be relieved by other measures. In some cases the hot packs seem to prolong the muscle spasm. The spasm disappeared in some cases when the packs were stopped. She insists that a very rigid technique should be followed for twelve hours each day. This is not essential.

5 "Restoration of muscle function." Jones and Lovett many years ago advised the same in their textbook.

6 "No braces or splints are tolerated." Splints are beneficial in some cases. The patients should be allowed to wear braces and be able to discard crutches.

7 "No respirator should be used." The committee thinks they should be used when needed.

8 "The family are told that the Kenny method would have prevented paralysis." She tells parents that if she could have treated the patient early it would not have gone on to paralysis. This is wrong. Some of her patients which she treated early before they were paralysed developed severe paralysis. She does not recognize spontaneous improvement. She claims that it is her method which "cures" the patient. We know that 80% improve spontaneously.

9 "Muscle tests." Her lack of muscle tests is to be condemned. Muscle tests carefully done are not harmful. She is the only one who thinks they are harmful. She says that only 13% recover by the other methods. This statement is wrong. She has been shown abundant evidence in medical literature that from 70 to 90% recover by the orthodox methods.

10 "Deformities." She says that no deformities have developed following her treatment. Her cases have not been followed long enough. Severe paralytic scoliosis does not show up until after three years. Her cases will need to be watched longer. Contractures of the muscles must be prevented early.

In summarizing the report Ghormley said "A study of 750 cases showed that continuous hot packs are of questionable value, and that it is a waste of man power and hospital beds."

Gill stated that the members of this committee had different views about this treatment at the beginning of the study, but that they were all agreed by the end of the study.

Albert Key said "The concept of Miss Kenny is wrong. What is good in her treatment is not new, and what is new in it is not good." He thought that another paragraph should have been added to the report making it still more clear that the committee did not recommend her treatment.

—I am, etc.,

Exeter

NORMAN CAPENER.

### Registration of Specialists

SIR,—I have just read Lieut. Col. Gear's instructive paper read and considered in conjunction with the 1,509th "Old and True" in the *Times* of Aug. 5. The relevant part of the quotation is "it requires art in order to persuade, oooh is needed in order to command . . . When the power that makes the laws and the power that applies them are identical, laws are useless. Every exercise of authority that goes beyond what is really necessary is a tyranny"—Turgot.

And, having read the "Old and True," let us turn to the *Journal* (p. 183) and, after perusing it, ask ourselves whether the suggested registration of specialists does not go beyond what is really necessary.

First, it would be reasonable to settle the problem of what (if anything) is wrong about our specialists. Secondly, we might reasonably ask ourselves whether we are likely to get better specialists by making young men and women decide on a specialist career immediately after (or even before) they have become qualified. And, thirdly, we must face the fact that, if the future registration of specialists is to depend upon the possession of higher qualifications and upon a period of postgraduate training (but still *in statu pupillari*), we shall have two distinct branches of the medical profession—one firmly and permanently fixed in the groove of general practice, and the other in the even deeper groove of specialism. No passage from the former to the latter group would be possible, except perhaps for a very small number of general practitioners with private means, who could give up lucrative work for five years in order to be subjected to specialist training.

There are other features of the suggested legislation which should make us (and our leaders) pause. Thus, there could never again be another Sir James Mackenzie, who, graduating from a busy general practice into specialism, became the father of modern cardiology. Of course, there may be those who would contend that he would have been a still greater man if he had had five years of postgraduate training in his specialism. I doubt it, and, I imagine, Sir, that you do also.

Then again, we should remember that, learned though the members of the General Medical Council undoubtedly are, they have not been endowed by statute or (so far as I am aware) by miracle with the gift of prophecy. And, as they have not been so blessed, it is difficult to see how it can be assumed that they will foresee and cater for new specialties that may be needed in the future. I am, of course, presuming that it is not supposed that the book of knowledge is already completely written.

One would, not unnaturally, like to know whether the specialist of the future will be allowed to examine and even treat maladies that are not included (by, I suppose, delegated legislation) in the schedule of diseases he is licensed to deal with. Or must, for instance, the haematologist (if haematology be permitted the sacred status of a specialty) who is treating a patient with pernicious anaemia call in a neurologist if the patient develops signs of subacute combined degeneration of the cord? Or must he have the continuous collaboration of a neurologist, because he (the haematologist) is not supposed to be able to recognize the early (or, indeed, any other) stages of the nervous complication?

Of course the present suggestions are for the interim period, and it will not be until later that the compulsory postgraduate training will be essential for admission to the register of specialists. At present persons recognized by their colleagues (who know them) as specialists will be recognized as such by the General Medical Council (which does not know them). But the day will come when some youngster, after his five years of postgraduate training, will be admitted to the specialists' register and will tell his older colleague that he himself is a qualified specialist while he (the older man) is only a registered one. Do not tell me that this is impossible: both dentists and State-registered nurses have met the same difficulty.

May we not, Sir, with all respect, ask the Mother of Parliaments to refrain from converting herself into a purely legislative assembly, so that she may have time to perform her centuries-old duty of protecting the people from infringement of their ancient rights by the executive?—I am, etc.,

London W1

A. PNEY.



### The Surgeon and the Anaesthetic

SIR,—Recent correspondence concerning the respective merits of old and new methods of anaesthesia seems to emphasize once again that the safety of any anaesthetic depends chiefly on the technical skill and clinical judgment of the anaesthetist. Like most anaesthetists I use a little chloroform on occasion and under certain special conditions, but Dr. Herbert Brown's belief (Aug. 5, p. 191) that light chloroform anaesthesia is not especially dangerous only holds good when the skill and judgment of the administrator are above suspicion. In incompetent or inexperienced hands chloroform is potentially an extremely dangerous and toxic drug, and for this reason many authorities recommend that it should be banned from general use.

Sudden death during light chloroform anaesthesia is particularly prone to occur in two classes of patient: (a) the violently excited and struggling patient, with an obstructed airway due to pharyngeal or laryngeal spasm; and (b) the pale, "quiet" individual (usually under 30) suffering from general debility and obvious oxygen lack. In the former case a struggling and cyanosed patient suddenly takes a deep breath of concentrated chloroform vapour with the customary well-known result. In the second group the tidal respiration may be so shallow that the anaesthetist (often an inexperienced house-surgeon or practitioner) sometimes does not know that the patient is dead until an onlooker chances to remark that "The patient doesn't look very well, doctor!" Catastrophes such as these are less likely to occur if care is taken to maintain a free airway and oxygen is administered continuously before and during induction, but the only certain way to prevent them is not to use chloroform.

The technique of administration and precautions to be adopted in injecting pentothal have been very fully described in the literature, and if mishaps occur due to faulty judgment on the part of the administrator the remedy is not to stop using pentothal but to employ a more experienced anaesthetist. When injected intermittently in small doses and with due regard to the condition of the patient the danger of overdosage is very remote, especially if oxygen is administered throughout. When trouble arises it is generally because insufficient care has been taken to keep the tongue forward and the airway clear. Pentothal should not be used if the airway is likely to become obstructed, or if there is a possibility that haemorrhage from the mouth or post-nasal space may set up laryngeal spasm; if this should happen endotracheal intubation must be carried out at once. Lastly, it is safer to limit the dose according to the condition of the patient. Personally I prefer to use pentothal for induction of anaesthesia, or short procedures lasting not longer than 20 minutes.

Dr. Brown's apparent surprise at the sensible precautions suggested by Dr. Murphy (July 15, p. 93) and others is surely unnecessary. Oxygen, cardiac and respiratory stimulants, etc., should always be available when an anaesthetic is being administered, whether the method of administration be intravenous, inhalational, spinal, local, or even no anaesthetic at all. The last contingency is by no means an exaggeration. Not long ago, when I was preparing to inject pentothal for a dental case, the patient suddenly went off in a "dead faint" (either at the sight of the needle or myself, I am not sure which!), and, at my suggestion, the extractions were completed by a slightly horrified dentist, while 100% oxygen was administered under pressure through the nose-piece of the McKesson apparatus. However, I do not recommend this mode of anaesthesia, although, from the standpoint of economy, it has certain advantages.—I am, etc.,

Newcastle-upon-Tyne.

PHILIP AYRE.

SIR,—Having read Dr. Herbert Brown's letter with interest, may I offer the following criticisms from the point of view of a specialist anaesthetist.

1. Quoting Dr. Elam (Feb. 19, p. 263), Dr. Brown says, "Modern anaesthesia will become (if it has not already done so) far more dangerous than chloroform anaesthesia at its worst." Yes, in unskilled hands. All potent drugs—chloroform, trilene, and cyclopropane (which Dr. Brown does not mention; why?), pentothal sodium and allied drugs—are dangerous in unskilled hands. Is it not those who have done a few simple

cases successfully with a certain method—e.g., pentothal sodium—who are apt to develop that false sense of security described by Dr. Elam? The more one uses these drugs and discovers their variations from case to case the more wholesome respect one has for them.

2. Dr. Brown says, "A new and relatively untried drug such as pentothal. . . ." This drug came into wide use in November, 1937, as a result of published reports. Its forerunner, evipan sodium, had been in use for several years previously. As to the relatively "untriedness" of the formidable number of Allied casualties in this war very few requiring anaesthesia fail to have pentothal sodium. The number of administrations, therefore, in the past four years alone must be enormous.

3. "The surgeon should choose the anaesthetist who will give the anaesthetic he prefers" ("he," I presume, meaning the surgeon) "in the manner required and not continue the administration unduly." If, as is implied by this, anaesthetists must be one-method men or mere technicians, let us have nurse- and orderly-anaesthetists to carry out Dr. Brown's instructions implicitly!

Most modern surgeons, I believe, prefer an anaesthetist with experience in the use of all anaesthetic and analgesic drugs (ancient and modern) by all recognized methods and routes, who can be relied on to give that drug or combination of drugs most suitable to each patient by such methods, routes, and apparatus as may be most expedient, and so to submit the patient to the surgeon that the operation may be most easily performed with the least after-effects. Such a standard cannot be attained without much full-time study and experience. Modern anaesthetics require a full-time specialist. They cannot be successfully practised as a busy G.P.'s hobby. (In compiling the proposed "Register of Specialists" it would be well that this point were considered.)

Finally, whatever the advantages and dangers of that old "bone of contention"—chloroform—I never use it because it makes the anaesthetist very sick, and it is as well to credit one's patient with at least as much sensitivity (in all respects) as oneself.—I am, etc.,

Wattasey.

UNA M. WESTELL.

### Progesterone

SIR,—I am grateful to Dr. Richard Sands for pointing out that in 1932 Mr. Christie Brown put forward the theory which I outlined in the *Journal* of June 24.

My letter was partly by way of being a disclaimer, as I was afraid Dr. Walter Calvert might possibly imagine that when I made a personal communication to him along the same lines I was claiming some originality for the theory so far as I was concerned. In a subsequent letter Dr. Calvert seems to imagine that I imputed that he, Dr. Calvert, was claiming originality for the theory. I think that if he reads my first letter again he will see that I made no such implication, but merely made it clear that his views might be based on my personal communication to him, and that the views in that communication were not my own, but were, so far as I knew, those put forward by Mr. Barton Gilbert.

In suggesting that this theory had been originated by Mr. Gilbert I have since learnt that in the main I was in error. In the *Journal of Obstetrics and Gynaecology of the British Empire*, Autumn, 1932, appeared an article by Mr. Christie Brown entitled "The Posterior Pituitary Gland in Pregnancy." Briefly, his theory suggests that the decreased sensitivity of the uterus to the posterior pituitary during pregnancy is due to the secretion of the corpus luteum—as has been pointed out by H. Knaus—and that in the same way one finds relaxation of the intestine leading to constipation, relaxation of the blood vessels with lowering of the blood pressure, and the production of varices and also early morning sickness.

As it has been pointed out that Mr. Gilbert did not originate this part of the theory which I outlined, I may well be in error in suggesting that he was responsible for the rest of it as well. Once one has grasped the underlying principle of a theory of this sort, it is very easy to extend its implications; so who was first responsible for suggesting that albuminuria of pregnancy, primary uterine atony, for accidental haemorrhage, and pyelitis of pregnancy were due to a similar cause I cannot definitely say. As the outlines of the theory appear to be moderately well known, it may well be that I, in company with many others, have unwittingly extended its original implications to make it fit in with similar clinical entities which have been encountered in practice.—I am, etc.,

D. G. WILSON CLARKE.

London, W.1.

\* \* This correspondence is now closed.—Ed., B.M.J.

### Action of Penicillin

SIR.—Sir H. W. Florey, in his interesting article on penicillin, states that it is a "bacteriostatic." What does he mean by this term? Are we to understand that such an action, which takes place outside the body, is the one which takes place in the body, and is followed by recovery from the disorder? In other words, is penicillin to be used for the treatment of the disease? or of the patient?—I am, etc.,

Swansea.

G. ARBOUR STEPHENS.

### Infant Feeding

SIR.—Dr. Boucher (July 29, p. 160) calls attention to the prevalence of difficulties with infant feeding. Much unnecessary suffering could be prevented if cases of deficiency of breast milk were more promptly recognized and dealt with, and if mothers who cannot feed their infants entirely on breast milk were given adequate instructions about artificial feeding based on the methods recommended by Drs. Paterson and Smith in their book *Modern Methods of Feeding in Infancy and Childhood*. Some of the points on which these methods differ from others commonly in use are worth noting:

1. The quantity of the feed is calculated primarily according to the weight of the infant, larger babies getting larger feeds. Thus the needs of individual infants whose weights at birth or natural rates of growth differ from the average receive due consideration. If any difference is made between the quantity of feeds at the same age, it is the smaller babies who are given the larger feeds, on the assumption that all babies ought to have the same weight at a given age.

2. The composition of the feed is a simple milk, sugar, and water mixture, and for infants between 1 and 6 months old two-thirds of the total volume is made up of whole full-cream milk. Some methods of feeding give too low a concentration of milk and others too high.

3. It is made clear that sugar in appropriate amounts must be added to the feeds in order to get satisfactory results with artificial feeding. But the directions on tins of some brands of powdered milk mention the addition of sugar as optional. In giving a figure for the amount that may be added they fail to grade it according to the quantity of the feed, and the amount suggested is too little for all except the smallest feeds.

In addition to information about composition and quantity of feeds, a mother needs advice on the technique of bottle-feeding, including such matters as preparing a teat with a hole of the right size, and ensuring that the feed is reasonably near body temperature when it is being given.

There are some babies whose natural rates of growth are very considerably above the average, and who are only satisfied when receiving feeds that enable them to grow faster than the commonly accepted maximum rate. When such an infant is breast-fed and the mother has plenty of breast milk, and when the mother does not allow the natural process of feeding to be interfered with by undue fussing about scale and clock readings, then no difficulty arises. The large gains in weight are only discovered incidentally. The baby is contented. When, however, such an infant is being bottle-fed or if the mother has not sufficient milk to satisfy him, he may then appear as one of the cases of crying and fretfulness of unknown origin. There is nothing clinically wrong. According to accepted standards the gains in weight are satisfactory and the amounts of feeds are sufficient. Nevertheless the crying and fretfulness are due to the fact that he is not fully satisfied by the feeds. Increase them either in quantity or in concentration, or both, and he becomes satisfied. I think that if the existence of infants having these high growth rates were more generally recognized more cases of fretful infants and distressed mothers could be effectively remedied.—I am, etc.,

Leeds.

SYLVIA DICKINSON.

### Post-operational Strain in the Navy

SIR.—I was interested in the article on post-operational strain by Surg. Capt. Curran and Surg. Lieut. Garmany (July 29, p. 144). I do not think, however, they have stressed sufficiently that it is a psychophysiological, outrage when one is obliged to pass too quickly from a state of tension to one of relative

relaxation. The holiday neurosis, whereby the over-tense individual sustains an increase in anxiety during the first days of his vacation, is well known. Perhaps the authors would be interested to know that it is an absolute necessity in teaching patients the art of conscious relaxation to avoid relaxing them too soon. To aim at achieving too quickly a state of deep muscular relaxation is to promote feelings of anxiety and restlessness, which more than ever prevent the patient from relaxing. This slight criticism is not to say that one does not appreciate very much an outstanding article.—I am, etc.,

Bath.

A. GUIRDHAM.

SIR.—If one turns from the particular and clinical findings to the general and to trends in our cultural life, it is a fact that there has been for years an increasing tendency for the population—more noticeable in the large towns—to become dependent on artificial stimulation for their amusements and more passive in their attitude to leisure life in general. The machine age, with its damping effect on active handicrafts, has extended increasingly to the whole art of living, and the male —Surg. Capt. Curran's findings (July 29, p. 144) are limited to this sex—is becoming more sedentary and receptive in the way he spends his non-working life; he relies more and more on external stimulus to be provided and less and less on ideas arising within his own ego. Wartime increases this tendency, especially in the civilian population, since it is harder for the individual to come by the materials for his particular hobbies and to get the facilities for participation in sport and games. This sessile attitude toward life belongs to the ovum rather than to the spermatozoon, and it is, I think, largely contributory in Surg. Capt. Curran's findings.

It can truly be said that similar findings were commonly met with in behaviour difficulties in the male long before this war, and the interacting causes should be given serious consideration in any schemes for social improvement after the war. It may be that if the factors responsible for this reliance on commercial provision of stimulation at the expense of initiating his own libidinal drives continue, this sessile attitude may in the course of time become a permanent mutation in our male culture. Against this lack of ego-interest may be put the enormous increase in the hobby of gardening during the war.—I am, etc.,

London, N.W.3.

JOHN MACKWOOD.

### Service Medicine

SIR.—The attack on certain aspects of Service medicine in your issue of April 1 provoked Air Cdre. Cade and Conybeare (April 22, p. 574) not only to paint an idealistic picture of medical organization in the Services but also to dismiss the anonymous writer as selfish or lazy and incompetent. I submit, Sir, that these R.A.F. consultants are making a serious mistake. Of the hundreds of temporary medical officers in all three Services to whose opinions I have listened since 1939 only one failed to deplore the anomalies and abuses of Service medicine, and this single exception admitted that he disliked clinical work.

Dr. Geoffrey Bourne has rightly remarked (*B.M.J.*, 1943, 1, 673) that administration should be the servant, not the master, of the public and its doctors. Service medicine is, on the contrary, ruled by officers who regard medicine as the slave of administration, and the consequences of this radical defect are fatal. Admittedly the skilled doctor is helpless without administrative machinery to provide essential supplies and transport. Such machinery can, however, be devised and operated for the most part by people whose training is far shorter than that required to graduate in medicine. Yet hundreds of medical officers, at a time when civilians cry out for more doctors, are engaged exclusively in so-called administration. I purposely say "so-called" because the word "administration" is often a pretentious euphemism for the process of signing redundant documents unread.

How, it may be asked, can these men reconcile their professional conscience to the performance of tasks within the capacity of a layman? Promotion is the answer. Simple administrative duties, easily mastered within a week or two, carry a higher rank than do most of the specialized clinical posts, although the latter cannot be efficiently filled except by people of long

training and experience. This subordination of clinical skill has placed overwhelming power in the hands of regular officers, who, in spite of being numerically negligible since the vast wartime expansion of all Services, yet hold nearly all the key positions. They are selected not only to command important hospitals and preside over medical boards but even to exercise control over clinical departments, thereby taking credit for work done by their Service juniors and professional betterers. Well-paid sinecures are also filled by ex-regular officers dug out of pensioned retirement.

Your anonymous correspondent will surely echo the hope expressed by those eminent Air Commodores, that he will remain out of a State Medical Service. Long may the public be spared the mockery of a whole-time salaried State Medical Service: but if this thing should come, then I venture to prophesy that the administrative lightweight, with their smattering of medical knowledge, will rise to the summit of the bureaucratic hierarchy; and the clinicians, who have perforce endured the brass-hatted administrators in time of war, will resume civilian life, only to be strangled by red tape.—I am, etc.,

TEMPORARY SERVING OFFICER.

### Ultra-violet Light Treatment at Welfare Centres

SIR,—In the abridged notes of a lecture by Dr. Doyné Bell (July 29, p. 157) I fear a wrong impression may be implied of the use of ultra-violet rays in welfare practice. Dr. Doyné Bell condemns their use in the "prophylaxis of respiratory infection," whatever that may mean. Ultra-violet rays can be used in various other conditions in babies and young children with very satisfactory results, as I showed in an investigation carried out a number of years ago when I was M.O.H. at Middleton, Manchester. I go so far as to say that all child welfare centres should be equipped with U.V.R. lamps. When mothers generally report that their babies are sleeping better, thriving and putting on weight, and are more lively after a course of treatment, this is a sufficient guarantee of the usefulness of U.V.R. in clinic practice.—I am, etc.,

S. T. BEGGS.

### Yeast in Furunculosis

SIR,—Among several present-day uses yeast still holds its own as an acknowledged remedy for boils and furuncles. In tablet form as the dried preparation it is of little or no use for the purpose; being, however, of substantial benefit if freshly skimmed from brewers' or distillers' wort and administered in its natural semi-fluid state, suitably suspended. This fresh yeast is exhibited in one-drachm doses in sweetened water thrice daily before meals. Or it may be given compressed as a bean-sized piece or as "yeast-cake" (1/4 to 1/2 oz. pro dos.), broken up and added to mineral water sweetened with sugar. Of the two, the semi-liquid yeast is the more active in therapy.

The pharmacological action of yeast was formerly believed due to its fermentative properties; but is it not more likely that its content of *Penicillium glaucum* contains the active chemotherapeutic principle that inhibits the *Staphylococcus aureus* and does the good? In view of the discovery that penicillin, prepared from the mould *Penicillium notatum*, is bacteriostatic to the *Staph. aureus* among other pyogenic organisms, does this not suggest an analogous action on the part of the *P. glaucum* of yeast? Here, perhaps, is a field for investigation. Yeast is given by mouth only, not by injection, or is it applied locally. It is possible that microscopic doses of *P. glaucum*, or its extract contained therein, are sufficient therapeutically; and that if wholly or partially destroyed by the hydrochloric acid of the gastric juice the stuff might be more potent given after alkalizing this; or, for that matter, might be most effective in the absence of HCl as in achlorhydria, constitutional or other. These considerations may account for yeast being unequal in its results.

Beer wort, by the way, even at room temperature, is a simple, useful test-tube medium for cultivating moulds and fungi by surface smear.—I am, etc.,

Bournemouth.

S. WATSON SMITH.

### The Fly Menace

SIR,—I have just read Lieut.-Col. Gear's instructive paper (March 18, p. 383). He has pointed out how seriously the fly menace is viewed in the Army. He describes the work of Fly Control Unit consisting of five officers, several N.C.O. 200 to 300 British other ranks, and African pioneers. Needless to say, these personnel would not have been released for the duties had the work of eliminating flies not been deemed of urgent priority.

My mind goes back to an article, about a month previous by Dr. Shooter and Miss Waterworth (Feb. 19, p. 247). In it the following complacent statement occurs: "In September 1942, when flies abounded in this hospital. . . ." I suggest that the fly problem be tackled at its source. This would eliminate the need for papers on the transmissibility of haemolytic streptococcal infections by flies in hospitals. Let hospital administrators at home learn a lesson from the Army, and in their planning really give due consideration to this undoubted menace.—I am, etc.,

P. JACOBS,

Capt., I.M.S.

### Mr. Prynne's Habits

SIR,—In your issue of July 15 (p. 91) the note on Pepys and alcoholism contains the remark: "Total abstainers in those days were exceptional. Such a one was Mr. Prynne." The statement does not agree with Aubrey's famous description of Prynne at his studies: "He wore a long quilt cap, which came 2 or 3, at least, inches over his eyes, which served him as an umbrella to defend his eyes from the light. About every 3 hours his man was to bring him a roll and a pott of ale to refocillate his wasted spirits. So he studied and drank and munched some bread: and this maintained him till night; and then he made a good supper." I suspect that Prynne's objection was to the practice of drinking toasts and not to the practice of drinking liquor.

The late Sir Henry Maxwell Lyte pointed out to me, when I drew his attention to this passage some twenty years ago that the main purpose of Prynne's quilt cap was probably to conceal his mangled ears.—I am, etc.,

The University Library, Glasgow.

W. R. CUNNINGHAM.

### Representation on Council of R.C.S.

SIR,—It is with great pleasure that I read of the invitation from the Royal College of Surgeons to the Association to nominate general practitioners, one of whom should serve as a co-opted member of the College Council (Supplement Aug. 5, p. 31). For 50 years the Society of Members R.C.S. has been trying to persuade the College Council to take such a step, as we have felt that the G.P.s should be represented on the Council, as they are by far the more numerous and contribute more to the College funds than any others.

There are many able men among the G.P.s who would be most worthy colleagues on the Council of the College, and would undoubtedly benefit that Council by knowledge they possess of "ordinary practice." This step on the part of the College is a welcome and graceful act.—I am, etc.,

PERCY B. SPURGIN,

President, Society of Members, R.C.S.

The Alvarenga Prize for 1944 has been awarded by the College of Physicians of Philadelphia to Dr. Gervase J. Connor, Department of Surgery, Yale University School of Medicine, New Haven, Connecticut, for a paper entitled "Anterior Cerebellar Function: An Analytical Study in Functional Localization in the Cerebellum in Dog and Monkey." This prize was established by the will of Pedro Francisco da Costa Alvarenga of Lisbon, Portugal, an Associate Fellow of the College of Physicians, "to be awarded annually by the College of Physicians on each anniversary of the death of the testator, July 14, 1883, to the author of the best memorial upon any branch of medicine which may be deemed worthy of the prize." Dr. Connor's paper will be published in the *Transactions and Studies of the College of Physicians*, December, 1944.

## Obituary

ALEXANDER PRIMROSE, C.B., F.R.C.S.

We regret to announce the death, at the age of 82, of Alexander Primrose, formerly dean of the Faculty of Medicine of Toronto University. Primrose, who was born in Nova Scotia, studied medicine at Edinburgh, qualifying M.B., C.M. in 1886, and after a period at the Middlesex Hospital returned to Canada to practise in Toronto. In 1896 he was appointed professor of anatomy at Toronto, a post he held until 1907. Dr. Primrose went over-seas in 1915 as surgeon with No. 4 Canadian General Hospital, and later served in Salonika, returning to England in 1916 as consulting surgeon to the Canadian Forces. He was mentioned in dispatches, and in 1918 received the C.B. When he returned to Canada at the end of 1918 he was appointed professor of clinical surgery at Toronto. He held his post until 1931, and for a great part of that time (from 1920 to 1932) was also dean of the Faculty of Medicine. In 1925 he was made a Fellow of the Royal College of Surgeons, and among a number of offices he held were president of the Canadian Medical Association, of the American Surgical Association, and of the Toronto Medical Society.

Prof. GREY TURNER writes:

For many years Alexander Primrose was an outstanding figure in Canadian medical life, and especially in connexion with the University of Toronto, where he originally lectured in anatomy, and for years afterwards occupied the position of professor of clinical surgery and of dean. I remember so well the prominent part he played at the time of the meeting of the British Medical Association in that city in 1906. From then onwards he continued to be most active both in surgery and in university affairs. He was interested in the wider field of medicine and in medical education, and was always anxious to keep in touch with the work going on in what he always referred to as the old country, which he loved to visit whenever opportunity arose. It gave him immense pleasure to be elected a Fellow of the College of Surgeons as a member of twenty years' standing in 1925, and he was particularly proud to be asked to represent the College thereafter in connexion with functions in his own country. Primrose was accepted as an outstanding representative of Canadian surgery by American surgeons; he was an honorary Fellow of the American College and he had held high office in several of their societies. But though his professional work naturally slackened off very considerably in recent years, he contributed from his experience at the meetings of societies and to the journals, and he gave a very interesting address as president of the American Surgical Association in 1931. He was of a very kindly disposition and always anxious to be helpful, and his wide knowledge of men and affairs encouraged application to him for guidance. Primrose was the sort of man to whom colleagues naturally turned for advice, and he seemed especially cut out for the position of doyen, a seniority which he occupied gracefully for several years.

By the death on July 10 of Dr. A. E. KIDD, of Dundee, the Scottish School Medical Service has lost one of its pioneers. Alexander Edward Kidd studied medicine at Dundee, at Edinburgh University, and at University College, London, graduating M.B., C.M. at Edinburgh in 1894. In 1901 he also took his D.P.H. at St. Andrews University. "J. H." writes: Dr. Kidd had many interests, but the main one was his life-work—the health and well-being of the youngsters of Dundee. For over a quarter of a century he was in charge of pre-school and school medical administration in Dundee. As a member of the Territorial Army he saw service in the last war, and was in command of stationary and general hospitals in Serbia after being in France with the 3rd Highland Field Ambulance of the famous 51st Division. His work was recognized and honoured by the British, Greek, and Serbian Governments. He received the O.B.E. and was mentioned five times in dispatches. Dr. Kidd retired from the School Medical Service in 1937 on attaining the age limit, but on the outbreak of war he took charge of Civil Defence casualty work and first-aid posts in Dundee. This post he held until failing health compelled him to give it up. In recognition of his services in the city he was made a Deputy

Lieutenant in 1943—an honour which was well deserved and which he thoroughly appreciated. He was one of the founder members of the Association of School Medical Officers of Scotland. Indeed, if my memory is correct, he was its first honorary secretary. In due course he became president, and his period of office culminated in a successful conference in Edinburgh in the early 'twenties. It was during this time that my friendship with him deepened and I learned to appreciate in proper degree his sound professional knowledge, his powers of organization, and his downright common sense. He was a most delightful companion to adults and children alike. He would have celebrated his jubilee in medicine if he had survived until Aug. 1: it was on that date in 1894 that he was "capped" at Edinburgh University. He leaves behind among his colleagues very happy and unfading memories.

## Medical Notes in Parliament

### Distribution and Use of Penicillin

In an answer, on Aug. 3, to Mr. Linstead Mr. WILLINK said that up to the present all official supplies of penicillin, apart from a small quantity used for clinical trials, had been reserved for the Services and air-raid casualties. Production was, however, increasing to such an extent that it would shortly be possible to make some penicillin available for general civilian use. It was expected that some time next year the supplies would be sufficient to meet all requirements. During the transitional period it was essential to restrict the use of penicillin to cases in which it was likely to save life or to be the only available means of effecting recovery from grave illness. It had been arranged to issue the available supplies to university medical schools for use in their teaching hospitals and other hospitals approved by them in their areas. For the time being the issue would be made free of charge. The conditions for which penicillin should be used would be indicated in an official memorandum. Suitable cases would be admitted to the hospitals concerned. It would not be possible at present to make penicillin available to private practitioners.

Preparation of penicillin required the highest possible technical control to prevent the marketing of inferior and possibly dangerous preparations. For the present all supplies were obtained from the Ministry of Supply, who satisfied themselves through their staff of competent inspectors as to the quality of the penicillin before issue. Regulations had also been prepared for prohibiting the manufacture of penicillin for sale except in accordance with a licence issued under the Therapeutic Substances Act, and in conformity with prescribed conditions, including tests for strength, quality, and purity.

### Ministry of Health's Social Survey

Brig.-Gen. CLIFTON BROWN on Aug. 3 asked Mr. Willink why inquiries had been made of people living in the Hungerford district about their health and past illnesses without consulting their local doctor who attended them. He asked whether the Minister would stop these proceedings in future. Mr. WILLINK said the visitor was a representative of the War-time Social Survey of the Ministry of Information, which since January had been carrying out, on behalf of his Department, a sampling inquiry in England and Wales. The object was to assess the amount of ill-health, including minor illness, which did not necessarily come under treatment by a doctor and was not otherwise recorded. This survey was providing information essential to a proper understanding of health statistics which could not be attained in any other way. He would not agree to stop the survey, but any information given by people in response to it was entirely voluntary. Experience had shown that practically everyone approached had been very willing to be helpful.

On the same day Sir E. GRAHAM-LITTLE asked a similar question and was referred to the above reply.

### Evacuation: Position of Invalids

Mr. WILLINK, answering Mr. Pritt on Aug. 3, said arrangements were proceeding for the removal from danger areas of a number of permanent invalids already in institutional accommodation. For other infirm and invalid persons the Government Evacuation Scheme provided for the issue of travel warrants and billeting certificates if they could arrange for their own accommodation in safer areas. With the resources available he could not bold out hope that it would be possible to undertake the organized evacuation of all permanent invalids from areas at present subject to bombing.

### Jamaican Medical Service

Ten doctors, Col. STANLEY stated on Aug. 2, have resigned from the Jamaican Medical Service during the last three years. One of these doctors resigned when on leave in the United Kingdom, where her husband was posted on military duty; one returned to the United States, of which he was a citizen; one, a Dutch refugee, proceeded to Curaçao at the request of the Netherlands Government; one resigned without giving any reason; and one has since rejoined the medical service. In general, said Col. Stanley, the reasons put forward for resignation were inadequate travelling and subsistence allowances, differences with the senior medical officer, protests against transfers, and lack of time for private practice. The salaries of medical officers were substantially increased as from April 1, 1943. Newly appointed officers who previously received a fixed salary of £400 per annum now get £500 per annum, rising to £600 per annum plus a sum of £300 per annum in lieu of private practice where that is not available or permitted.

### The Government's New Houses

In the House of Commons on Aug. 1 Mr. WILLINK moved the second reading of the Housing (Temporary Accommodation) Bill. He referred to the urgent need to provide family housing during the period at the end of the war before permanent houses could be provided, and said that this consideration pointed to a type of building capable of production away from the site—a type of building, so far as possible, factory-made. A scheme was required to meet urgent needs as quickly as possible, and that pointed to standardization. A start would be made in time of war, and there was reason to think that something of the order of 100,000 of these houses—or bungalows, as he preferred to call them—could be produced within one year of going into production. Economy of labour, material, and time could be achieved by accepting some reduction in normal standards, and primarily in the standard of total size. Under most building by-laws, the normal minimum height of rooms was 8 ft., and the height of the rooms in the bungalow would be 7 ft. 6 in. The ventilation would be so arranged, however, that there would be no ground for anxiety and there would be an economy of material.

The actual area of the bungalow, excluding the detached outdoor shed, would be 616 sq. ft. compared with the range of 800 to 900 sq. ft. contemplated for the normal permanent family house. There would be no staircase, and there would be two bedrooms instead of three. There would be a living room, kitchen, two bedrooms, bathroom, separate w.c., and a detached outdoor shed. The Minister of Works had obtained a wealth of advice on this matter. He had used the full resources of the Department of Scientific and Industrial Research, and had even consulted the Medical Research Council. The materials and method of construction had been very carefully considered. Heat and cold, condensation, noise, liability to wear and tear, and cost of upkeep had been considered, and it was intended to produce a simple manual for tenants to help them in management and upkeep. This bungalow was probably more scientifically correct than any house had ever been. He could only hope it would be correspondingly comfortable. Special attention had been given to cupboard space, and there would be a refrigerator in the kitchen. It was estimated that the cost would be about £600 a bungalow, including transport and erection. The Government was considering more than one type of these bungalows.

Miss LLOYD GEORGE said that the new bungalows were meant for small families, but she hoped the families would not remain small. What, she asked, was to happen as the families grew? Mr. SILKIN said that these houses would not stand up to rough weather: a height of 7 ft. 6 in. was all right in the country, but in towns it was bad. In London the minimum height was 8 ft. 6 in. There was also a real danger of warping with steel houses. There was grave danger of vermin in London and many other large towns. He was advised on high authority that these houses were peculiarly susceptible to vermin. Mr. WILLINK said it was to that matter that he had referred, more delicately, when he mentioned consultation with the Medical Research Council.

The debate was adjourned.

### Diseases Attributable to War Service

During a debate on pensions and grants on Aug. 3 Mr. DOUGLAS directed attention to the refusals of pensions in the case of men who had suffered from certain constitutional diseases or from diseases of which the cause was unknown. He asserted that there was a policy of excluding completely categories of cases and refusing to give them the benefits which the Royal Warrant provided. The Ministry threw back on the

claimant the onus of proof which the Royal Warrant intended to remove. An amendment made to the Warrant on Oct. 4, 1943, had provided that where the injury or disease which led to discharge or death was not noted in the medical reports made on the commencement of war service, a certificate should be given as a matter of right unless the evidence showed that the conditions were not complied with. It further provided that the benefit of any doubt should go to the claimant. The Ministry had ignored these provisions and had said there was a short list of diseases which could not be attributed to war service. He (Mr. Douglas) asked Sir Walter Womersley to recognize that a consensus of medical opinion was not evidence and that it was not permissible to interpret the Royal Warrant by reference to statements by somebody, however eminent. The Ministry must interpret the Warrant by what was contained in it.

Sir WALTER WOMERSLEY replied that he was fortified by the best legal opinion. The Ministry did not "turn down" every case of a disease which the consensus of medical opinion had declared was not due to war service. Account was taken of aggravation by wrong diagnosis or by wrong treatment in hospital. The Ministry was guided by medical opinion on the diseases which could not be attributed to war service. The entitlement practice was based on the advice of experts nominated by the Royal Colleges of Physicians and Surgeons and the Medical Research Council. This procedure had been followed during the war and extended by the holding of conferences with eminent specialists on new problems as they arose. Cancer was one disease scheduled by consensus of medical opinion as not due to the war. Men whose disability was not due to war service or aggravated thereby came under the ordinary social services and got as good treatment as did the ordinary civilian.

*Skin Sores following Malarial Therapy.*—Replying on Aug. 1 to Mr. Robertson, Sir JAMES GRIGG said Army medical authorities were familiar with the cases of soldiers in India who, after prolonged malarial preventive treatment with quinine, mepracine, and other drugs, with the effect of the climate and insect pests, developed skin sores. Arrangements existed for treating these cases in India and also for transferring from India such men as became medically unfit to serve there. Most of the men who had done five years' service over-seas had by now left for the United Kingdom.

### Notes in Brief

Giving on Aug. 1 instances of German looting and vandalism in Italy, Sir JAMES GRIGG recorded that the Germans took the entire library of medical books from the Biblioteca Comunale at Vasto.

In his survey of the war situation, which Mr. Churchill made on Aug. 2, he said the efficiency of the hospitals with our large armies in many varied theatres reflected high credit upon the War Office.

Forty-one cases of smallpox, two fatal, have been reported among British troops in India since the first landing.

## Medical News

Mr. Gordon Harker, the actor, will broadcast an appeal for the Royal Westminster Ophthalmic Hospital, High Holborn, in "The Week's Good Cause" on Sunday, Aug. 20.

The allowance of dried bananas to children with steatorrhoea (including cases of coeliac disease while they have steatorrhoea) will in future be 7 lb. a month instead of 14 lb. Applications accompanied by a detailed medical certificate, should be made to the local Food Office in the usual way.

The prize distribution and conversazione of the Royal Dental Hospital will be held at the hospital, 32, Leicester Square, W.C.2 on Oct. 7 at 3 p.m., when Sir Alfred Webb-Johnson will preside. Past students are asked to accept this as an invitation to attend.

The telephone number of the National Hospital for Nervous Diseases, Queen Square, London, W.C.1, has been changed to Terminus 7721 (7 lines).

The Trustees of the Leverhulme Research Fellowships have approved the award of a grant to A. J. Lea, M.B., Ch.B., for research on the association of colour with other characters. Applications and further information about the Fellowships may be obtained from the Secretary, Leverhulme Research Fellowships, Unilever House, Blackfriars, E.C.4.

The Professional Classes Aid Council (20, Campden Hill Square, London, W.8) exists for the relief of distress among the professional classes and others considered suitable. Lord Dawson of Penn is a patron, and among the bodies represented on the council are the Royal College of Physicians, the British Medical Association, and the Royal Medical Benevolent Fund. The annual report for 1943-4 briefly recounts what the Council has done during the year and includes a financial statement.



## EPIDEMIOLOGICAL NOTES

## Discussion of Table

England and Wales during the week notifications of acute pneumonia were 76 higher than last week, and those of scarlet fever 61 higher, but measles notifications fell by 49.

The rise in scarlet fever notifications was due mainly to an increase of 59 in Yorks West Riding, and of 24 in Glamorgan. Lancashire showed a rise of 47 in the incidence of acute pneumonia, and Sussex recorded 39 more cases of whooping-cough than last week. The largest decreases in the notifications of measles, were in Lancashire and Northumberland with 68 and 42 cases respectively fewer than last week, in Devonshire notifications went up by 31, and in Dorsetshire by 29.

Notifications of dysentery, 149 in all, were 2 fewer than last week. The largest returns were Lancashire 22, Dorsetshire 17, Essex 16, London 15, Yorks West Riding 10.

In Scotland notifications of diphtheria fell by 21, and of scarlet fever by 31. The 86 cases of dysentery were 5 fewer than last week's total; the highest returns were Edinburgh 36, Glasgow 17, and Lanark County 18.

In Eire the incidence of measles fell by 49. Over half of the total notifications were from two areas: Clare, Ennis U.D. 32, and Roscommon, Roscommon R.D. 20. The notifications of diphtheria remained at the relatively high level of the preceding fortnight.

## Tuberculosis in Wales

At the annual meeting of the Welsh National Memorial Association it was stated that the tuberculosis death rate in Wales was lower than in any pre-war year. 890 patients were awaiting admission to hospital—the highest number in the association's history.

## Quarterly Returns for England and Wales

In the first quarter of 1944 the birth rate was 17.9 per 1,000, the highest rate for a March quarter since 1926. In the first quarter of 1943 the birth rate was 16.9, and the average for the five preceding first quarters was 15.0. Infant mortality was 58 per 1,000 live births, and 14 below the average of the ten preceding first quarters. The general death rate was 14.2 per 1,000, compared with 13.5 for the first quarter of 1943 and the average rate of 16.2 for the five March quarters before 1943. The marriage rate of 12.1 per 1,000 was the lowest rate for a first quarter since 1939.

The deaths in England and Wales for 1943 show that diphtheria mortality was the lowest on record. There were 1,368 deaths from this disease, compared with 1,827 in 1942 and 2,641 in 1941. Deaths from respiratory tuberculosis increased by 552 for males, but decreased by 202 for females.

## Quarterly Returns for Northern Ireland

The birth rate during the March quarter was 23.3 per 1,000, which is 2.6 above the average of the five preceding first quarters. Infant mortality was 85 per 1,000 registered births, 10 below the five-years average. The general death rate was 15.6 compared with 17.4 for the average of the five preceding March quarters. Deaths from pulmonary tuberculosis numbered 233 and from other forms of tuberculosis 80, the former being 40 below and the latter 5 above the five-years average. Deaths from whooping cough and infantile diarrhoea were 6 and 23 above the average while deaths from influenza were 92 below. Diphtheria accounted for 26, the same as the five-years average.

## Registrar-General's Annual Report for Northern Ireland, 1940

The births registered during the year were equivalent to a rate of 19.6 per 1,000. The infant mortality was 86 per 1,000 registered births, 16 higher than in 1939. The maternal mortality rate was 4.22 per 1,000 births, an increase of 0.42 on the rate of the preceding year. A general death rate of 14.6 per 1,000 was 1.1 above that for 1939. The downward trend of tuberculosis mortality was arrested by a rise of 14 to 98 per 100,000. Deaths from cerebrospinal fever increased from 17 in 1939 to 58 in 1940. Diarrhoea under 2 years of age was responsible for 387 deaths, 110 more than in 1939.

## Week Ending August 5

The notifications of infectious diseases in England and Wales during the week included: scarlet fever 1,410, whooping cough 1,768, diphtheria 471, measles 2,154, acute pneumonia 376, dysentery 139, paratyphoid 7, typhoid 15.

## INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended July 29.

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year, for: (a) England and Wales (London included), (b) London (administrative county), (c) Scotland, (d) Eire, (e) Northern Ireland.

Figures of Births and Deaths, and of are for: (a) The 126 great towns, (b) London (administrative county). The 13 principal towns in Eire. (c) T

A dash — denotes no cases, a blank space denotes disease not notifiable or no return available.

Disease	1944					1943 (Corresponding Week)				
	(a)	(b)	(c)	(d)	(e)	(a)	(b)	(c)	(d)	(e)
Cerebrospinal fever	43	3	22	2	2	47	4	13	1	3
Deaths	—	—	—	—	—	—	—	—	—	—
Diphtheria	461	20	111	76	15	609	40	127	66	40
Deaths	6	1	2	2	1	6	1	—	—	—
Dysentery	149	15	86	—	1	99	13	160	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Encephalitis lethargica, acute	1	—	1	1	—	1	—	1	1	—
Deaths	—	—	—	—	—	—	—	—	—	—
Erysipelas	—	1	28	18	—	—	—	29	4	3
Deaths	—	—	—	—	—	—	—	—	—	—
Infective enteritis or diarrhoea under 2 years	49	9	11	31	1	61	11	12	36	7
Deaths	—	—	—	12	—	—	—	—	14	—
Measles*	2,352	73	61	86	22	2,262	143	35	20	3
Deaths	2	—	1	—	—	2	—	—	—	—
Ophthalmia neonatorum	61	6	21	—	1	78	7	22	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Paratyphoid fever	11	—	1(B)	1(B)	—	10	2	—	—	1
Deaths	—	—	—	—	—	—	—	—	—	—
Pneumonia, influenza†	450	17	2	4	5	432	24	12	—	3
Deaths (from influenza)	3	—	—	—	—	9	1	1	—	—
Pneumonia, primary	—	—	149	6	—	—	—	135	19	—
Deaths	—	—	26	10	2	—	—	23	5	7
Polio-encephalitis, acute	—	—	—	—	—	1	1	—	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Polymyelitis, acute	12	1	5	2	—	11	1	—	4	—
Deaths	—	—	—	—	—	—	—	—	—	—
Puerperal fever	—	7	10	—	—	—	3	16	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Puerperal pyrexia‡	147	6	9	2	1	163	10	13	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Relapsing fever	—	—	—	—	—	—	—	—	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Scarlet fever	1,530	38	147	40	36	1,979	193	170	44	39
Deaths	—	—	—	—	—	1	—	—	—	—
Smallpox	—	—	—	—	—	—	—	—	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Typhoid fever	18	1	2	14	—	13	1	3	9	6
Deaths	1	—	—	—	—	—	—	—	—	—
Typhus fever	—	—	—	—	—	—	—	—	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Whooping-cough*	2,151	129	33	55	9	1,896	95	26	36	38
Deaths	14	3	1	2	1	10	—	4	—	1
Deaths (0-1 year)	313	35	62	44	17	350	34	68	25	29
Infant mortality rate (per 1,000 live births)	—	—	—	—	—	—	—	—	—	—
Deaths (excluding still births)	4,190	707	562	204	102	4,100	591	444	143	101
Annual death rate (per 1,000 persons living)	—	—	—	—	—	—	—	—	—	—
Live births	7,039	69	937	419	312	6,569	759	940	322	264
Annual rate per 1,000 persons living	—	—	—	—	—	—	—	—	—	—
Stillbirths	217	14	34	—	—	254	26	34	—	—
Rate per 1,000 total births (including stillborn)	—	—	—	—	—	—	—	—	—	—

\* Measles and whooping-cough are not notifiable in Scotland, and the returns are therefore an approximation only.

† Includes primary form for England and Wales, London (administrative county), and Northern Ireland.

‡ Includes puerperal fever for England and Wales and Eire.

§ Owing to evacuation schemes and other movements of population, birth and death rates for Northern Ireland are no longer available.



## The Services

Col N. Cantlie, M.C., late R.A.M.C., has been appointed D.D.M.S. of a Command, and has been granted the acting rank of Major-Gen.

Air Cdre T. C. St. C. Morton, O.B.E., has been appointed an Honorary Physician to the King in succession to Air Cdre H. L. Burton, who has vacated the appointment on retirement from the R.A.F.

Capt C. Soniek, I.A.M.S., has been awarded the M.C. in recognition of gallant and distinguished services in Italy, and Capt. A. G. Hewer, R.A.M.C., in recognition of gallant and distinguished services in the field.

Temp Surg Lieut A. H. Zuckerman, R.N.V.R., has been commended for skill and endurance in services to injured survivors when a merchant ship was wrecked on a desolate part of the coast of Scotland.

### CASUALTIES IN THE MEDICAL SERVICES

*Wounded*—War Subs Capts. G. M. Clark, A. B. Hill, G. C. Kennedy, S. M. G. McGuffie, D. W. Moynagh, A. G. Richards, D. N. Thornton, E. N. Whitley, R.A.M.C.

*Killed in action in Normandy*—Capts C. R. Veall and A. D. Fisk, R.A.M.C.

*Reported missing at sea, now presumed killed in action*—Major E. B. Rotherham, R.A.M.C.

*Missing, believed prisoner of war*—Major J. S. Darling, R.A.M.C.  
*Killed accidentally while on duty*—Capt. S. Conway, R.A.M.C.  
*Died*—Major C. F. Rainer, R.A.M.C.

## Universities and Colleges

### UNIVERSITY OF OXFORD

In a Congregation held on July 29 the following degrees were conferred:

B.M., B.Ch.—J. C. Chartres, F.R.M. Elgood, H. C. Nohl, Nancy D. Cox  
*In absentia*

### UNIVERSITY OF LONDON

The following candidates have been approved at the examination indicated:

M.D.—Branch I (Medicine) G. D. Daruvala, P. Forgacs, J. W. Paultley  
Branch III (Psychological Medicine) W. E. W. Bridger, Branch VI (Tropical Medicine) A. C. Howard

### ROYAL COLLEGE OF SURGEONS OF ENGLAND

At an ordinary meeting of the Council held on Aug. 3, with Sir Alfred Webb-Johnson, President, in the chair, it was decided to invite the following representatives of the branches of practice indicated to attend meetings of the Council during the ensuing collegiate year:

Dr. H. Guy Dain (general practice), Mr. V. E. Negus (otolaryngology), Dr. A. D. Marston (anaesthetics), Mr. George Black (ophthalmology), Mr. G. F. Stebbing (radiology), Prof. R. V. Bradlaw (dental surgery).

It was decided to recognize the posts of fourth house-surgeon at the East Suffolk and Ipswich Hospital and of resident surgical officer and casualty officer at the City General Hospital, Leicester, for the six-months surgical practice required of candidates for the Final Fellowship examination. Sir Frank Colyer was reappointed Honorary Curator of the Odontological Collection of the Museum for a further year. Mr. H. S. Souttar was appointed the representative of the College on the Scientific Advisory Committee of the Radium Institute and Mount Vernon Hospital.

#### Diplomas

Diplomas of Membership were granted, jointly with the Royal College of Physicians of London, to the candidates whose names appear in the report of the meeting of the Royal College of Physicians of London in the *Journal* of Aug. 12 (p. 227). Diplomas were granted, jointly with the Royal College of Physicians of London, as follows:

DIPLOMA IN OPHTHALMIC MEDICINE AND SURGERY—J. A. Chivers, Philomena M. Guinan, W. Harris, H. G. W. Hoare, M. Klein, L. Lurie, S. J. H. Miller, M. C. Mundie, V. G. Patel, E. C. Richardson, R. H. Rushton, W. Shortus, G. L. Simmons, R. Spink, Mabel E. Silwari, G. F. Wright.

DIPLOMA IN MEDICAL RADIOLOGY—K. E. Barlow, R. J. Carr, F. H. Cross, Kathleen M. Packett, G. Steiner.

DIPLOMA IN PHYSICAL MEDICINE—F. S. Cooksey.

Before the meeting of the Council the Blane Medal was presented by Surg. Vice-Admiral Sir Sheldon Dudley, Medical Director-General of the Royal Navy, to Surg. Cmdr. W. A. Hopkins, O.B.E., M.D., R.N., in the presence of Lord Moran, President of the Royal College of Physicians, and the President and Council of the Royal College of Surgeons.

## Letters, Notes, and Answers

All communications with regard to editorial business should be addressed to: EDITOR, BRITISH MEDICAL JOURNAL, B.M.A. HOUSE, TAVISTOCK SQUARE, LONDON, W.C.1. TELEPHONE EUSTON 2111. TELEGRAMS: *Articulate Westcent London*. ORIGINAL ARTICLES AND LETTERS forwarded for publication are understood to be offered to the *British Medical Journal* and unless the contrary be stated.

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B.M.A. SCOTTISH OFFICE: 7, Drumsteugh Gardens, Edinburgh.

### ANY QUESTIONS?

#### Injections for Arthritis

**Q.**—Can you give me any information about the injection solutions into painful joints for the relief of arthritis?

**A.**—An article recently appeared (*Lancet*, 1944, 1, 563) on the injection of joints in rheumatoid arthritis with acid potassium phosphate. Good results being claimed in a large series of cases. The method must, nevertheless, be considered to be in the experimental stage, and further controlled observations will be required before it can be regarded as a safe and effective method of treatment. It would be desirable at the present stage that it should be tried only in the hospital, where rigid antisepsis and careful nursing and observation would be possible.

#### Chloride Content of Blood in Drowning

**Q.**—In cases of drowning, what is the medico-legal significance of alterations in the chloride content of blood and pleural fluid?

**A.**—In cases of drowning water tends to enter the respiratory tract just before death, and it has been found that if drowning takes place in fresh water there is a tendency for the percentage of chlorides to be lowered in the blood generally, and, further, the percentage in the left heart is lower than that in the right heart. When drowning takes place in salt water there is a tendency to increase the chloride of the blood generally, and in particular the blood of the left heart has a higher content than the blood in the right. After drowning in sea water the magnesium is increased in the blood generally, and the amount in the left heart is greater than that in the right. Examination of the blood for chlorides and magnesium in both sides of the heart, is therefore helpful in arriving at an opinion as to whether in a body found in water death was actual due to drowning. These changes are most significant in bodies recovered before putrefaction is advanced. It is obvious that the changes will depend upon the rapidity of death after submersion and particularly upon the length of time the circulation continues after water has been admitted to the lungs—that is, after consciousness has been lost. Obviously the greater length of time between the one phenomenon and the other, the more equal would be the dispersion of chlorides between the two sides of the heart.

#### "Safe" Period

**Q.**—A healthy young woman has borne three children in 5 years. Before marriage menstruation occurred regularly every 30-31 days. Menstruation began again 6 weeks after each confinement and no occurs at intervals of 36 to 42 days. Is it possible (a) to restore previous regularity—e.g., by the use of stilboestrol or progestin—and (b) to advise on a "safe period," however short? The patient's sister, whose periods have always occurred regularly every 21 days, has also sought advice on a "safe period." Would the regular timing of the vaginal temperature before rising provide a useful indication of the date of ovulation in either case, and, if so, could the date be related to a possible "safe period"? Both patients are intelligent women and decline contraceptives on ethical grounds.

**A.**—Some alteration in the menstrual cycle after pregnancy is not uncommon, and unless there is other evidence of endocrine disturbance, such as gross alteration in weight, spontaneous cessation of the rhythm is to be expected. Neither stilboestrol nor progestin is indicated, and although thyroid, gr. 1/2 to 1 each night regularly for two to three months, appears to help to regulate the cycle at times, there is much to be said for adopting an expectant attitude in this case.

Ovulation occurs approximately 14 days before the onset of the next menses, so in a 21-day cycle it is soon after the last period ceases. The only reasonably "safe period" is therefore the 7-14 days preceding menstruation. With a cycle so irregular, as in the first case, it is difficult to predict the time of ovulation, especially

as there is a possibility of spontaneous alteration at any time. With the exception, perhaps, of the two or three days immediately after menstruation I should therefore hesitate to advise any time as being safe.

Observations on temperature changes during the menstrual cycle have mostly been based on rectal recordings, but the vaginal temperature probably tallies closely. There is a general agreement that the highest temperatures are registered during the premenstrual phase, with a fall at the onset of the flow. It has also been claimed that on the day of ovulation there is a fall to temperature (Zuck, T. T., *Amer J Obstet Gynec*, 1938, 36, 998), but this is not confirmed by all workers. In any case the range of variation is so small and observations need to be so accurate and carefully controlled that this cannot be recommended as a practical means of assessing the time of ovulation. Both patients, however, if observant, might be able to get some indication by watching for slight lower abdominal discomfort and for mucoid vaginal discharge, sometimes blood-stained, either of which may appear for one to three days round about the time of ovulation.

#### Function of Spleen

Q.—*Apart from its activity in blood formation and destruction, what is the function of the spleen? Is there any evidence of an internal secretion, and could you recommend a recent monograph on the spleen in particular or the reticulo endothelial system in general?*

A.—The spleen acts as a reservoir for blood, though the significance of this function varies in different species and is probably minimal in man. The spleen also plays an important part in infection and immunity. This is very prettily shown in the rat, which frequently has a latent Bartonella infection but is liable to succumb to the infection if the spleen is removed. There is some relation between the lymphatic tissue of the spleen and the absorption of protein. Extracts of the spleen have been said to reduce the platelet count and the red cells, and they have been used for the latter purpose in polycythaemia, but the effects have not been generally confirmed. Spleen has also been used as a treatment for tuberculosis. It is doubtful whether the spleen has an internal secretion in the ordinary sense of the term. Most of the functions of the spleen can apparently be taken over by other tissues, but the red cells show abnormal nuclear remnants or Howell-Jolly bodies indefinitely after splenectomy. Recent monographs on the spleen are *Physiologie der Milz* by E. Lauda, Berlin (1933), and *The Spleen and Resistance* by E. Perla and J. Marmorston, Baltimore and London (1936), the latter is probably the most suitable book for the present inquirer. Two attractive French books, both published by Masson of Paris, are *La Rate, Organe Reservoir*, by Leon Binet (1930), and *L'Exploration Fonctionnelle de la Rate*, by Ed. Benhamou (1933), neither, however, deals at length with questions of an internal secretion or immunity. The best recent account of the reticulo-endothelial system is probably the 300 page review by R. H. Jaffe in Hal Downey's *Handbook of Haematology* vol II, London, 1938.

#### Isolation of Scarlet Fever

Q.—*What is considered the minimum quarantine for uncomplicated cases of mild scarlet fever treated with serum?*

A.—The inquirer doubtless means minimum period of isolation. Current practice in fever hospitals is to release adults towards the end of the third week and children during the fourth week from the onset. It is known that about 50% of patients harbour haemolytic streptococci in varying numbers on release from hospital, but only some 1% to 4% (the higher rates in the winter months) give rise to new (return) cases. Patients nursed singly can usually be discharged somewhat earlier because reinfection does not occur, as it frequently does in a hospital ward accommodating 20 patients mingling more or less freely when convalescent. If two negative consecutive swabs are obtained the patient may be released still earlier, the nose and nasopharynx being examined as well as the faeces or tonsils. There is available neither a simple test to determine virulence of the streptococcus nor a reliable criterion to determine how many organisms are likely to lead to infection.

#### Muscular Twitching before Sleep

Q.—*A man of 35 states that shortly before going to sleep his body gives a violent convulsive movement. This is frequently repeated and occasionally occurs during his sleep. He is a normal, healthy man, mentally stable, and free from any evidence of organic nervous disease. I have heard of, and experienced, mild and sometimes generalized muscular twitchings when the body is relaxing, but I have never come across a case where they are so regular, persistent, and violent. Are any further investigations indicated?*

A.—A solitary muscular twitching of an involuntary nature which occurs as a person is going off to sleep is quite normal. Its frequency and the number of muscles involved vary greatly from person to person. Everyone has experienced a sudden, quick jerk of the

leg or arm, and the usual story is that this occurs in any limb a few times a year. It has been observed that people who have very frequent twitching of this sort are more often subject to epileptic fits than are others, but this does not mean that this particular patient either is epileptic or is going to develop fits. It might be interesting, however, to inquire whether he has epilepsy in his family.

#### Non-tropical Elephantiasis

Q.—*A middle aged woman has severe non-tropical elephantiasis. Is there any operation which would offer a possibility of relief or cure?*

A.—It is assumed that the condition affects one leg, and that there is no discoverable vascular obstruction in the groin, pelvis, or abdomen. In such circumstances it may be possible in a favourable case to place a full-thickness (pedicle) skin graft with its lymphatics as a bridge between the "oedematous" thigh and the normal abdominal skin. The graft should be placed so that the lymph stream through it may flow in the same direction as it followed when the skin was in its original position. When this method cannot be adopted, the alternative is to excise the thickened subcutaneous tissue with broad longitudinal strips of the deep fascia, and then either to trim the skin so that when it is sutured it fits tightly over the exposed muscles, or to remove the skin completely and make good the defect with split skin grafts placed directly on the muscle or fascia. This procedure must be carried out in multiple stages, one side of the limb being done at a time. Should this fail, amputation may be inevitable.

#### After-treatment of Acute Nephritis

Q.—*Two children (5 and 6) had a sharp attack, three months ago, and now although the blood pressure and blood chemistry are back to normal, each continues to pass albumin in the urine, varying from 0.5 gms to 1 gms per 1000 (Esboch). They are kept in bed, and most textbooks agree that bed rest is advisable until there is no further reduction of albuminuria. However, no definite progress is being shown as on some days the protein cloud is as heavy as it was two months ago. Is the object of bed rest merely to avoid droughts and if so are not the risks of a chill less in a well-clothed child up and about than in one who feeling perfectly fit, is constantly in and out of bed dressed only in a flannel bed jacket, despite all the efforts of the nursing staff to keep him in bed?*

A.—Assuming that by "a sharp attack of acute nephritis" the questioner means nephritis of abrupt onset associated with haematina (Type I nephritis), often a sequel of tonsillitis, two points should decide whether further bed rest is necessary or not. A urine deposit should be examined for red blood cells. If no more than a few are seen, the patient should be allowed up and the ultimate prognosis should be good. Secondly, the presence of orthostatic albuminuria should be excluded. This can be done by examining the early morning specimen of urine. Specimens passed later in the day may contain additional "orthostatic albumin" if the child has been sitting up, and more so if walking about, the maximum amount occurring after 2 to 3 hours. Therefore, if there is no excess of red blood cells in the urine deposit, and if the early morning specimens contain no more than a faint trace of albumin—the other clinical features being as described—complete recovery is to be expected and the patient should be allowed up. Convalescence should be managed in the usual way.

#### Toxaemia persisting after Parturition

Q.—*In most cases of toxæmia of pregnancy the condition clears up after parturition. What is the correct treatment for those cases where the blood pressure reading remains abnormally high and a variable degree of albuminuria persists? In the type I have in mind there are no casts or blood cells in the urine and primigravidae can behave so well as multiparae.*

A.—The persistence of an abnormally high blood-pressure reading is common after a toxæmic pregnancy. Prof. Browne and Miss Dodds (*J Obstet Gynaec Brit Emp*, 1939, 46, 443) found a persistent hypertension in about 40% of patients who had suffered from pre-eclampsia toxæmia. Recent work by Theobald, and in the United States, suggests that this hypertension is probably not caused by the toxæmia, but that such patients are potential hypertensives and that their blood pressure would rise with age even if they had never been pregnant. The American workers claim to have shown that hypertension is an extremely common condition and that, in fact, 40% of adults are actually or potentially hypertensive. Hypertension following a toxæmic pregnancy does not call for any treatment and is important mainly for its possible effect on subsequent pregnancies, since Prof. Browne and Miss Dodds (*J Obstet Gynaec Brit Emp*, 1942, 49, 1) have also shown that in cases where the blood pressure exceeds 150/100 before pregnancy, or in the first 20 weeks, in only 30% does the foetus survive.

It is known that albuminuria may take a long time to clear up. A case has been recorded where albuminuria persisted for two years.

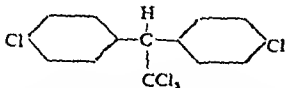
after confinement and then cleared up completely. No treatment is required.

The persistence of hypertension and albuminuria together for a long time after childbirth is suggestive of either chronic nephritis or malignant hypertension, though neither of these is likely in the absence of casts. In such cases, however, examination of the fundus oculi and renal function tests should be carried out.

#### D.D.T.

**Q.**—I understand the powder used so successfully in Naples to rid both persons and rooms of lice is known as D.D.T., which chemically is dichlor-diphenyl-trichlorethanne. What is the graphic formula for this?

**A.**—The formula is:



The drug is used diluted with an inert carrier, not "neat."

An account of D.D.T. was given in a leading article in last week's *Journal*.

### INCOME TAX

#### P.A.Y.E. on Fees for Unaccompanied Evacuated Children

"S." writes: An inspector of taxes claims that, as regards an M.O.H. not in private practice, these fees cannot be treated as part of general earnings assessable under Schedule D, and consequently tax should be deducted under "pay as you earn."

\* For tax to be so deductible the earnings must be emoluments assessable under Schedule E—i.e., derived from holding an office or employment of profit. As we understand the position doctors undertaking this work are not employed by the local Medical War Committee Bureau—i.e., the relationship of master and servant is not created by the arrangements made—and if so the fees are assessable not under Schedule E but under Schedule D, as professional profits. It is suggested that this view be put to the inspector of taxes concerned.

#### Retirement

R. C. inquires: "Supposing I retire at the end of next March, when do I pay my last instalment of income tax on my practice?"

\* The last year of assessment will be that ending April 5, 1945, the tax payable being due in two instalments on Jan. 1 and July 1, 1945. If, however, "cessation" is claimed, the last year is liable to be assessed on the basis of the earnings of the current year, in which case some supplementary amount of tax may become payable later.

#### Hospital Appointment: "Living Out"

"M. X." was recently living in at a hospital but now lives out and receives £150 in lieu. Is tax payable on this £150?

\* Yes. Employees living in are in favourable circumstances as regards income tax, and no special concession is made when those circumstances cease to operate.

#### "Pay as you Earn": Wife's Earnings

P. A.'s wife does part-time locum work, but does not earn more than £80 a year. Tax is being deducted from her earnings.

\* As a married woman Mrs. A. is entitled to the special allowance of £80 a year, so that she should not be liable to tax at all taking the year as a whole. It may be, however, that her earnings since April 5 last have exceeded the proportion of the annual £80, in which case some tax would be deducted; but that can be rectified during her next period of locum work. We suggest that P. A. ask the inspector of taxes to confirm that Mrs. A.'s code provides for allowance of the £80 to which she is entitled, and, assuming that to be the case, should then await rectification of the matter on the next occasion that Mrs. A. acts as locumtenent at the institution in question.

#### "Pay as you Earn": Locumtenent

W. B. inquires whether the fact that he still does some work in connexion with a former practice (which he did not sell) affects the basis of calculating his liability as an "indefinite locum."

\* In law clearly "no." As a matter of convenience relatively small Schedule E earnings—e.g., those received as a visiting hospital physician—are frequently omitted from the Schedule E assessments and regarded as outside "pay as you earn" where they can be looked upon as being by-products of a general practice. But the facts in this case are otherwise. W. B.'s employment is the main source of his earnings at present, and "pay as you earn" properly applies.

### LETTERS, NOTES, ETC.

#### Oedema of Ankles in Hot Climate

Dr. JOHN G. MUNRO writes: Dr. Watson Newton's letter on the above subject (Jan. 1, p. 32) prompts me to quote an experience I had of similar cases on a troopship some months ago. The first cases occurred on the second day in the Red Sea. There was a sharp rise in incidence for the next four days, then a gradual decrease, and for the last few days of the voyage only two cases were recorded. Just over 1% of the troops were affected. There were no instances of the complaints among the ship's company, permanent staff. The history in each case was fairly constant—a gradual onset of swelling of both ankles, begun usually on the medial side just below the malleoli and accompanied by tiredness of the feet and by aching or stiffness in and around the ankle. There was no history of trauma that the patient was aware of. Clinically all degrees of oedema were noted, from slight puffiness to an extensive swelling which obliterated the normal contour of the ankle, extending on to the dorsum of the foot and 1 to 3 in. in the leg. In these latter cases there was obvious pitting and sluggishness on pressure. The local temperature was raised at several cases showed mottled dark-blue discoloration similar to that seen in a bad sprain. Function was not unduly interfered with by both active and passive movements were partially restricted by stiffness. There was no oedema of other parts or joints, and so far could be ascertained no renal or cardiac cause for the complaint. The general health remained normal. The treatment prescribed was rest. In severe cases the ankles were supported in elastoplast, and when bed space was available the patient was admitted to the sick bay. The average time for disappearance of signs and symptoms and return to normal duties was four days. The less marked cases were excused duties and advised to rest as much as possible. The recovery took nearly twice as long to recover, perhaps because they did not or could not rest efficiently. The aetiology of this curious complaint seems obscure. At first it was thought that prolonged standing, repeated minor trauma to unsupported ankles (all men wore gym shoes) from the inevitable climbing of gangways, etc., contributed mainly, especially in men not yet physically hardened. More recently, however, I have seen the same type of case in thoroughly trained infantrymen, on short voyages, who were wearing boots at the time. The incidence here was negligible, however. I would like to hear the opinions of others who may have seen similar cases.

#### Gonorrhoea in North Africa

B. S. writes: To complete Dr. Campbell's summary (July 3, p. 4) it should be stated that tests had shown adequate absorption of the drug into the blood stream. The paper at once recalls the inadequate absorption of quinine tablets in malarial. What part of the alimentary canal absorbs the drug? Had conditions arisen that hurried the drug along this part or along the whole canal? Was partial inadequate treatment of the civilian population created a resistant coccus?

#### Marriage and Parenthood

Dr. H. M. DENHOLM-YOUNG (Farningham, Kent) writes: We are agreed that our patients expect us to be able to repair marriages and to prepare them for marriage, and we agree that we were not trained for this as students, but no one has suggested books. May I venture to suggest: for patients of all grades of intelligence, *The Sex Factor in Marriage*, by Dr. Helena Wright (Williams and Norgate Ltd.); for serious study, *Ideal Marriage*, by T. Van de Velde (Hoepli); and, regarding birth control, *Parenthood: Design or Accident*, by Michael Fielding (Williams and Norgate); and possibly for adolescents, *Men, Women, and God*, by Herbert Gray (Student Christian Movement). The first book, given to the husband, usually repairs a breaking marriage without further advice, and is obtained from medical bookshops.

#### Concurrent Herpes Zoster and Varicella

Dr. C. H. BARNETT (Winchmore Hill, N.21) writes: Dr. J. J. Manning (July 22, p. 115) stresses that his patient with both herpes zoster and chickenpox is 63 years old. Since varicella is predominantly a disease of childhood and herpes zoster can occur at all ages, examples of the twofold condition would certainly be expected among children in the main if the view mentioned by Dr. Manning that coincidence alone is responsible were correct. The figures do not confirm this expectation, however. Out of 32 similar patients mentioned in British journals, 22 were more than 25 years old. Several were over 60, when varicella is most unusual. Coincidence is therefore unlikely to be the complete explanation.

#### Hospitality for Doctors' Children

Offers of hospitality for the families of doctors practising in dangerous areas are still being received. Any reader interested should communicate with the Secretary, British Medical Association, B.M.A. House, Tavistock Square, London, W.C.1.

# BRITISH MEDICAL JOURNAL

LONDON SATURDAY AUGUST 26 1944

## PSYCHOLOGICAL MEDICINE AND THE FAMILY DOCTOR\*

BY

R. D. GILLESPIE, M.D., F.R.C.P., D.P.M.

*Physician for Psychological Medicine, Guy's Hospital; Acting Air Commodore, R.A.F.V.R.*

The opening of the York Clinic for Psychological Medicine at Guy's is an opportune moment for discussing the applications of psychiatry to general practice. The need for doctors to pay attention to the psychological aspects of medicine has been recognized more and more in the past two decades; but tradition dies hard, even if it is not a very old tradition, and there is still reluctance on the part of many to take any lively interest in psychiatry. The curriculum is partly to blame. Although there was a curriculum conference not many years ago it did not succeed in producing more than recommendations that the teaching of psychological medicine should be supplemented in certain ways. The compulsory part was still left at attendance at lecture-demonstrations in a mental hospital. The fact that mental hospital patients are only part, and numerically a minor part, of the domain of psychiatry was not recognized by making anything else compulsory, nor was it made obligatory to have at least one question in this field included in the final examination. When a subcommittee of the British Medical Association surveyed the field of education in psychological medicine nearly 20 years ago it was discovered that one university in the Empire went so far as to include psychiatry as one of the subjects equivalent with medicine and surgery in the final examination. Now Edinburgh has followed suit at the request of the students themselves. This observation should be printed in italics. But, as Mr. Slesinger often points out to me, with some envy perhaps, the Scottish student is a far-seeing person.

### Prevalence of Psychological Disorder

It would be very much to the advantage of medical men generally that more teaching of this sort should be available, not only in the interests of their patients but often in their own. To show how much the psychological aspects of disease matter, it is only necessary to quote the results of investigations that have been made in recent years. At Guy's Hospital, for example, it was found that one-sixth of all those who turned up at general medical out-patient departments were not suffering from any organic disease but from symptoms due to psychological causes. This series of Dr. Bruce Pearson's included over 1,200 cases, and has been supplemented at the same hospital by a study of a further 500 cases by Squad. Edr. A. M. G. Campbell, who found that 13% were suffering from psychological disorder. Where illness of the more chronic type is concerned the proportion has been found in 1,000 cases to be approximately 35%. This was the figure arrived at by Halliday, acting as medical referee in a district of Scotland. These data are obtained from clinical material of the type that would as a rule appear in general practice.

Where a consulting practice is concerned the position is not very different. Prof. J. A. Ryle told me some years ago that anxiety neurosis was one of the most frequent diagnoses he had to make, and Air Cdre. Conybeare is of a similar opinion—at any rate, so far as war medicine is concerned.

### Presenting Symptoms

These figures do not mean, of course, that the patients always or even usually come with their symptoms formulated in psychological terms as depression, worry, or what not, although it is my impression that on the whole they do so now more frequently than they did in the past. Whereas formerly they were apt to complain almost exclusively in terms of physical discomfort, it seems more common nowadays for them to say that they feel nervous or that they cannot concentrate or that their memory is bad. This is probably correlated with the decrease of gross hysterical symptoms in the form of paralysis, blindness, etc., as opposed to frank anxiety states, which have been relatively more frequent in this war in contrast to the last—a difference which some have sought to explain in terms of an alteration in war conditions, but which merely parallels a change that has occurred in civil practice in the intervening 20 years. The late T. A. Ross remarked the same thing in one of his reports of the work of the Cassel Hospital—that in the course of the years it had seemed to him that there had been less tendency for neurotic patients to emphasize bodily complaints and more inclination to talk in terms of fear and worry. I have received very much the same impression in both civil and military practice, and I have sometimes longed for the good old days when paralysed limbs and anaesthetized senses could be demonstrated in Sir Arthur Hurst's graphic manner to both patient and student, and when there was often something much more tangible to get hold of than a phobia or a blank depression of spirits. The change depends partly on public education and partly perhaps on doctors themselves knowing more about these matters as a result of advances in pathology on the one hand and in psychopathology on the other. The discovery of the Babinski reflex made it much more easy to distinguish organic from functional paralysis, just as other discoveries made it impossible for doctors to speak of Parkinsonism any longer as a "functional" disease, as Gowers did in his famous textbook.

### "A Rose by Any Other Name"

It still happens, however, that a physical diagnosis covers a fundamentally psychogenic condition. Such diagnoses as "debility," "anaemia," "rheumatism," and "gastritis" are apt to be labels for what is really a psychoneurosis. Years ago Dr. Millais Culpin showed this very well when he produced a statistical table of the incidence of these alleged conditions in a large industrial concern. Taking the sick returns year by year, he found that when the number of diagnoses of anaemia, gastritis, and dysmenorrhoea went up those of neurasthenia, "nerves," and general debility went down; in other words, these are often interchangeable labels. Recently war experience has provided a further illustration of the same thing.

When a special unit was opened for the treatment of rheumatism it was found that more than one-third of the cases sent there were not rheumatic at all but were psychoneurotic in some sense. For example, a man aged 20, whose case was described to me by Wing

\* A lecture delivered at Guy's Hospital in May, 1944.

Cmdr. J. Flind and Squad. Ldr. Barber, had complained of the fairly sudden onset of pain in his shoulder, hip, and knee-joint on the left side, about nine weeks before admission, associated with attacks of dyspnoea, palpitation, and dizziness. He had breathlessness and palpitation, but no pains, before entering the Service. When he joined up he was given disciplinary training; he felt very low in spirits, complained of aches and pains, and was put to bed. Being allowed up, he was transferred to another station, where his symptoms soon reappeared and he was sent to bed again. It was found that he had always been an excitable worrying person more or less afraid of the dark and upset by the sight of blood; his mother was herself nervous. His symptoms appeared in the Service when he was put to a type of training which he disliked enormously, and reappeared when he was put on guard duty, which he disliked still more. He said frankly that he was "seared stiff of these guards." He had no physical signs, and the only positive findings were psychological ones.

The same thing holds in many cases of appendicitis in which a normal appendix is found on operation. I still remember vividly the first case of this sort that I had under my eye as house-physician. I was not trained in psychological medicine then; but this man's appendix was quite normal, and I noticed during his convalescence that he was inordinately fond of self-display, wearing a gaudy dressing-gown, which he might be said to flaunt in front of the nurses as he strolled about the ward. I have no doubt now that had I known something of psychological medicine then one unnecessary operation could have been avoided. We all know of teeth taken out unnecessarily, on the assumption that symptoms, really psychogenic, were due to dental sepsis, of refractive errors of plus one or minus one diopetre corrected by glasses but without ultimate relief of the headache, which was due to anxiety of some sort; and of exploratory laparotomy with negative findings in, say, a depressive illness.

#### Psychosomatic Medicine

But it is not only conditions mistakenly diagnosed as physical that are to be accounted for by psychological factors. The term "psychosomatic medicine" covers also conditions which have a definite peripheral pathology of structure but in which psychological factors are important, sometimes the most important, determinants; for example, in some cases of asthma, of certain skin diseases such as prurigo, of duodenal ulcer, and of hyperthyroidism.

Not long ago I saw a man with a fairly widespread pruriginous eruption, which had been very persistent and was associated with a good deal of depression of spirits and insomnia. Repeated and vigorous treatment for his skin did not have any lasting effect. It was then found that his symptoms had begun when he was sent abroad on service and that his going abroad was only the last of a series of efforts to get into a really dangerous enterprise, although he was certainly over the age at which front-line service was usually permitted. He had volunteered for two of the most risky forms of service and had been refused these on account of his age. It was curious that he should have been so unusually persistent in seeking danger. It transpired that he had a sense of shame for having developed neurotic symptoms in the last war so that he was invalided home, furthermore, he had a great admiration for, and at the same time considerable fear of, his father, who was a very severe man with an impulsive temper. A sense of unworthiness acquired vis-à-vis his father had made him want to live to please him. This apparently was the main driving force of his life, and although he was married and had a family his great desire was to justify himself in what he thought was his father's opinion, and it was this that caused him to volunteer for the dangerous jobs. In actual fact the attempt to face the rigours of a campaign had made him tense and nervous, had upset his health and helped to bring on his skin eruption, and kept him miserable at what he considered his failure. Discussion of this attitude and the realization of its immaturity enabled skin treatment to proceed with final success.

Another patient with impetigo which was suspiciously persistent turned out to be suffering from acute apprehension about return to duty—not because he was a coward, but because he had had an extremely disturbing experience which had stamped itself on his mind in a way that made him feel it was impossible to face a recurrence of the same situation, although previously he had behaved with courage and devotion.

It is possible to show that asthma has all sorts of relationships to mental events; that hyperthyroidism is especially apt to occur in people who have been anxious over a long period; and that rheumatoid arthritis is found more often in people whose emotional furniture is disarranged. Naturally the

relationship of the pathological bodily state to the psychological aspects is a very varied one, but the simplest is where the precipitating factor is psychological—for example, in asthma sustained by an unhappy domestic situation, or, as Rogersen showed, in children in whom the development of asthma may be precipitated by an over-anxious parental attitude.

#### Medical Scepticism

It is of course natural for anyone approaching the problem from the angle of general medicine to be very sceptical about the relationship of psychological disturbance to what is obviously physical disease. I remember a meeting of the Asthma Club many years ago, when it was obvious that some of the members were extremely resistant to the suggestion that an asthmatic attack could be precipitated by an idea just as much as by an injection of something. But appreciation even of the "conditioned reflex" process would have prevented anyone being surprised by this.

The story of the woman who had an asthmatic attack on seeing a bouquet of artificial roses has been paralleled a number of times; for example, in the case, recorded in an American journal, of a woman who was allergic to onions and who immediately developed conjunctivitis and a stopped-up nose on seeing, apparently, onion peelings on the rug. On withdrawing to another room, she told the maid that there were onion peelings on the floor and they had made her sick. The maid apologized and said they would be removed immediately, but soon returned and said that they were the remains of a narcissus bulb which a dog had chewed.

This type of thing is one of the simplest examples of the effect of a psychological fact on what looks like an entirely bodily ailment; but it is worth knowing that a great many more complicated psychological patterns—for example, a domestic situation—can have the same effect. It has also been noticed that a psychological upset, or at least a period of psychological tension, often precedes the appearance of a duodenal or even a gastric ulcer.

#### Terminology

The general practitioner is apt to treat psychiatry as an esoteric mystery, and this is probably in part the fault of the professors of the subject, but not entirely so. Many doctors profess to be deterred by the terminology, but I am inclined to think that this is a kind of rationalization for a refusal to become interested. Actually there is no branch of medicine in which the general practitioner is more fitted to undertake or in which he has more opportunities. First, as to the objection about terminology: the best practical work in the English language about the psychological treatment of patients is T. A. Ross's *Common Neuroses*. It is written in the simplest English, and there is hardly a technical term anywhere. It describes mainly psychoneurotic conditions. But if the terminology is taken as a whole it will be found—for example, in a standard textbook of psychiatry such as Henderson's and mine—that so far as syndromes are concerned not more than half a dozen names are necessary for classification purposes, and of the half-dozen major groups the most outlandish designation of the lot (namely, schizophrenia) has become almost a household word—thanks, it is true, largely to the sensational press. It is only when you come to psycho-analytic terminology that much special knowledge is required; but the psycho-analytical method is highly specialized, and as it is of practical use, for a variety of reasons, only in a minority of psychological illnesses this problem need not trouble the general practitioner.

#### Special Opportunities of the Family Doctor

On the positive side the family doctor has certain advantages. First and foremost he has, or should have, a good working knowledge of human nature. General practice is one of the best training grounds in that subject. Psychological illness is, roughly speaking, a matter of human beings in personal distress very often because of their ignorance, shortcomings, disappointments, and dissatisfactions, and still more often because of their fears. The study of human nature is therefore profitable not only in teaching one how to handle one's patients but in knowing how to cure, or at least to help, anything from one-sixth to one-third (some would say more) of the illnesses for which they consult their doctor. In this sense anyone who cares to



study this topic is capable of becoming a psychotherapist up to a point although few people will deny that the best psychotherapists are born as well as made. It is however, to be expected that so long as doctors as a whole tend rather to shun the psychological aspects of their practice, the number of irregular practitioners in this field is likely to be considerable. Many of the triumphs of those who practise suggestion in various disguises are achieved in patients in whom the doctors have not recognized the psychological basis for their illness. The medical man, however, has certain advantages of his own, although his very knowledge prevents him having that sublime confidence which comes so naturally to the quack. In the first place, the psychological distress which the patient is suffering expresses itself very often in terms of bodily discomfort—indigestion, palpitation, and so on—and only a doctor is in an authoritative position to evaluate such symptoms. Unfortunately medical education tends to over-emphasize the structural aspects of pathology. It is a pity that the student's physiological work does not concern itself a good deal more with the effects of the emotions on the bodily functions. He might then never forget that when symptoms of a disturbed organ are presented to him one of the causes that he must always remember is the emotional or psychological one. This, however, is the last that he usually thinks of, and a great deal of time may be spent on laboratory investigation before the patient is even asked whether he is worried or not. Psychological factors are so pervasive that they should enter into consideration in almost any differential diagnosis in the first instance. This at any rate, would be safer than not considering them at all.

#### Suggestion

There is another advantage that the doctor possesses. Like the priest he is a symbol of mysterious power in the eyes of his patients and has in consequence a great capacity for allaying anxiety. We are apt to forget how thin is the veneer of culture and adult control, and how often in times of distress, especially if the distress is fundamentally distress of mind rather than of the body, people tend to think in primitive terms. It is in such circumstances that suggestion is particularly potent, yet few doctors consciously practise suggestion, although they are in a position to use a very enlightened type of it since they combine the authority conferred on them by the more childish aspects of their patients' minds with the enlightenment contributed by their own education in disease.

I am not advocating that suggestion as such should be widely used, yet it is more appropriate for the ill educated, and is sometimes the only form of psychological treatment that is applicable to them. How powerful it is is illustrated by the famous story told by Dr John Brown of Edinburgh, who reported the case of a labouring man affected with colic, for whom he prescribed some medicine, directing him to take it and return in a fortnight assuring him that he would be quite well. At the appointed time the man returned entirely relieved and jubilant. The doctor was gratified at the manifest improvement in his patient's condition and asked to see the prescription which he had given him, whereupon the man explained that he had taken it as he had understood the directions, by swallowing the paper!

#### Education and Suggestibility

I used to think that the more educated people were the less suggestible they became, but this is certainly not by any means always the case. Many years ago I acted as assessor for the Asthma Research Council to a doctor who claimed to cure asthma by suggestion. I selected 12 asthmatic patients for him and he proceeded to use his method in my presence. He employed what to my mind was a very simple form of suggestion and after one session three of the 12 patients proclaimed themselves better, and these were certainly among the most intelligent of the small group. Similarly Prof Witts and his co-workers found at the Asthma Clinic at Guy's that they had almost as much success for a time with injections of distilled water as they had with vaccines and the like.

The point is that suggestion is the simplest form of psychotherapy and does not require a technical knowledge of psychopathology in the modern sense. The family doctor is in a peculiarly good position to apply it, because of his special

prestige with the patient. It is true that he uses suggestion all the time, more or less unconsciously, when he gives a bottle of medicine or some other treatment that he himself has faith in, but deliberate and discriminating use of suggestion as an additional weapon is at present rather neglected.

#### Iatrogeny

There is a negative aspect of this matter of suggestion which is not so much to our credit. There is a chapter omitted from medical textbooks which might be headed Iatrogenic Diseases—that is to say, diseases produced by doctors. It is not well enough realized that it is dangerous to give a label to a set of symptoms of disease until you are convinced that it is the right one. If a syndrome is psychologically produced (which of course the patient does not know), and if the doctor also does not know this and calls it gastritis because the patient complains of indigestion, or a weak heart because he complains of breathlessness or precordial pain, or even if he attaches to it some cabalistic letters such as D.A.H., then he has implanted a suggestion in the patient's mind which fixes his anxiety in a way which, if not quite indehible, is at any rate very hard to undo.

The advance of clinical knowledge has definitely limited the scope for iatrogeny. The number of young people who were made into chronic semi-invalids by the diagnosis of a "weak heart" on the strength of a complaint of breathlessness or palpitation or in the pre-Mackenzie era, on the basis of a murmur must be very much less than it was, and though no doubt we have all encountered a case or two of the sort, colitis is not diagnosed on such dubious grounds now as in Axel Munthe's day. "Dropped kidney" is not heard of any longer as a cause of general ill health, but the old notions of "dropped stomach" and "dropped colon" die hard in spite of Hurst's demonstration years ago that a significant proportion of Guy's winning fifteens carried their stomach nearly in the pelvis. One still finds an occasional belt festooning the abdomens of neurotic patients. A prop of that sort only fixed the patient's conviction that he is physically incapable. All diets and regimes, and often medicines, that are not founded on definite physical findings—not necessarily x-ray or laboratory findings, but those based on a satisfactory clinical history and examination—are apt to produce the same result. This is even truer of operations that have been performed unnecessarily. The experience of such an operation is very impressive, and it is difficult for the doctor who comes afterwards to convince the patient that his symptoms are psychogenic and rather unhappy for the doctor who has the task of somehow getting over the fact that a colleague of at least equal standing has gone the length of operation. I have known such operations to be performed for broken hearts, angry fathers, sexual guilt, depression of spirits, anxiety of all sorts, and even on account of mistaken pride—the patient herself knowing that she had no physical ailment really but lacking the courage to tell her parents that she had simply been giving a demonstration and was not ill at all. In that instance the play went on and the appendix came out and the patient was no better a character afterwards, but rather the reverse. It is however, only fair to observe that the number of operations performed in the mistaken belief that an organic cause exists, when the condition is really psychogenic is less than is sometimes supposed as L. H. Ziegler has shown.

#### Types of Psychogenesis

It is worth while pointing out, what has not usually been said that in the psychological approach to patients the family doctor has advantages not possessed by any specialist or consultant. The reason for this becomes clearer when we remember that the main causes of psychological ill health can be classified as (a) constitutional, (b) situational (to use an ugly but self-explanatory word), and (c) historical in the sense of something dependent on events far back in the patient's life. It is especially in a and b that the family doctor possesses advantages. In connexion with both it is necessary to remember that there is no apparatus or technique which will make even the most able specialist always certain when the patient is telling the truth or is concealing it and so he has to depend for some of his information on outside sources, which are often not nearly so accessible to him as they are to the family doctor.



Again, many psychological problems are closely related to the character and temperament of the patient, and there is no satisfactory laboratory or consulting-room test of character and temperament, although some things are helpful. Nothing that we have at present surpasses or even as a rule equals in reliability the knowledge of the day-to-day behaviour of an individual such as is accessible to those who are in contact with him in his, so to speak, natural surroundings. In contrast with the consulting-room—which represents a special and artificial environment in which it is very easy (in fact, almost inevitable for the patient, at any rate in his first interview) to display a façade that is extremely artificial—the family doctor is much more likely to be in a position to know when the patient is being truthful and to learn something about his temperament, not only from contact with the man himself but also from his relatives and possibly some of his friends.

These considerations have a very important bearing on the evaluation of the various types of causal factor, whether constitutional, situational, or historical. The assessment of the constitutional factor, for example, depends very much on a knowledge of the family history. A family whose child I was treating concealed from me for a whole year the fact that an uncle had died insane and that the brother was a "near-miss" to schizophrenia. The family doctor had sent this case to me by post, as it were, and I had not had an opportunity of talking with him. It is astounding with what aplomb people will say there is no mental illness in their family. One realizes this especially when, from some other quarter not known to either patient or relatives, one happens to hear that there is. Contrast this position with the possibilities of the family doctor, especially if he has lived in the same district a considerable time and knows the people. Sir Thomas Clouston made an inquiry into the family history of 83 families taken at random in a country parish in Scotland, all the members of which were personally known to him for three generations.

He said, "I took every family I really knew, and no others. I made no selection. They were all country people—decent folks, hard-working, thrifty, few very poor, indeed mostly money-loving, with scarcely any drunkards. . . . I took advantage of my intimate knowledge of the people as a doctor to count the lesser attacks of melancholia, the milder delusional states, and the milder degrees of imbecility that would not have gone into any public statistics of lunacy or census schedules. Still, they were all mental diseases or defects just as truly, from the scientific point of view, as our acutest case in Morningside" (the Royal Edinburgh Mental Hospital). "The result was this—that, of those 83 families, I knew that in 41 of them one or other of these four diseases had occurred."

His remarks refer, of course, only to more or less strictly mental diseases; but the same is just as true, and even more important because they are in greater number, of the conditions that we now know as psychoneurotic and psychopathic. There has been a tendency on the part of over-enthusiastic psychotherapists to neglect, and not to trouble to evaluate, the constitutional factor in the patients whom they undertake to treat. There is a fair amount of evidence that such disorders as phobias, which are often supposed to be entirely determined by complexes, are far more often apt to arise in those whose ancestry shows some neurotic stigmata as well.

I am thinking, for example, of a patient of mine who has a phobia of open spaces which prevents him from going far from his home, and whose father had a similar phobia; and of another patient with a such-like difficulty whose father was eccentric and extremely reluctant to meet anyone outside his immediate family. Another patient occurs to me who had a great deal of neurotic anxiety, whose mother had epilepsy, and whose uncle was insane. Instances of that sort are frequent enough to make the conclusion extremely probable that there is more often a constitutional factor in the psychoneurotic form of illness than has been admitted in the sometimes rather underdiscriminating enthusiasm for psychotherapy. Dr. Felix Brown's researches on the familial incidence of psychoneurosis support this view.

A knowledge of these things, which certainly comes more readily to the family doctor, is of value in prognosis. It is of course desirable that the family doctor should reside for a considerable time in the same district. The rolling stone in medical practice will certainly gather very little of this essential knowledge. One of the best letters I have ever had about a patient came from an old practitioner in the North of England who said that he had known the young woman whom I was

to see since she was a baby, and had known her mother since she was a baby, and had also known the patient's grandmother. Such a long perspective is of course very rare, and I often think that the death of an old doctor is in this respect a much greater loss to the community he serves than we are apt to think. It is particularly in the psychological aspect of medicine that the life history is important. The specialist envies the family doctor his opportunities in this regard. The value of a life history obtained from direct observation from childhood into adult life is so great that it has always been my ambition to collect case records of the difficult or nervous child, referred to us at Guy's, so that we could get in touch with them in their adult life. Healy has recently done this in America, but no psychiatrist has a similar opportunity here; and even with the best arrangements in the world it would be very difficult for the specialist to keep track for any length of time. For the general practitioner in not too urban a district the chances are very much better and his data potentially much more reliable. Healy and his associates took the opportunity of correlating their patients' childhood as they knew it with the history given retrospectively afterwards, and found striking differences, partly as a result, no doubt, of the falsification by the rosy mists of memory, or, more technically speaking, by the workings of selective repression.

### "Situational" Factors

With regard to situational factors, as distinct from constitutional and historical ones, the family doctor has a special part to play and special opportunities for playing it. In fact, his opportunities of collecting data from the patients' immediate circumstances and from the patients' life history put him in a unique position as a kind of social pathologist. It seems to me that this may even be one of his chief roles in the future, which no one can take from him. One often hears that he is losing portions of his work to this clinic and to that organization, and so forth, but the fact that he lives among the people whom he serves, and especially knows something of their family life, means that he can fulfil a function that no one else will be in a position to do. I cannot see the English public admitting social workers to their homes on the same terms as the family doctor—not, at any rate, if the latter lives up to his best tradition and reputation.

Moynihan used to contrast the pathology of the dead-house, or morbid anatomy, with the pathology of the living. Psychological medicine is really the pathology of life or social pathology. This pathology concerns itself with the jealousies, disappointments, annoyances, grievances, dissatisfactions, fears, anxieties, and so on that produce the aches and pains that we call functional. The lumbar pain without discoverable basis which the gardener had yesterday, and which disabled him for the time being, can be traced to some annoyance at his master's attitude. The headaches that the dutiful daughter complains of may arise, if she did but know it, from a smouldering resentment at her invalid mother, whose invalidism in turn may be just a method of keeping her daughter at home; while Mrs. Jones's asthma may be nothing but an expression of her aversion to her husband.

The specialist confronted with functional symptoms due to situations of this kind has to start from scratch, and is very much at the mercy of what the patients care to tell him. I have known patients conceal for months facts about themselves which were fundamental and not at all unconscious, and this not only from myself, who am perhaps simple-minded, but from my colleagues. The family doctor, on the other hand, may know these things already. The fundamental truth implied in the term "situational" is that emotional situations generated by unsatisfactory circumstances and disappointing relations with other people cause emotional tension that generates symptoms—mental or *prima facie* physical—which are the complaints the patient brings to the doctor. The simplest situation is where the job is unsuitable.

For example, a young woman, a telephone operator, complained of attacks of faintness and dizziness which occurred at her work. Physically she was perfectly sound; intellectually she was considerably above the average and had won a scholarship at school; but on leaving she had to take a post which would quickly bring remuneration, as her father was dead and her mother was largely dependent on what the daughter could earn. Her desire to become a school

mistress was thus frustrated, and she became a telephone operator. The technique, such as it is, was easily mastered. This done, the work merely became monotonous, giving her ample time to ruminate over her frustrated career and later (in the sequence that is common) on her health. The usual hypochondriacal consequences ensued.

Again, there was the case of an elderly man, the father of a large family, who had suffered from headaches for thirty years—headaches which left him during his holidays. He was an intelligent man, who had worked on the same routine job, long since learnt by heart, for 40 years. For most of that time he had been heartily sick of the work, but he had hoped for promotion. At length it became obvious that he could justifiably hope no longer, and then the headaches which had already begun became permanently installed. Here, too, was a neurosis resulting from occupational misfit and monotony, but again there were other factors—in this case the disappointment of legitimate ambition.

The same situation may of course be pathogenic for one patient and not for another, and this is where knowledge of the character and temperament of the individual will be of the greatest service. This group of disorders is also one which the family doctor is fairly often in a good position to assess and even to treat: first, by explaining to the patient how symptoms are related to emotional tension, then from his knowledge of the circumstances, advising whether the situation can be altered, as by change of job, or whether it must be faced, and if necessary, not forgetting to point out where a fault of outlook or a defect of character has been mainly responsible for the failure of the patient to solve the difficulty on his own.

The usual objection made by the family doctor to the psychological side of medicine is his lack of time. The late T. A. Ross, who was himself in general practice for 20 years, used to reply that the proper use of time was necessary, and that an interest in psychological medicine would save the doctor's time in the long run. Another objection that may be urged is this: How can the general practitioner be expected to know the circumstances, dispositions, and temperaments of, say, 2,000 possible patients? But psychological disorders are very often related to family affairs, and although the general practitioner may have a clientele of 1,000 or 2,000 it is probable that the total number of family groups involved is considerably less than this and the more neurotic families will probably consult him a good deal oftener than the rest.

### "Complex" Factors

The third large group of psychological disorders consists of those in which neither circumstances nor situational factors are important, and the symptoms of which are a legacy of some far distant miscarriage of psychological development. This, on the therapeutic side, is the specialist's domain, since the discovery of the pathological processes and their rectification require a special technique of exploration and many hours of painstaking work. But even here the family doctor can give useful hints from his knowledge of the patient's life history. Many of the complex-determined psychoneuroses originate in childhood or even in infancy. One of the most potent causes is emotional insecurity on account of insufficient parental love, or, as it is usually called, parental rejection. Few people are in a better position than the family doctor to know whether a child has been wanted or not, and this knowledge may be a key to all that goes on subsequently. In fact, in the field of child psychiatry itself the family doctor has opportunities which the specialist might well envy, since he is often present in the early days of life and sees the mother's attitude, and whether there is over-protection or rejection, or both, these attitudes being so often determining factors in the subsequent behaviour of the difficult or the neurotic child.

Views on the deeper pathology of neuroses have been drifting away from exclusive preoccupation with the Oedipus complex—a development which might well be beyond anyone's observation at the time—to a more comprehensive theory of the causation of neuroses. It will be seen that, although the type of psychoneurosis that is dependent on early faults of psychological development may probably always remain the particular held of the specialist, nevertheless the family doctor can collaborate with him in providing bits of information that may give valuable hints on the nature of the early causes.

### Sexual Factors

There is one type of situational problem which I have left for separate mention until now, and that is the sexual. In calling it situational I am of course not forgetting that its roots may extend far into the individual's past. It has long struck me as peculiar that practically no medical school in the country offers a course in sexual psychopathology to its students. I suppose it means that the parental attitude of the medical schools parallels the attitude of most parents in this country, in that it prefers to leave the young to find out for themselves. This is not a satisfactory position for a doctor, who as soon as he has qualified is regarded by the lay public as a repository of mysterious knowledge in this respect. It seems only fair to the doctor, and also to the public, that he should be provided with a modicum of information on the nature and cure of the most common group of maladies about which he is likely to be consulted.

The most frequent inquiries concern impotence, frigidity, masturbation, and homosexuality. It has been well said of impotence by Dr Ernest Jones that it is either very easy or very difficult to cure and there is every reason to suppose that many such cases can be, and probably many of them are, cured by a doctor who understands that their commonest causes are ignorance, fear, and misinterpretation of some previous experience. The deeper causes, often to be sought out only by the professed psychopathologist, are chiefly guilt-feelings and over-attachment to the mother. Similar factors, *mutatis mutandis* are at the basis of frigidity. Homosexuality occasionally yields to superficial exploration and persuasion, but is more often a job for the specialist, who succeeds in curing only a minority of such cases. Difficulties of this sort naturally have ramifications in problems of domestic harmony. This may be the guise in which the thing first presents itself to the doctor: the other way is in the form of psychoneurotic symptoms elsewhere in the body, aches and pains generally, all of which are sometimes the direct result of sexual inadequacy or sexual dissatisfaction. But I imagine that a large proportion of doctors are shy of knowing these things about their patients and the patients are shy of telling their doctors, because it takes time to get down to a topic of that sort, and you cannot possibly broach it to someone who has only a short time to give you. It is nevertheless not true that the majority of nervous conditions even in women, are the result of obvious sexual situations of this sort, but they do undoubtedly play a part in some of them.

### Prognosis

The hysterical conditions commonly so called—that is to say, the paralyses and sensory disturbances—can usually be cured fairly rapidly by persuasion, at any rate so far as the symptoms themselves are concerned, but, having done this you may find in a number of cases that you are left with a state of psychoneurotic anxiety which replaces the headaches and what not previously complained of.

It is my impression that one will only completely cure a hysteric if he has ceased to have a motive for his disability and merely wants to know how to recover without losing his self respect. This accounts for some of the more dramatic cures of hysterical paralysis in the last war: few of these patients were expected to return to the front. Some, in peace-time conditions, you can cure even when the motive still exists, by showing them what that motive is. Other cases, more rare, depend on unconscious mental processes associated often with guilt-feelings such as only professional psychopathologists can hope to find and tackle.

As regards psychoneurotic anxiety states, some of which are called by the Freudians "anxiety hysteria," prognosis for the "situational" group is good as a rule, so also is the prognosis for those cases of this type which arise from faulty upbringing and the acquisition of wrong ideals, and so forth, but the cases that depend on historical factors in the unconscious await the advent of the skilled psychotherapist before much is likely to happen in them. In the two groups together the statistics in the Cassel Hospital collected by T. A. Ross showed a recovery or "much improved" rate of 76%. The data from the various psycho-analytic clinics recently collected by Knight showed a combined recovery rate of "cured" and "much improved" of 61% in approximately the same groups.

The trouble in assessing these results is the lack of satisfactory control groups, and there is no doubt that in some conditions a certain proportion of these people tend to get well themselves in the course of time. Any satisfactory investigation would require to distinguish not only loss of symptoms but durability of cure and its other features, such as the change in the social qualities of the patient concerned and the improvement in his general adaptation to life. Among cases of the obsessional or obsessive-compulsive variety the data are conflicting; I have no doubt that there are some cases which without special treatment would not improve at all or would improve very little, but it has to be remembered that here also there is a spontaneous recovery rate. I find statistics of this sort very unsatisfactory and the individual case much more convincing. Statistics should also take into account the duration of a treated case compared with one untreated. I believe that with treatment many psychoneurotic illnesses are shortened; and this, in fact, it would be fair to say—that psychoneurotic conditions are among the most curable of the chronic illnesses the doctor is called upon to treat.

### Conclusion

There is an outstanding fact which should commend the practice of psychological medicine to the clinician—and the family doctor is first and foremost a clinician. It is this: that psychological medicine remains pre-eminently a field in which the clinical method, independent of the laboratory and the test-tube, is still the fundamental one. Even the most recondite psychiatric history—such as, for example, that which psychoanalysis involves—is essentially a clinical history of the patient. This history of the patient, which should be a history not only of his symptoms but of his life as an individual, is both a means of diagnosis and the foundation of treatment. For diagnosis, of course, one has to know as well the natural history of physical diseases, while to use the detailed history for the purpose of treatment requires a knowledge of the principles of psychological medicine. But these principles in what I have called the “situational,” and even in many of the historically determined conditions, are simple and can be applied successfully by anyone who cares to give his attention consistently to this aspect of his practice.

## AN EPISODE OF “HOMOLOGOUS SERUM JAUNDICE”\*

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The occurrence of jaundice in man after the administration of human blood products (plasma and serum) is now a well-recognized phenomenon, and a review of this “homologous serum jaundice” was recently published. The jaundice, which is of hepatic origin, is readily distinguished from the haemolytic icterus which may arise immediately after transfusion with incompatible blood or out-of-date stored blood. Clinically it is similar to, if not indistinguishable from, epidemic hepatitis (catarrhal jaundice), but the incubation period is unusually long—commonly from 2 to 3 months, in contradistinction to the 20- to 40-day period believed to occur in epidemic hepatitis.

A high incidence (57%) of this jaundice has been observed among 71 subjects during the course of an investigation into allergic reactions to human serum. All these subjects received pooled human serum from a single batch (No. 034); a few of them received in addition whole blood or serum from other batches. Batch 034 was, however, the only common factor, and was clearly incriminated as being icterogenic. Subsequently, icterogenicity was confirmed by the results of the deliberate

administration of batch 034 to four volunteer cases of rheumatoid arthritis in which it was desired to produce jaundice for therapeutic reasons.

From this, experience it is possible to draw certain conclusions concerning the routes of administration and the effective dosage of icterogenic material: some of the findings are therefore reported.

### Materials Used

No. 034 was a routine batch of dried serum issued by the Medical Research Council Drying Unit. It had been prepared from 106 litres of pooled, filtered human serum collected in late April, 1943, from donors in the London area. Sterility tests before and after filtration were negative, and the batch was issued in units (bottles) each equivalent to 400 c.cm. of liquid serum. The units were numbered 1 to 250: Nos. 8- to 146 were received by this depot as its quota of the batch and were reserved for purposes of investigation.

The other batches of serum also administered to some of the subjects were:

(a) *Batch 045.*—This was another routine batch of dried human serum issued by the Medical Research Council Drying Unit, and was prepared from 177 litres of serum from donors in the London area and East Sussex. It was collected in early June, 1943, and sterility tests before and after filtration were negative. Nos. 1 to 102 were received at this depot.

(b) *Pool 0.*—This was a small pool of serum prepared locally, and after Seitz filtration, kept frozen until used.

Any bottle of batches 034 and 045 was assumed to be of identical composition with any other bottle in the same batch.

### Methods of Administration

*Intradermal Tests.*—Several bottles of batch 034 dried serum were reconstituted to normal strength with 400 c.cm. of sterile distilled water taken at random from stocks prepared at this depot. The resultant liquid was partitioned in 2-c.cm. aliquots into sterile test-tubes and kept frozen at 5° F. till required. It was used on numerous days, on each of which one or more tubes were thawed out and a sterile tuberculin syringe was charged with the fluid. Any unused fluid remaining in an opened tube was discarded at the end of the day. The same syringe and needle might be employed for several tests on the same day without sterilization between tests, but after each day's use the syringe was cleaned in chromic acid and resterilized. Needles were thoroughly rinsed with water and resterilized daily. Sterilization was by dry heat (160° C. for 2 hours).

For the intradermal test two intracutaneous injections of the reconstituted serum, each of 0.05 c.cm., were made into the skin of the back in parallel with extracts of dust, pollen, animal hair, etc., and carbol saline.

*Transfusions.*—A bottle of dried serum was reconstituted to 400 c.cm. as above or, in the case of pool 0, the serum was thawed out. Each transfusion was administered in approximately 30 minutes. This applied to all except the four transfusions, given to rheumatoid arthritis patients, who each received 50 c.cm. of reconstituted dried serum (batch 045) added to 450 c.cm. of a group O concentrated red cell suspension.

### Cases

*Group 1.*—47 subjects received intradermal skin tests on one to three occasions with batch 034 only. 25 of the 47 were allergic subjects (hay-fever, bronchial asthma, etc.).

*Group 2.*—9 subjects received intradermal skin tests and serum transfusions on one to three occasions with batch 034 only. 7 of these were allergic subjects.

*Group 3.*—19 subjects received skin tests or transfusions, or both, with batch 034, and, in addition, tests or transfusions with other human material (pool 0, batch 045, concentrated red cells). Of these, 7 were allergic subjects, 8 were non-allergic controls, and 4 were the cases of rheumatoid arthritis.

### Results

All except two subjects who could not be traced were followed up for at least 150 days after exposure. The results

\* A report to the Medical Research Council from the S.W. London Blood Supply Depot

are summarized in the accompanying Table. Of the 47 cases group 1) who had received batch 034 only as skin tests, 26 developed jaundice. Similarly, of the 9 (group 2) who had batch 034 only as skin tests and transfusions, 5 developed jaundice. The latent period in these cases, calculated from the date of the first or only administration of serum up to the

Table showing Incidence of Jaundice following Intradermal Tests and Transfusions of Reconstituted Dried Serum (Batch 034)

Group	Cases	Clinical Signs		Latent Period	
		Nil	Jaundice	Mean (Days)	Range (Days)
1 Intradermal tests only	47	21	26	71	46-104
2 Intradermal tests and transfusions	9	4	5	60	45-79
3 Intradermal tests and/or transfusions + other human material	19	8	11	59	45-96

date of onset of the jaundice, was from 45 to 104 days. This is the maximum latent period; it assumes that the patient had been affected by the first introduction of serum. The date of onset of jaundice was taken as the end-point of the latent period, since in most cases, in retrospect, it was possible to ascertain this date, whereas the date of onset of prodromal symptoms could not be determined.

Of the 19 cases (group 3) who received other materials as well as batch 034, 11 developed jaundice. The latent period, calculated from the date of the first or only administration of batch 034, ranged from 45 to 96 days. Several subjects in this group received material from batch 045. From subsequent investigations there is reason to believe that this batch is also ietogenic.

The attack rate was of the same order whether the serum had been given intradermally or intravenously, and whether it had been given as a single dose or in repeated doses. The severity of hepatitis, which in all cases was mild or moderate in degree only, also appeared to be unrelated to the size, the route, or the frequency of injection. There was a suggestion, however, that the latent period was shorter when the material was given in the larger or in repeated doses (see Fig.). There is no evidence, so far, that permanent liver damage ensued.

GROUP	QUANTITY	LATENT PERIOD				
I INTRADERMAL TESTS	0.1-0.3 c.c.	.	.	.	.	.
II TRANSFUSIONS	1200 800	.	.	.	.	.
III INTRADERMAL TESTS	0.1-0.3	.	.	.	.	.
TRANSFUSIONS	50-1200	.	.	.	.	.
DAYS		40	50	60	70	80

Chart showing latent periods before onset of jaundice after intradermal tests and transfusions of reconstituted dried serum (batch 034).

The incidence of jaundice was no greater in the allergic subjects than in the normal controls.

### Discussion

Since the publication of the Ministry of Health's Memorandum on Homologous Serum Jaundice (1943) the occurrence of the syndrome in this country has been mentioned in several reports (Morgan and Williamson, 1943; Dible, McMichael, and Sherlock, 1943; Steiner, 1944; MacCallum and Bauer, 1944; Beesoo, Chesney, and McFarlan, 1944). Nevertheless, the cases of jaundice in the present series had been regarded as "catarrhal jaundice" and the association with the administration of blood products was at first not recognized. The diagnosis of homologous serum jaundice was established only by this follow-up.

When the syndrome occurs after inoculation (measles convalescent serum, yellow-fever vaccine, etc.) it is relatively easy

to detect ietogenic batches of material, because in most instances serum from only a single batch has been given. When jaundice follows transfusion it may be impossible to decide which is the causative batch, because in the usual transfusion practice several batches of plasma or serum may be administered to a single patient and not infrequently whole blood is given as well. In the present series groups 1 and 2 resemble jaundice following inoculation in that only one batch (034) was administered; group 3 cases are more comparable with those seen in transfusion practice, and if groups 1 and 2 had not been studied simultaneously it would have been more difficult to attribute the jaundice to the causative batch. All the subjects, except the 4 cases of rheumatoid arthritis, also received injections of allergens, but we have no reason to believe that these produce hepatitis.

The attack rate—57% of exposed subjects—is the highest so far recorded in any series of homologous serum jaundice. It must, however, be remembered that opportunities for following up in this series were unusually good. The jaundice was not severe and there was apparently no correlation between dosage and virulence. In group 1 the dose was minute (0.1 to 0.3 c.c.m.); in group 2 two subjects received 1,200 c.c.m. and three subjects 800 c.c.m.—that is, 12,000 and 8,000 times the lowest group 1 dose. The group 1 dose is comparable to the dose recorded by MacCallum and Bauer in yellow-fever vaccine jaundice. Intradermal injections would therefore seem to be as effective as the intravenous and subcutaneous routes.

One possible contact case occurred. A subject in group 2, first injected on July 1, 1943, developed jaundice on Aug. 16. A cousin who had been living with this patient until Aug. 9, developed jaundice 31 days after the last contact. This may have been a random case of epidemic hepatitis, but an alternative source of infection could not be established.

In this series the clinical features (Livingstone, personal communication) and the biochemical findings (Gray, personal communication) were indistinguishable from those of epidemic hepatitis. Dible, McMichael, and Sherlock have reported their inability to distinguish histologically between biopsy material from cases of epidemic hepatitis and that from cases of homologous serum jaundice. For the diagnosis of the latter condition, therefore, one must rely upon the history of injection or transfusion of human material during the preceding few months.

Ietogenic batches of human serum and plasma cannot be detected by any laboratory or animal tests. Their recognition is possible only when accurate records of the batch and bottle numbers of blood products given to patients are kept and when a careful follow-up of all recipients is practised for some months afterwards. In the present series the generous co-operation of numerous medical officers of health and practising physicians made a 97% follow-up possible.

### Summary

Homologous serum jaundice has followed the administration of a particular batch of pooled human serum.

Jaundice occurred in 57% of the cases exposed.

The dose of homologous serum administered varied from 0.1 to 1,200 c.c.m.

The severity of the disease was not related to the dosage of serum given or to the route of administration.

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The Colonial Office has issued through H.M. Stationery Office (Colonial No. 187; price 6d.) a report of the West Indian Conference held in Barbados last March. Among the matters reported on by committees were the means for raising the nutritional level; planning of public works for the improvement of agriculture, education, housing, and public health; and health protection and quarantine. The conference took place under the auspices of the Anglo-American Caribbean Commission, and it is planned to hold another within the next ten months.

## LATE RESULTS OF CLOSED INTRAPLEURAL PNEUMOLYSIS

BY

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The difficulties of statistical evaluation of artificial pneumothorax treatment are well known. It is now recognized that crude statistics such as those of Drolet (1943) and Soderstrom (1941)—which do not take account of the effectiveness of the collapse—are weighted against pneumothorax by the inclusion of a large proportion of cases in which the A.P. was either useless or positively harmful (Rafferty, 1943).

The late results of pneumothorax treatment depend largely on the efficiency of the collapse obtained (Hjaltestad and Torning, 1939; Jennings *et al.*, 1940), and since it has been shown that it is possible, by the use of internal pneumolysis, to improve the collapse in a large proportion of pneumothoraces (Edwards and Lynn, 1939; Wollaston, 1940), it seems to us that for the efficient practice of pneumothorax treatment this operation should be readily available and should be freely used when indicated.

Edwards and Lynn (1939) reported the immediate result of internal pneumolysis on 235 patients. These have now been followed up for five years. Bilateral operations and thoracoscopies without division of adhesions have been excluded from this series, and the number brought up to 200 consecutive cases of pulmonary tuberculosis treated by artificial pneumothorax with unilateral division of adhesions by closed intrapleural pneumolysis. When the indications existed this treatment was supplemented by phrenic evulsion (110 cases), and all patients underwent a strict course of sanatorium routine.

All patients were classified according to the Ministry of Health classification on admission to the sanatorium. The poor quality of the clinical material is shown by the fact that 41% of the series fell into the T.B. + 3 group, 49% were T.B. + 2, and the remaining 10% were either T.B. + 1 or T.B. minus. In all but seven of the 200 cases there was cavitation in the treated lung, and 97 had multiple cavities.

## Radiological Result of Operation

The present series of 200 pneumothoraces with pneumolysis have been grouped according to the degree of collapse obtained as estimated from a study of serial post-operative films; the survival of the different groups is shown in Table I. Group I

TABLE I.—Survival 5 Years after Operation according to Degree of Collapse

	Group	No.	Alive	% Alive	L.S.O.
Satisfactory	I	28	21	75	1
	II	56	50	89	1
Incomplete	III	12	7	58	—
	IV	28	19	68	—
	V	76	36	47.5	—
		200	133	66.5	2

indicates a pneumothorax in which there is complete relaxation of the apex with no adhesions to the lateral chest wall or upper mediastinum. In Group II the lung is free of the chest wall but there are adhesions to the upper mediastinum below the level of the clavicle. Several patients in these two groups had unimportant basal adhesions associated with upper-zone disease. Group III includes all cases with the lung completely freed except for adhesions to the mediastinum as far up as the apico-mediastinal angle. In Group IV the lung apex was adherent to the cupula. Group V includes those cases in which there was massive adherence of the apex to the dome of the chest and all cases in which there were inoperable adhesions to the lateral chest-wall irrespective of the apical relaxation. Before operation none of the cases had a collapse which could be classed as Group I or II.

Edwards and Lynn (1939) found that the immediate effect of pneumothorax was not impaired by undivided adhesions of the mediastinum below the level of the clavicle. From this it appears that these adhesions are also without harmful effect on the late results.

It is worthy of note that these findings are not in agreement with those of Jeanneret and Gilliard (1942), who insist for full effect the freeing of the lung must be carried as far as the hilum on the mediastinal aspect. Collapse of this nature was present in 55 of their 300 cases of pneumothorax without pneumolysis, and of these 55 cases 49 (89%) found to be efficacious after six months. In the present series it is shown in Table I that of 56 cases with mediastinal adhesions below the level of the clavicle, 50 (89%) are five years after operation. We are of the opinion that adhesions to the medial thoracic wall below the level of the clavicle are in most cases without effect on the course of the pneumothorax, and that operation in this area can often be needless and dangerous.

In cases with adhesions either to the apico-mediastinal angle (Group III) or the cupula (Group IV) the survival rate is distinctly less satisfactory. So far as deductions can be made from such small figures, it seems to us that the removal of some apical adhesions is of small benefit to the patient as the apex can be dropped below the level of the clavicle. The 76 cases with ineffective pneumothorax (Group V) survival of only 47.5% is an indication of the small therapeutic value of this type of collapse.

Since we have found the cases in Group II to have survived at least as well as Group I, both as a whole and when the factors were controlled, we have in the subsequent tables combined the groups into a class designated "satisfactory collapse." For the same reasons Groups III and IV have been combined as "incomplete collapse."

In the "satisfactory collapse" group it was possible to follow 81 of the 84 patients for six years after operation, and a more detailed survey was available as to their present condition:

Number of patients	..	..	..	..	..	84
Total alive	..	..	..	..	..	69
Well and working	..	..	..	..	..	56
Unable to work	..	..	..	..	..	13
Dead	..	..	..	..	..	12
Lost sight of	..	..	..	..	..	3

Of the 56 who were working 52 had completed their treatment, and the other four had their disease well controlled with refills at intervals up to 10 weeks. One patient had died in the sixth year, and one had been lost sight of.

## Ministry of Health Classification on Admission

The Ministry of Health classification on admission correlated with the radiological result and survival in Table II.

TABLE II.—Classification on Admission. Correlated with Degree of Collapse and Survival 5 Years after Operation

	T.B. Minus			T.B. + 1			T.B. + 2			T.B. + 3		
	No.	A	% A	No.	A	% A	No.	A	% A	No.	A	% A
Satisfactory ..	7	7	100	2	2	100	44	40	91	29	22	76
Incomplete ..	5	4	80	—	—	—	18	14	78	17	8	47
Ineffective ..	6	5	83	—	—	—	34	17	50	36	14	39
Totals ..	18	16	89	2	2	100	96	71	74	82	44	54

The survival of even 54% of T.B. + 3 patients for 5 years is not unsatisfactory. An effective pneumothorax in this same class improves this figure to 76%. The number in the T.B. + 3 minus group is too small to warrant any conclusions, but the survival of 16 of the 18 is in keeping with the good prognosis for patients with negative sputum after operation, which is apparent in a later table.

## State of Contralateral Lung

The contralateral lung was classified as "good" when it was clear or when minimal infiltration was present, and as "bad" when there was cavitation or massive infiltration likely to progress to early cavitation. Eleven cases with ineffective artificial pneumothorax without pneumolysis on the contralateral side were included in the "bad" group. Intermediate cases were classified as "moderate." The state of the contra-

lateral lung is correlated with the radiological result of operation and survival in Table III. Of the 198 cases 93 (47%) had

TABLE III—*State of Contralateral Lung Correlated with Degree of Collapse and Survival 5 Years after Operation*

	Good			Moderate			Bad or A P		
	No	A	% A	No	A	% A	No	A	% A
Satisfactory	25	23	92	26*	25	96	31*	23	74
Incomplete	11	9	82	9	6	67	20	11	55
Ineffective	16	11	69	18	9	50	42	16	38
Totals	52	43	83	53	40	76	93	50	54

\* 1 accidental death

advanced disease in the contralateral lung and this group accounted for 77% of all the deaths. There was no death from tuberculosis among the 26 patients with a satisfactory collapse accompanied by moderate infiltration of the contralateral lung. The survival of 74% of those with satisfactory collapse and contralateral cavitation was unexpectedly high and noteworthy. These findings support the view that control of the disease in one lung favours healing in the other.

The prognosis for the tuberculous patient with bilateral cavitation is always poor, and in our series contralateral artificial pneumothorax was either impossible or unsatisfactory. So artificial pneumothorax with pneumolysis was the most radical treatment applicable to them. A small proportion would nowadays become candidates for contralateral partial thoracoplasty, but in this class of case "many are called but few are chosen."

#### Sputum

Sputum was negative or absent three months after operation in 138 (70%) of the 198 patients who were followed up. Of these sputum-negative patients 109 (79%) survived five years, compared with only 40% survival in the sputum-positive group. The great majority of the negative findings were confirmed by concentration and culture.

The correlation between the state of the sputum three months after operation and the degree of collapse obtained is shown in Table IV. It is noteworthy that only one of the 65 sputum-

TABLE IV—*Sputum 3 Months after Operation Correlated with Degree of Collapse and Survival 5 Years after Operation*

	Negative			Positive		
	No	A	% A	No	A	% A
Satisfactory	65*	62	96	17	9	53
Incomplete	25	19	76	15	7	47
Ineffective	48	28	57.5	23	8	29
Totals	138	109	79	60	24	40

\* 2 accidental deaths.

negative patients with satisfactory collapse died of pulmonary tuberculosis. In 13 of the 17 sputum-positive cases with satisfactory collapse the contralateral lung was classified as bad, and was the probable source of the positive sputum.

In the "incomplete collapse" group the survival of 76% of the sputum-negative cases suggests that a considerable number of these artificial pneumothoraces are worth maintaining, provided control of the disease is indicated by negative sputum. Of the 15 sputum-positive cases in this group only 7 survived. Since a contralateral origin for the bacilli could not be excluded in 6 of the 8 patients who are dead, we do not feel that any conclusions can be drawn from these small figures. But throughout the series the prognosis is gloomy for the patient whose sputum remains positive, and it is imperative that every other possible method of treatment should be considered. Unfortunately the hard core of untreatable cases remains distressingly large.

Altogether Table IV suggests very strongly that the achievement of a negative sputum is quite as important for the patient himself as for his contacts.

#### Extent of Area Cauterized

In every case the operator (P. W. E.) described the adhesions divided and estimated the area of the burnt surface of the

peripheral stumps. According to this estimate, the extent of area cauterized was classified as small when only strings and thin bands were divided, moderate, and large. Only very extensive cauterizations were included in the "large" group.

Of the 82 satisfactory collapses 66 were the result of moderate or large cauteries. The proportion of different sizes of cauteries was similar in the other two collapse groups except for a slightly greater incidence of large cauteries in the ineffective group. The size of cautery has been correlated with the radiological result of operation and survival rate in Table V. It

TABLE V—*Extent of Area Cauterized Correlated with Degree of Collapse and Survival 5 Years after Operation*

	Small			Moderate			Large		
	No	A	% A	No	A	% A	No	A	% A
Satisfactory	16	14	88	55*	46	84	11	11	100
Incomplete	9	6	67	24	15	61	7	5	72
Ineffective	14	4	29	47	26	55	15	6	40
Totals	39	24	61.5	126	87	69	33	22	65.5

\* 2 accidental deaths

appears that in this series, size of burn did not have a significant effect on the prognosis, although Edwards and Lynn (1939) found that the incidence of effusion was higher in extensive burns and that the effusions tended to be persistent in type. The majority of the empyemata occurred in the ineffective group.

#### Effusions

Enough fluid to cover the dome of the diaphragm in the upright position has been classed as an effusion, and smaller amounts have been disregarded. This quantity of fluid, or more, occurred in 103 of the 198 cases followed up. In 46 of these cases the fluid disappeared in a short time without aspiration. In cases in which the fluid persisted we aimed at keeping the pleura as dry as possible, and all fluid specimens were examined by direct film and culture for tubercle bacilli and pyogenic organisms.

The survival of patients having the different types of effusion is shown in Table VI. Here it is apparent that effusions which

TABLE VI—*Effect of Effusions on Survival 5 Years after Operation*

Effusions	No	A	% A
Nil	95	63	72
Transient	46	36	73
Clear T.B. —	24	15	63
Clear T.B. +	15	8	54
Tuberculous empyema	9	4	44
Mixed empyema	9	2	22

quickly clear up have no ill effect. The prognosis in cases progressing to empyema is of course bad. We found, however, that the total deaths attributable to this cause were 12, in 7 of which cases the collapse was ineffective.

#### Discussion

As experience of artificial pneumothorax treatment has increased, more and more tuberculous physicians have come to accept the view, often expressed by one of us (Edwards, Ann. Reps. Cheshire Joint Sanatorium), that the result of pneumothorax depends on the efficiency of the collapse. Since the general adoption of internal pneumolysis, the standard of what constitutes an efficient collapse has become more rigid, and the aim is a complete relaxation of the lung. Hjaltsted and Torning (1939) have found that their patients in whom a good pneumothorax was the result of internal pneumolysis fared at least as well as those in whom the same type of collapse was present without operation. In the present series 84 patients had satisfactory relaxation of the diseased lung as a result of internal pneumolysis. Furthermore, we have found that throughout our series the collapse obtained as the result of an extensive cauterization was no less effective than that in which smaller or fewer adhesions were divided.

In those patients on whom operation carries special risk by reason of the anatomical character of the adhesions or the poor general condition of the subject, alternatives to artificial pneumothorax must be considered. But when contralateral



disease allows of no more radical alternative the operative risk must be accepted, for success in obtaining a satisfactory collapse carries with it some prospect of improvement in the contralateral disease. The abandonment of the pneumothorax without thoracotomy and the maintenance of an unsatisfactory collapse are both bad practice.

### Summary and Conclusions

The state of 200 cases of unilateral internal pneumolysis 5 years after operation is reported.

Of these cases 2 were lost sight of in this period. 133 (66.5%) survived 5 years. 71 (86.5%) of those cases in which a satisfactory collapse was obtained by operation survived 5 years, and 56 of these were well and working after 6 years; none of them had a satisfactory collapse before operation.

A satisfactory collapse on one side seems to have greatly improved the prospect of survival in cases with bilateral cavitation.

The persistence of positive sputum 3 months after division of adhesions indicates a poor prognosis. On the other hand, a negative sputum improves the outlook in the "incomplete" and "ineffective" collapse groups.

Tuberculous empyema, especially when secondary infection is present, is a serious complication, but it accounted for only 18% of the deaths in 5 years.

If artificial pneumothorax is employed the aim should be to obtain the most complete collapse possible by the use of internal pneumolysis.

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## HIGH-TONE DEAFNESS IN SCHOOL-CHILDREN SIMULATING MENTAL DEFECT

BY

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Some years ago, after several examinations, I certified as mentally defective a girl aged 9 who had been referred to me in school as a case of backwardness associated with speech so rudimentary that the child was practically dumb. She was said to hear normally. She came when she was called and she had every appearance of understanding simple orders and requests. I verified this by several rough tests such as calling her name loudly, ringing bells, beating an enamel bowl, clapping my hands, etc., behind her back at distances ranging from one to five feet. She never failed to turn immediately with a bright smile. Her elder sister had been a certified defective and had attended a special school. There had been no question of deafness in the older girl's case: the diagnosis appeared only too obvious. In the special school, however, with its better opportunities for individual observation and teaching, it was soon apparent that the child's general behaviour, muscular control, and handwork were vastly superior to that of her classmates, and the possibility of some unusual form of deafness was considered. She was sent to the Department of Education for the Deaf at Manchester University, where Dr. and Mrs. Ewing were conducting their first work in audiometry. The audiogram at once showed that the child possessed only "islands of hearing." She was transferred to the Royal School for the Deaf at Old Trafford, where, since her intelligence was actually of a high order, she responded most satisfactorily to Dr. and Mrs. Ewing's (1938) methods of combined lip-reading and hearing-aid methods.

This case, and a somewhat similar one, prompted me to investigate the whole subject of speech and language from the physical rather than the psychological point of view, and I

was granted the privilege of studying phonetics and audiometry in Mrs. Ewing's department at the University. As my ear became more sensitive to fine distinctions in sound, and my eyes more observant to detect slight differences in the articulatory movements of the tongue and lips, I began to distinguish innumerable sound substitutions and omissions of which I had hitherto been more or less oblivious. It was soon obvious—as every speech therapist knows—that these substitutions and omissions followed definite patterns. My problem was to discover, if possible, why the same patterns kept recurring. It occurred to me that some sort of classification according to sex, age, and intelligence would be useful for the purposes of the survey. I decided to exclude cases of "baby speech" under 5 years of age. Over a period of three years I examined the speech of some thousands of elementary-school children between the ages of 5 and 14 in London, Manchester, and Cornwall. These places were chosen because the local accents differ very widely and because facilities happened to be available to me. The investigation was later widened to include some hundreds of secondary-school children of corresponding age groups; 100 certified mental defectives; 100 blind children; and finally 100 children known, from pure-tone audiometric examination, to be suffering from impaired hearing. Examination of this last group was made possible through the kindness of Dr. J. L. Burn, the medical officer of health for Salford, who had conducted a hearing survey of his entire school population, using first a group pure-tone test and then giving an individual pure-tone test to those who failed to reach the normal level in the first test. The detailed findings of the survey are too lengthy and complicated to give here, but it gradually became apparent that defects of speech are most commonly found in mentally retarded children and in children with impaired hearing; and that, although the patterns of speech defect were very similar in the two groups, certain sound substitutions and omissions were more often associated with impaired hearing, and certain others with mental retardation. Vowel sounds were only rarely interchanged: the nasal sounds (m, n, and ng) were usually correct (although occasionally "n" would be substituted for "ng," after the manner of our "huntin'" and "fishin'" forebears); but the sounds represented in ordinary script by the letters r, l, w, and y were fairly often substituted for each other, so that a "rabbit" might be a "labbit," a "wabbit," or a "yabbit," and a "little lamb" might be a "ritter ramb" or a "yitty yamb." The sounds of "t" and "d" were often omitted, especially at the ends of words. These same sounds, which are "front stops," were very frequently substituted for the back stops, "k" and "g" (this "eup of cocoa" became "tup of toto."); but the most frequently defective sounds of all were those of "s," "f," and "th" and their voiced equivalents "z," "v," and "th" (voiced). The "s" defects included substitutions by "th" (the common "lisp"), "sh," "t," and a sort of voiceless "l" rather like the Welsh "ll" sound in the word "Llewellyn." No less than 83% of my cases in which a defect of "s" was the sole defect present were associated with malocclusion of the jaws (Seth and Guthrie (1935) give a 90% association), and the frequency with which I either observed thumb-sucking myself or obtained a history of the habit from the mothers leaves no doubt in my mind of the permanently harmful effects of this practice. The most common substitution of all in the elementary-school children, the blind children, and the mental defectives was "f" for "th" (e.g., "thirty-three things" would be "firty-free fings"). This defect did not once occur in the secondary-school group, probably because the intelligent child, even if his hearing is slightly impaired, rapidly learns to distinguish these sounds by their lip movements and by their different visual symbols in reading-books. It was not so common in the hard-of-hearing group as defects of "s" and "r," doubtless for the same reason.

It is to Dr. Harvey Fletcher (1929), the physicist employed by the Western Electric Film Co. in research on the transmission of speech sounds, that we owe the invention of the audiometer. A complete description of the chart or audiogram and how it was evolved is given in his book. Otologists have been using the audiometer to diagnose deafness for so many years that it is unnecessary to describe it here; but for the sake of those who are not familiar with the chart it may be said that the normal "speech range" extends over some 6½ octaves, from

90 to 8,000 double vibrations per second. The "pure tone" or fundamental note of middle C on the piano is 256 (on the horizontal scale), so that we use one and a half octaves below and five octaves above this note. The line 0 represents normal hearing. The figures on the vertical scale represent the intensity of sound in decibels, 10 being approximately equal to the whisper of leaves in a faint breeze, 20 a whisper at 5 feet, 30 normal conversation at 4 feet, 75 a man shouting at 4 feet, 90 a lion roaring at 18 feet, and 110 (about the limit of human endurance) a steel plate hammered by four men (R. T. Beatty, 1932).

The late Dr. Phyllis Kerridge of University College Hospital, who first introduced audiometry into this country, said that the "middle frequencies" are the most important for speech recognition (Kerridge, 1937) but Dr. and Mrs. Ewing consider that good hearing over 250 to 5,000 d.v. is necessary for accurate appreciation of speech. Harvey Fletcher was able to show that vowels are normally heard more easily than consonants, partly because their phonetic power is higher (he says the sound "aw" has a phonetic force 680 times as great as the voiceless "th") and partly because their fundamental notes are at the lower end of the scale, although the sound "ee" (as in "speed") has important harmonic components among the upper frequencies: the sounds of "l", "r", and "ng" are the easiest of the consonants to hear. The most difficult sounds are "v", "f", and "th," which together account for more than half of the mistakes made in listening to nonsense syllables. He also noted that the sounds most often affected by filtering out the high frequencies were "s", "th", "z", "t", and "f". These findings are significantly comparable with my own observations concerning the sounds most often defective in school children. In my survey I had each day noted down carefully phonetic substitutions and omissions that came my way but did not attempt to analyse them until the entire period of review was over. In this way I tried to eliminate all my preconceived notions regarding speech defect. Subject to the limitations of my own visual and auditory fields, the results charted were as accurate as I could make them.

As noted above, it gradually became apparent that defects (or, perhaps more accurately, immaturities) of speech sounds were associated most commonly with two groups of children—those who had impaired hearing and those who were mentally retarded. The deaf child is *organically* unconscious of certain speech sounds since his auditory nerve is defective for that part of the range; the backward child is *functionally* unconscious of certain sounds although his audiogram may show no defect of hearing for pure tones. The difference between the speech and attitude of the two groups of children is difficult to describe, but it is obvious enough to the trained observer to prompt thorough investigation.

Of the various types of deafness the one most commonly mistaken for mental backwardness in school is high tone deafness. The child with impairment of low tones but good "consonant hearing" does not, in my experience, suffer a comparable educational disadvantage. He hears the vowel sounds diminished in power but normal in quality, the "speech tunes" rise and fall with their normal cadences, and provided he can sit near the teacher, his disability will scarcely be noticed unless it is severe. The child with heavy loss over the high frequencies, however, will never be able to acquire the finer consonants naturally—that is, by ear; the speech tunes will have gaps (as if he were listening to a piano in which some of the notes were dumb), and his own speech, re-echoing as all children's speech does only the sounds that are fully appreciated, will show distortions varying in proportion to his hearing loss from mere indistinctness to gross unintelligibility. Often the good vowel hearing of these children will deceive the parent, the teacher, and the medical officer so completely that they are considered to be not deaf but stupid and obstinate. Their attainments in the basic subjects, particularly spelling and dictation are seriously retarded and may be non-existent. Their attainments in arithmetic are usually less rudimentary and may be comparatively good, because it is easier to recognize numbers from vowel sounds alone, and the few visual symbols needed are soon learnt. (The acquired ability to recognize numbers from vowel sounds alone must always be remembered in using a grammo-

phone audiometer, especially with adults who are experienced listeners and whose minds are accustomed to "making up" the whole word from bearing a mere fraction of it.) It is probable that many of the cases diagnosed in the past as congenital word-deafness or auditory imperception were, in reality, examples of high-tone deafness. It must be obvious that an audiogram should be made of every child over 7 years old whose speech shows more than two phonetic substitutions or omissions, whether or not deafness has been suspected, and that no child showing speech defect, however slight it may seem to the untrained ear, should be certified as mentally defective without a complete investigation of the hearing.

I have come across several such cases in the course of the past year. The following are selected because they are particularly instructive and because I first suspected, from their speech alone, that the hearing for high tones was defective.

It may be noted that in each case the bone conduction as well as the air conduction is tested, but to prevent confusion these readings are omitted from the charts. One case of low-tone deafness is included for comparison. In every case clinical tests are also given. The tests used are 5 lists of 25 words each and groups of sentences standardized by Kerridge and Fry (1939).

### Illustrative Cases

**Case A**—Girl, aged 13 years 10 months. Certified as mentally defective at 11 years with a Binet I.Q. of 50. At the retest 12 months later the I.Q. was 52. The child's speech was noted as "slightly defective." (To my trained ear after I had studied phonetics it was gross.) The defect markedly involved "s," "sh," "r," and "k."

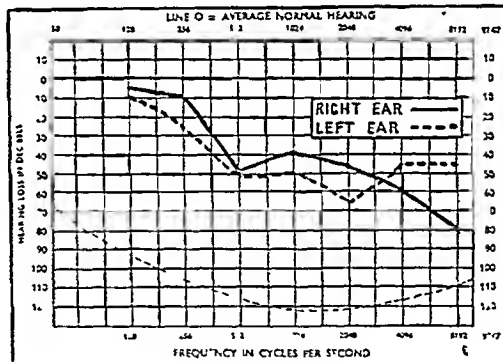


Chart of Case A

Deafness had never been suspected at home, in school, or in the clinic. The case was re-examined finally only a few weeks before the child was due to leave school. Further training until 16 was offered but refused. Re-examination some months later was offered, but no reply was received.

**Case B**—Girl aged 13 years 8 months. Certified at 9 years with an I.Q. of 67. (Later examinations gave 70.) The child's speech

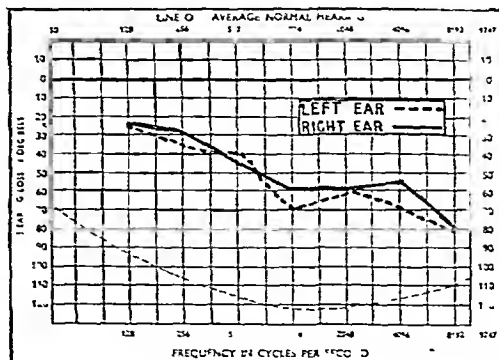


Chart of Case B

was noted as "indistinct." It involved "s," "sh," and "r" principally. There was in this case a family history of deafness. The parents gratefully accepted the special training offered, and the child was admitted immediately to a school for the deaf, where she will remain until 16 years old, and where she will be taught a suitable trade.

**Case C**—Boy aged 9 Referred to the clinic by his teacher as "hopelessly backward and unteachable, with very poor speech." His speech was completely unintelligible. The defect involved most of the consonants, the back vowels "oo" (pool) and "aw" (paw)

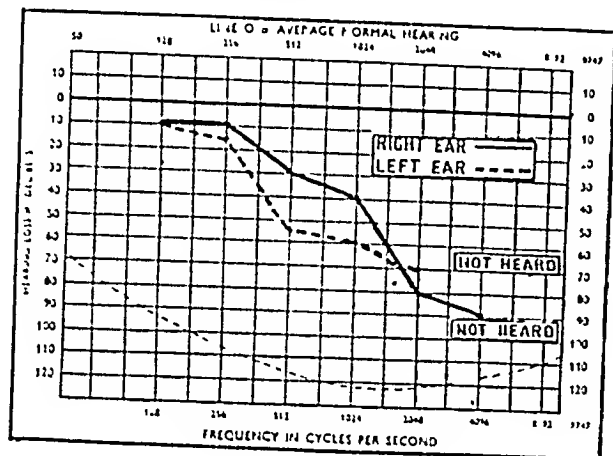


Chart of Case C

were strongly nasalized. His comprehension of other people's speech was quite good, but his scholastic attainments were nil. The audiogram showed very plainly the severity of his defect. He was immediately admitted to a school for the deaf.

**Case D**—Boy aged 12 This was one of the most dramatic cases encountered in the research. The boy was one of a highly intelligent family of five. His speech defect markedly involved "s," "r," and "th," but his concentration was so good that, except for dictation, in which his disability caused him to appear very backward, his scholastic attainments were normal. His English composi-

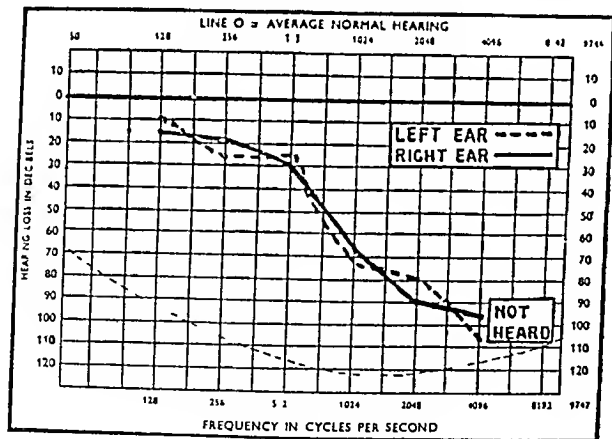


Chart of Case D

tion, in which he could choose his own words, was well up to standard, and his arithmetic was good. His deafness had never been suspected either at home or in school. He had merely been considered a rather mediocre member of a clever family. He has a distinct gift for drawing, and is being referred for special training in art. He is also attending the lip-reading classes provided for all these children.

**Case E**—Girl aged 11 This child was suspected of deafness at 3 years of age by her parents because she was "late in talking." Her defect involves "s," "sh," and "r" markedly. She is highly intelligent and has actually won a scholarship, she attends a secondary school, where her teachers, informed of her disability, have been able to give her special consideration. She is now successfully learning French. She is an expert self-taught lip-reader. At 3 metres, with her back turned, she did not hear a single word of the first list of 25. Facing the speaker at the same distance, she repeated 16 correctly out of the second list of 25 words. At 1 metre,

with her back turned, she heard none of the third list of 25. Facing at 1 metre, she repeated 20 of the fourth list of 25 words. Hearing for connected speech, in which the "tunes" help it is (facing) 4 out of 5 at 3 metres, and 5 out of 5 at 1 metre.

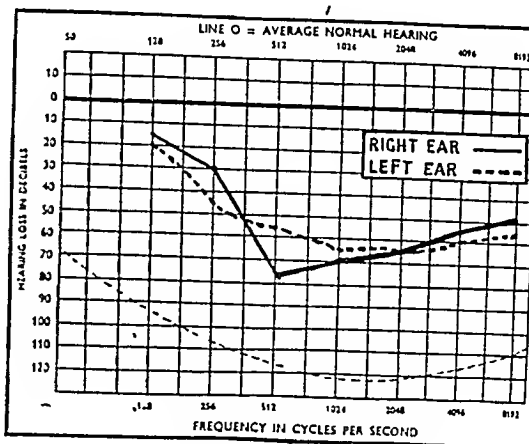


Chart of Case E

**Case F**—Girl aged 13 This chart of typical low-tone deafness is given only for comparison. There was a family history

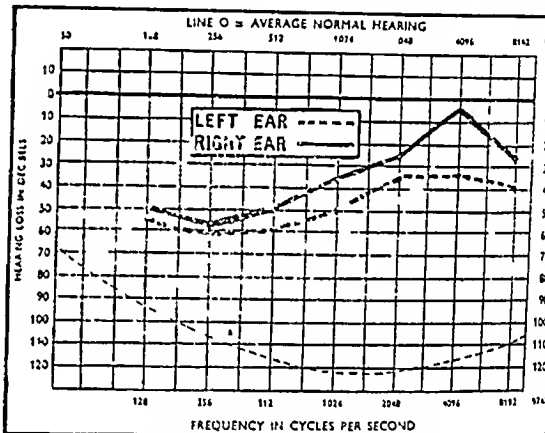


Chart of Case F (low-tone deafness)

otosclerosis. The child's speech was perfect, but very quiet. Her school work was excellent.

### Conclusions

The estimation of the hearing of children by pure-tone audiometric methods is highly skilled work. Every large school medical staff should possess at least one medical officer (preferably a recognized Certifying Officer already familiar with normal standards of intelligence and scholastic attainment) who is adequately trained in audiometry and phonetics. Small authorities could send their cases for investigation to the large centres.

The hearing of all children over 7 years old who show persistent defects of articulation should be investigated by the trained medical officer. The co-operation of other school medical officers, speech therapists, and teachers in referring cases is essential.

No child with persistent defective articulation should be certified as mentally defective on the results obtained from tests involving language without an investigation of the hearing.

Accurate diagnosis of high-tone deafness is already possible. The problems of its aetiology and treatment (medical and educational) are matters urgently needing consideration.

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# AN "EXPLOSIVE" OUTBREAK OF HAEMOLYTIC STREPTOCOCCAL TONSILLITIS ON AN R.A.F. STATION

BY

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The *Bulletin of War Medicine* of July, 1943, Vol. III, No. 11, published an abstract of an article by Bloomfield and Rantz. This described an outbreak of streptococcal sore throat in an American Army camp. The following description of an epidemic which occurred on an R.A.F. station may prove of value. It will be seen to be similar in many respects, but it presents some interesting points of comparison.

## Incidence of Cases

The outbreak occurred in Nov., 1942, and of a total camp personnel of 14 officers and 351 airmen, 89 airmen were affected. The "explosive" nature of the epidemic is indicated by the daily incidence of fresh cases, which was as follows:

1st day .. .. .	4	5th day .. .. .	5
2nd .. .. .	25	6th .. .. .	2
3rd .. .. .	42	7th .. .. .	2
4th .. .. .	8	8th .. .. .	1

Subsequent to this, no fresh cases were reported.

## Clinical Features

Clinically, the patients were acutely ill, showing marked local and general reactions. The tonsils were red and oedematous, with patches of exudate. In many cases the cervical glands were enlarged and tender. Those patients without tonsils had a diffuse pharyngitis. Temperatures ranged up to 104°.

Response to the sulphonamide group of drugs was not as dramatic as might have been hoped, and in many cases there was a recrudescence of pyrexia around the tenth day. Blood sedimentation rates were almost invariably markedly raised—in some instances as high as 85 mm. (Westergren) in 1 hour—and even after the lapse of 4 to 5 weeks an increase was observed in many cases. Convalescence tended to be prolonged, 3 to 4 weeks elapsing before discharge from hospital. Two cases of otitis media, one of acute carditis, and two of arthritis were among the complications. Throat swabs from a number of patients all gave cultures of a haemolytic streptococcus which belonged to Group A Lancefield and was serologically Type 9.

## Investigation

In the course of investigation it was noted that the cases were confined entirely to those who dined in one particular mess. Of the officers, N.A.A.F.I. personnel, or civilians (one of whom fed in this mess) none was affected. There was no relation between the case incidence and the distribution of personnel in the sleeping billets. These features suggested a food-borne infection rather than the more usual "droplet" spread from case to case, although it is probable that the 10 cases occurring from the fifth to the eighth day were infected in this fashion. By studying the movements of affected personnel immediately before the outbreak, the period when the infection was presumed to have occurred was narrowed down to between 2 and 3 days prior to the first case being seen. Bacteriological examination of food-handlers was carried out. It was discovered that a cook who had been in charge of the preparation of milk on one of the days under suspicion was heavily infected with haemolytic streptococci. These were of the same serological strain as those isolated from patients, although the cook was himself symptom-free. The milk in question was tinned, and was prepared 2 to 3 hours before use by mixing one part of tinned milk with two parts of boiling water. This would give the mixture an initial temperature of about 65 to 70° C. When it was allowed to stand this would rapidly drop, providing an excellent medium for growth of organisms at optimum temperature. During the period in question the cook was suffering from a severe head cold and was sneezing continually. The conclusive proof of isolating the organisms from the milk under suspicion was impossible, as a sample was not available. Circumstantial evidence, however, strongly supports the assumption that this was the medium by which the infection was spread.

## Carrier Rate

With regard to the "cookhouse" personnel, the following statistics were obtained when throat swabs were taken 12 days after the outbreak: 20% had developed acute tonsillitis; 45% were carriers of haemolytic streptococci (30% Group A Type 9, 15% not Group A) and symptom-free; 35% had negative throat swabs and were symptom-free. If it is permissible to consider these persons as a representative cross-section of the community (the approximate similarity between the percentages who actually developed the condition would seem to support this assumption—20% of the cookhouse personnel and 25% of the station personnel), it can be concluded that 12 days after the outbreak of the epidemic 45% of the community were carriers of haemolytic streptococci. In 30% of cases the organism belonged to Group A Type 9.

After the lapse of a further 12 days, swabbing of the throats of a number of personnel chosen at random showed that the haemolytic streptococcus carrier rate had fallen to 25%. Unfortunately grouping and typing of this further series of throat swabs was not carried out, but it is probable, however, that this decline of 20% occurred in the numbers of those who harboured haemolytic streptococcus Group A Type 9.

Presuming that the decline in carrier rate during the first 12 days subsequent to the outbreak was approximately the same as that during the second 12 days (in all probability it was even greater), it would appear that on the first day of the epidemic the proportion of personnel who harboured this particular strain of organism in their throats but were symptom-free (i.e., were immune) would have been in the region of 50%.

In the intervening period between the two series of throat swabs the community had been divided into two sections, which were isolated from one another. The personnel of one section carried out gargling with pot. chlor. and phenol twice daily, while among those of the other section no preventive measures were taken. It was noted that, in spite of this, the carrier rates of the two sections remained exactly the same. This would seem to substantiate the doubts which have been cast on the usefulness of gargling in an outbreak of this kind.

## Conclusion

It is concluded that this was an epidemic in which the infection was primarily food-borne, with case-to-case spread playing a very minor part. It is thought that the reason for the comparatively small incidence of case-to-case infection may have been the fact that those susceptible had been picked out by the primary infecting agent, the few who escaped this hazard rapidly succumbing to "droplet infection." This is borne out by the remarkably large number of immunes—probably at least 50% of the community.

## Comparison with a Similar Outbreak

On comparing this epidemic with that described by Bloomfield and Rantz the following will be noted: (a) That in both cases a food-borne infection was suspected. (b) That in both instances case-to-case infection was minimal: while in the latter this was presumed to be due to a low virulence of the infecting organism, in the former the reason was thought to be that the majority of those who escaped were immune to the particular strain concerned. (c) That the causal organism in the American epidemic was of a different Griffith subtype, being Group A Lancefield subtype 15. (d) That the main clinical features were similar in both, with the exception that Bloomfield and Rantz describe the appearance of a characteristic scarlatiniform rash with subsequent desquamation in one-fourth of the cases, while in no instance was a rash observed in the present epidemic. This suggests that haemolytic streptococci belonging to subtype 9 play no part in the causation of scarlet fever, in contradistinction with those belonging to subtype 15.

## Summary

An explosive outbreak of haemolytic streptococcal tonsillitis is described.

The evidence suggested that it was a food-borne infection, probably by contamination of milk by an infected cook, who was a carrier.

A large proportion of the community were immune to this particular strain of organism.

Routine gargling had no effect in reducing the carrier rate during the epidemic.

A comparison is made with a similar type of outbreak which occurred in an American Army camp.

I wish to tender thanks to Dr. N. Crowley for the help she gave me in the bacteriological investigation of throat swabs, etc.

## TREATMENT OF RHEUMATOID ARTHRITIS WITH BISMUTH

BY

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The use of gold against active rheumatoid arthritis has fully justified itself in spite of the faulty premises which led to its introduction. Analysis of my last 200 cases indicates that it results in the disappearance of symptoms and signs of activity in 70%, but relapse within six months occurs in the majority of those subjected to only one course of injections—usually 0.8 g. Four courses in two years appear to eradicate the disease in 55%, but the possibility of recurrence, even 15 years later, forbids the use of the word "cure." The great objection to gold treatment is the high incidence of toxic reactions. In the early days it was as much as 45%, but with decreased dosage, and the use of the less toxic calcium aurothiomalate, the figure has fallen to 10 in the last 60 arthritides so treated—i.e., approximately 16%. Immediate interruption of treatment at the first sign of any one of the numerous reactions which may arise will almost invariably be followed by a slow but complete disappearance of the toxic effect. I have seen one case of agranulocytosis recover after five months, and one of gold nephrosis with oedema recover after three months. In each case instructions as to dosage, choice of preparation, and watch for toxic signs had not been observed. The commonest and most persistent reaction is seen in the skin, in which various irritating rashes are produced. It is this which has led to such fear of gold.

It seems probable that gold acts by virtue of its being a heavy metal, and not from any specific effect on the infecting agent responsible for the arthritis. In order to see whether it were possible to obtain the same effect with a less toxic substance, I started, late in 1942, administering bismuth. This substance was chosen because pharmacologically it acts similarly to heavy metals, it is easily procurable in injectable form, and its toxicity is low.

### Method

Twelve consecutive patients with active rheumatoid arthritis were treated with weekly intramuscular injections of injectio bismuthi (9) or injectio bismuthi salicylatis (3). One mil of the former and 2 mils of the latter contain 0.2 g. of bismuth and bismuth salicylate respectively. These quantities were used for 10 injections, giving a course-dose of 2 g.

**Clinical Material.**—Ten females, two males; aged from 24 to 63 years. With the exception of one who had suffered for 9 years, they gave histories of 9 years (2), 8 (2), 4 (4), 2 (1), 1 year (1), 1/2 year (1). Eleven patients had had one or more courses of gold in the past; in three only had it failed to do any good. The others had relapsed, usually within 6 months of finishing the course.

**Signs of Activity.**—In all cases there were pain and swelling of many joints, a recent extension of the disease to joints previously spared, and a raised E.S.R. in one hour the figure (Westergren method) were 22 mm. to 100 mm.

### Results

The effect of treatment was classified as—

**Group 1—Very good** if at the end of the course pain and swelling (not due to old deformity) had disappeared, and if the E.S.R. was below 7 mm for one hour. Only four patients qualified for this category, the initial and final E.S.R. figures being 22/2, 23/5, 70/5, 23/5.

**Group 2—Good** was the classification of those patients whose clinical signs had improved as in the former group but in whom the final E.S.R. for the first hour was between 7 and 15 mm. There were two of these with E.S.R. figures of 52/11 and 50/11.

**Group 3.—Moderate improvement:** those patients whose pain decreased and whose ability to perform certain movements—e.g. making a fist and walking—improved beyond doubt. Two fell into this category, with a noteworthy inertia of sedimentation rate. The initial and final figures were 40/22, 35/49.

**Group 4.—Failure**—i.e., those arthritides whose symptoms and signs showed no improvement. Of these there were four. The corresponding E.S.R. figures were 55/34, 38/35, 31/26, 100/110.

None of the patients has been under observation for less than 9 months or more than 1½ years from the beginning of bismuth treatment.

For practical purposes Groups 1 and 2 may be taken together as showing good results and Groups 3 and 4 as being failures. This gives improvement in half of a small series. There was no relation between the duration of the disease and the age of the patient with regard to the effect, or absence of effect, of bismuth on the activity of the arthritis. The two males were failures. Three patients who had had gold previously and obtained no relief provided three bismuth failures.

**Relapses.**—In Group 1 there has been no relapse. In Group 2 both have relapsed within 2 months of the end of treatment. In Group 3 both members relapsed within 7 weeks.

**Toxicity.**—There were no toxic reactions.

**Difference of Preparation.**—Bismuth salicylate provided two failures and one good result. It is probably immaterial whether bismuth or the salicylate is employed. The bulk of the former is less.

**Control.**—Six rheumatoid arthritides were given weekly intramuscular injections of 1 mil of sterile water. At the end of six weeks this was stopped because no objective improvement was seen, and in only one case did the patient declare herself to suffer less pain.

### Conclusion

(1) Bismuth by intramuscular injection appears to be capable of exerting a beneficial influence on the course of rheumatoid arthritis. (2) It compares unfavourably with gold in this respect, the probability of lasting benefit being less than half that expected from gold. (3) Relapse appears to occur more quickly than that following gold. (4) Gold-resistant arthritis are unlikely to benefit from bismuth.

Bismuth is indicated only for rheumatoid arthritides who show intolerance, whether physical or mental, to gold.

## Medical Memoranda

### Trypanosomiasis in a European treated with Pentamidine

As cases of early trypanosomiasis may occasionally be seen at the present time among Europeans returning from tropical Africa, an account of the treatment of such a case with 4,4'-diamino-diphenoxypentane (pentamidine, or M & B 800) is topical. An extensive trial of this drug on natives in Uganda was reported by Lawson (1942), and a fatality, possibly attributable to it, by McComas and Martin (1944).

#### CASE HISTORY

The patient, a Polish officer aged 32, had been stationed in a tsetse-fly area in Sierra Leone from April, 1942, to May, 1943. He thinks that he was bitten several times, but remembers particularly an occasion in Jan., 1943, when he had what he took to be a tsetse fly inside his trousers. Apart from malaria he was well until May, 1943, when he had a brief attack of pain and swelling of the glands in the neck, axillae, and groins. In June, 1943, he returned to the United Kingdom, and noticed occasional headaches, fever, and swelling of the face in the mornings. In the middle of September he reported sick with what he thought was malaria; scanty trypanosomes were found in thick blood films, and he was admitted to a military centre for tropical diseases.

Examination revealed the following: Irregular pyrexia to 100.5°, pulse rate almost constantly 100 to 110 a minute; mental state apparently normal; puffy swelling of lower eyelids and adjacent face, slight enlargement of occipital, axillary, and inguinal glands; no rash; spleen not palpable. A blood count showed: red cells, 3.7 millions per c mm; haemoglobin, 78%; white cells, 12,500 per c mm—neutrophils 70%, eosinophils 5%, monocytes 4%, lymphocytes 21%. Very scanty rings of *Plasmodium falciparum* were found in thick blood films, and, on two occasions, scanty trypanosomes in blood films and in juice from a cervical gland.

Treatment was begun in Sept., 1943, with 100 mg of pentamidine dissolved in 5 c cm of sterile distilled water, given intravenously.

on two successive days, followed by eight daily injections of 150 mg. After five days without treatment a further injection of 200 mg. was given, followed by nine more, each of 300 mg., over a period of 14 days. A total dose of 4.3 g. was thus given in 39 days to a patient weighing 128 lb. As the preparation used was the relatively soluble isothionate, this would probably correspond to a dose of about 3 g. of the preparation given by Lawson (1942). The solutions were freshly prepared and the injections were given very slowly, as they were accompanied by distressing palpitation, a sense of pressure in the forehead, and itching of the skin. The blood pressure was taken on several occasions, and no fall was noticed after the injection. There was no thrombosis of veins or local reaction at the site of injection. The urine remained normal throughout the treatment.

Rapid improvement followed the first few injections. The temperature and pulse rate fell to normal, the headaches and swelling of the face disappeared, and the weight increased. When last seen the patient felt perfectly well in every respect. No enlarged glands could be felt.

The erythrocyte sedimentation rate, which had been 81 mm. in one hour and 114 mm. in two hours before treatment, was 22 mm. in one hour and 54 mm. in two hours at the end of treatment, and 5 mm. in one hour and 15 mm. in two hours three months later.

The blood count at the end of the treatment was: red cells, 4.6 millions per c.mm.; haemoglobin, 95%; white cells, 9,000 per c.mm.—polymorphs 61%, eosinophils 2%, basophils 1%, lymphocytes 32%, monocytes 4%. No trypanosomes were found. It is noticeable that no leucopenia had been produced and that the figure for red cells and haemoglobin had substantially improved, although no drug but pentamidine had been given.

No trypanosomes were found in the cerebrospinal fluid. The changes in this fluid, with treatment, are shown in the following table:

	Total Protein (mg.)	Cells per c.mm.	Nonne	Pandy
Before treatment	35	10	+	+
After treatment	45	22	W+	+
Three months later	30	4	Tr	Tr

	Lange	Takata-Ara (minutes)						
		0	3	8	10	30	60	90
Before treatment	3334432100	Tr	W+	W+	W+	+	+	+
After treatment	2211110000	0	Tr	W+	Tr	W+	W+	W+
After three months	112232100	0	Tr	Tr	Tr	W+	W+	W+

Positive (+). Weak positive (W+). Trace (Tr). Faint Trace (FTr). Doubtful (=).

I am indebted to Dr. H. H. Fleischacker for these observations and for the opinion that, though their exact interpretation is uncertain (Fleischacker, 1943), they probably indicate a diminution in the globulin fraction of the protein and a return of the cerebrospinal fluid towards normal.

In view of the apparently satisfactory results of treatment with pentamidine in this case, the patient was allowed to return to duty without further treatment, and was advised to have his C.S.F. re-examined in six months' time.

I am grateful to Col. C. F. Anthonisz, Officer Commanding a Military Hospital, for permission to publish this case report and to Messrs. May and Baker for supplies of pentamidine.

R. R. BOMFORD, D.M., F.R.C.P.,

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### Spontaneous Thrombosis of Axillary Vein

The condition reported below is not common, only two or three cases a year being seen at a big general hospital.

#### CASE HISTORY

On Feb. 2, 1944, the patient, an airman, was first seen. He complained of a sudden diffuse swelling of his left arm, which had begun 24 hours before; on rising on Feb. 1 his left arm was swollen from finger-tips to above the elbow and was painful along the inner side of the upper arm. He did not recall any recent trauma to arm or shoulder; he had had no infection of the hand or arm and no other symptom previous to the swelling. He was employed on cook-house duties with no exceptionally hard work; he was, however, in the habit of reaching for boxes and jars from high shelves.

On examination the patient was a well-developed young man aged 22. There was a diffuse cyanotic swelling of his left arm, forearm, and hand, including the fingers; pitting oedema was present only to a very slight extent. There was tenderness over the third part of the axillary artery extending downwards for three inches. The ante-cubital veins and those on the dorsum of the hand were much distended with blood, and the whole limb gave the impression of being taut. There was a small scratch on the anterior surface of the forearm, which showed no evidence of infection; no tenderness of the epitrochlear or axillary lymph glands was found. The subclavian, brachial, and radial pulses were all present, though the left radial

was weaker than the right. Elevation of the arm for purposes of testing for cervical rib or other pressure on the subclavian vessels was not attempted at this stage. General examination revealed nothing abnormal. The temperature was not raised.

**Progress under Treatment.**—The patient was placed in bed on his back, with the left arm raised on two pillows and immobilized between sandbags. Next day the temperature rose to 99.6° F.; the swelling was more obvious, had become very firm, and he was complaining of tingling in the finger-tips; examination revealed no sensory changes in the arm or hand. The patient was given prophylactic sulphathiazole 2 g. stat., then 1 g. four-hourly. On the fifth day the firm oedema had much increased, particularly in the region of the elbow-joint, and there was a cord-like thickening and tenderness along the line of the brachial neurovascular bundle. On the following day the temperature returned to normal and the swelling had started to diminish: the sulphathiazole was stopped, a total of 13 g. having been given. On the eighth day the symptoms had greatly lessened and there was no pain or paraesthesiae. He was allowed up, and was discharged to his unit for 14 days' sick-leave. Besides the chemotherapy, the treatment consisted of daily applications of glycerin and ichthyol paste to the upper arm.

On return from leave he was examined for evidence of cervical rib, scalenus anticus syndrome, and subclavian aneurysm, but there was no evidence of these. Radiographs revealed no abnormality in the base of the neck and the Wassermann test was negative. A diagnosis of spontaneous traumatic thrombosis of the axillary vein was made, probably resulting from sudden rupture of the small veins draining into the axillary in the region of the bicipital groove, after stretching of the arm upwards as in reaching for an article from a high shelf.

#### DISCUSSION

The aetiology of axillary vein thrombosis is varied, being divided into two main groups: (a) pressure mechanism; (b) tearing mechanism.

Into the first group we can put the following: (i) Pressure on the axillary vein caused by an aneurysm of the third part of the subclavian artery; this may be either a traumatic or a syphilitic aneurysm. (ii) Aneurysm of the axillary artery, caused by falls on the outstretched arm or trauma from fractures. (iii) Continuous pressure by a cervical rib.

Into the second group falls the following: If the smaller veins of the axillary region are inadequately supported by the surrounding muscles at the moment of sudden stretch they may rupture and thrombose; this thrombosis may spread up the larger veins into the axillary vein, and cause a solid block to the venous return from the arm. The temperature recorded is thought to be due to the breaking down and absorption of the thrombus. I have seen a case illustrating the above in a youth who ruptured his axillary vein, with consequent thrombosis, when about to make a violent service at tennis; he was right-handed, and ruptured his right axillary vein.

I am indebted to Squad. Ldr. Rouillard for his treatment and for comments on this case.

G. E. FFRENCH, M.B.,  
Fl. Lieut., R.A.F.V.R.

### An Extraperitoneal Hernia of an Old Appendix Scar

The following unusual case is interesting enough to warrant publication:

Fourteen years ago Mrs. V., aged 32, of Dutch nationality, had had her appendix removed abroad. Till lately she had had no further trouble. She had come to this country at the beginning of the war, and was doing office work. Some three weeks before I saw her she began to have acute pains in the region over her appendix wound. Examination revealed a small swelling over the site of the appendix wound which seemed to be expansile on straining. On palpation this was acutely tender. It was taken to be a small hudge due to the weakness of the old scar—in other words, the start of a ventral hernia. She was advised to have the condition put right before it grew larger.

The operation was performed on Nov. 7, 1943, when a rare and curious condition was found. The scar in the tenuous portion of the external oblique muscle was good and firm, but at one point there was a small hole not more than a quarter of an inch across. Through this had protruded the extraperitoneal fat and vessels, but there was no peritoneal sac. It was the exact reproduction of the hernia met with near the linea alba where the vessels and nerves come to the surface. Though the neck of the protrusion was small, it mushroomed out to the size of a large flattened cherry, and this was the swelling previously felt. Large nerves were included it was impossible to say, but it is supposed that the acute pain in the hernia of the linea alba is due to the nipping of the nerve which is always present. It is known, however, that the extraperitoneal tissue is intensely sensitive. The neck of the protrusion was closely connected and continuous with the tendon of the external oblique muscle, and had to be freed all round; it was opened and examined before being replaced and the hole closed. The patient's recovery was uneventful.

DUNCAN C. L. FITZWILLIAMS,  
M.D., CH.M., F.R.C.S.



## Reviews

### ULCERATIVE COLITIS

*The Modern Management of Colitis.* By J. Arnold Bergen, M.D., M.S., F.A.C.P. (Pp. 322; illustrated. \$7.00 post paid, or 38s. 6d.) Springfield and Baltimore: Charles C. Thomas; London: Baillière, Tindall and Cox. 1943.

Dr. J. Arnold Bergen has for many years been chief of the section on intestinal diseases in the division of medicine at the Mayo Clinic. As about 250 cases of ulcerative colitis enter the clinic each year, his unique experience entitles him to speak with authority on the disease. Though his book, *The Modern Management of Colitis*, contains much of interest it is on the whole disappointing. Ulcerative colitis is classified into nine "types": (1) the common form of the disease, to which he has given the name "thrombo-ulcerative colitis"; (2) "segmental ulcerative colitis," in which the rectum escapes; (3) "chronic ulcerative colitis," which includes several unrelated groups of cases differing in various respects from the common type; (4) "tuberculous ulcerative colitis"; (5) "amoebic ulcerative colitis"; (6) colitis caused by dietary insufficiency; (7) ulcerative proctitis caused by the virus of venereal lymphogranuloma; (8) cases in which "allergy plays a role in the progress and possibly also in the inception of the infection"; (9) chronic ulcerative colitis following bacillary dysentery. But Nos. 4, 5, and 7 cannot be regarded as forms of ulcerative colitis at all, and it is doubtful whether either No. 6 or No. 8 exists as an independent condition, though food deficiency and allergy may occasionally aggravate already existing ulcerative colitis.

Bergen still believes that the diplostreptococcus he described some years ago is the cause of the common form of ulcerative colitis, though almost all bacteriologists consider it to be nothing more than a non-pathogenic enterococcus. His enthusiasm for treatment by vaccine and sera made from it appears to be less than it was at one time.

The important work of Hale-White, Saundby, Hawkins, and Lockhart-Mummery in England, Mathieu and Roux in France, and Adolf Schmidt in Germany is completely ignored in Bergen's historical survey of ulcerative colitis, from which it would appear that there was no advance in our knowledge of the subject between the original description by Wilks and Moxon in 1875 and a paper by Logan in 1919.

There is a good account of the irritable colon, though this has nothing to do with colitis, but the statement that "the associated nervous symptoms have included hysteria, introspection, fear, anger, hypochondria, neurasthenia, melancholia, unhappiness, and sorrow" shows some confusion of thought. It is also disconcerting to find an illustration representing "the average position of the large intestine with reference to the costal arch," which might have been a reproduction from an anatomy book of 1900, for it shows a colon as wide as the caecum throughout its length, with the transverse colon passing in a straight line from the hepatic flexure to the splenic flexure, and then up in the epigastrium.

### HISTORY OF CAESAREAN SECTION

*Caesarean Section. The History and Development of the Operation from Earliest Times.* By J. H. Young, M.B., Ch.B. (Pp. 254. 16s.) London: H. K. Lewis and Co. 1944.

This interesting volume is probably the most complete history of the operation ever written, and shows that Caesarean section is one of the oldest operations in the history of medicine, its origin being lost in the mists of antiquity. Certainly it was known to the Jews as early as 140 B.C., and some of the mothers seem to have survived, for it is stated that "it is not necessary for the woman to observe the days of purification after the removal of a child through the parietes of the abdomen." There is, however, no definite evidence that the operation was ever successfully performed upon a living European woman until the year 1500, and in the British Isles the first Caesarean section from which the mother survived seems to have been done by an illiterate Irish midwife in 1738. In England the first

successful case does not appear until 1796. Many records are quoted of cases in which impatient and ignorant women performed the operation upon themselves; and up to 1888 six cases are mentioned with five recoveries!

All this, together with the arguments for and against Caesarean section as opposed to craniotomy, makes good reading, but the chief value of the book lies in the fact that the various improvements in operative technique are carefully traced. In these chapters the extraordinary fact emerges that, although suture of the abdominal wound had been practised for generations, suture of the uterine incision was not generally considered until about the year 1840, and did not become universally accepted until Sanger described his operation in 1882. We find also that the "modern" lower segment operation dates back to 1786 and, as Prof. Miles Phillips states in the foreword, "Any obstetrician proposing to modify the operation in any particular should consult this work."

War economy in book manufacture probably prevented the inclusion of illustrations, but in spite of their absence the volume is absorbing and instructive throughout. An idea of the amount of work involved in compiling it can be obtained by studying the bibliography at the end of each chapter, and we hope that Dr. Young's thesis will have the success it deserves.

### A HOUSE-SURGEON'S HANDBOOK

*The Hospital Care of the Surgical Patient. A Surgeon's Handbook.* By George Crile jun., M.D., and Franklin L. Shively jun., M.D. Foreword by Everts A. Graham, M.D. (Pp. 184; illustrated. 14s. or \$2.50.) Springfield and Baltimore: Charles C. Thomas; London: Baillière, Tindall and Cox.

The change from the empirical to the scientific approach in the problems of post-operative care which has occurred in the past twenty years is well demonstrated in this small book by George Crile jun. and Franklin Shively, both attached to the Cleveland Clinic. As Everts Graham says in the foreword, it is particularly fitting that such a book should have as one of its authors the son of a pioneer in the use of physiological methods for the study of surgical problems. Its primary aim is to act as a guide to the interns working at the clinic, so that it gives a complete picture of the various methods of pre- and post-operative care which have become standardized at Cleveland.

The first section deals with physiological principles, and covers such subjects as the water and chloride balance, acidosis and alkalosis, the use of glucose and saline, and so on. The next section describes the treatment of the common post-operative complications, and there are some valuable common-sense paragraphs upon the preparation of the patient for operation. A further section gives a clear account of the technique of the procedures which the house officer may be called upon to perform frequently, including lumbar puncture, blood transfusion, thoracentesis, and gastric and intestinal intubation. Finally there is an unusual section which gives good advice to the intern regarding his relationship to patients and relatives, to the nursing staff, and to his chief.

There are clear line-drawings to illustrate many of the points mentioned in the text; and handy lists of doses of common drugs, of gastric diets, and of normal blood chemistry are provided at the end of the book. This is a useful volume which a newly appointed house officer would find of considerable value in his early encounters with surgical patients.

### Notes on Books

A cheaper edition has been made of Mr. C. J. FERRÉ's book *The Soya Bean and the New Soya Flour* (William Heinemann) 3s. 6d.), published fifteen years ago and now reissued without alteration. For some unknown reason soya has not as yet become popular in the United Kingdom, though the wonderful properties of this bean for nutritional and industrial purposes have become widely recognized in other countries, such as the U.S.A. and Germany. A good description of the cultivation and varieties of the bean is given together with an analysis of its constituents, but the book mainly deals with the nutritional value of soya. The different processes of manufacturing soya flour are described, and a number of useful recipes incorporating it are included at the end of the book, which is the work of a man who knows his subject.

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## BRITISH MEDICAL JOURNAL

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## HEPATITIS AFTER TRANSFUSION

Transfusion of whole blood has never been a procedure entirely free from risks. Reported mortality figures from the operation have varied in different series from 0.1 to 1%. Death has usually been due to renal failure after haemolytic crises or to heart failure from circulatory overloading. Less severe reactions—haemolytic, pyrogenic, and allergic—and non-fatal vascular accidents also occur. The administration of blood products—plasma and serum—is not attended, other than in exceptional circumstances, by haemolytic reactions; but the other above-mentioned dangers remain. Another transfusion hazard is now being reported and must be seriously considered. Hepatitis is occurring after the use of certain batches of human serum and plasma. This danger was anticipated by the Ministry of Health, whose medical officers a year ago published a memorandum<sup>1</sup> on this "homologous serum jaundice." Up till then the condition had been recognized chiefly after yellow-fever vaccination, the virus being suspended in human serum. Such reports had come from this country,<sup>2</sup> South America,<sup>3</sup> and the U.S.A.<sup>4</sup> Hepatitis was also known to occur after the injection of serum from a measles convalescent, and, latterly, also after the injection of plasma from a mumps convalescent.<sup>5</sup> In the last year the condition has been seen, and in some cases reported, after transfusion of serum and plasma.<sup>6,7</sup> Bradley, Loutit, and Maunsell make a further contribution to this story in our present issue.

In one or two instances jaundice after transfusion of blood alone has been seen.<sup>8</sup> It is, however, more difficult to be certain of the diagnosis in such cases. Batches of plasma and serum can be incriminated because multiple cases occur after their use; more or less homogeneous material has been given to many recipients. This does not obtain with whole-blood transfusion, which is a much more individual affair. Unless a single donor's blood on repeated occasions results in jaundice of the recipient, it is impossible categorically to aver that his blood carries a hepatotoxic agent; such a donor has not yet been reported. If he does exist—and he probably does—then his plasma or serum could easily make a large pool icterogenic. Very small quantities even of pooled material are effective, though the dose and route of administration seem to bear no relation to the severity of the resulting hepatitis.

This homologous serum jaundice is probably closely related to post-arsphenamine jaundice, also very prevalent at present. Contamination of syringes with human material from previous use has been suggested as the cause of this.<sup>9</sup> Its relation to infective hepatitis is less clear. There is some evidence that an attack of homologous serum jaundice or post-arsphenamine jaundice confers no immunity to infective hepatitis, and vice versa.<sup>10</sup> The cause of homologous serum jaundice is therefore unknown. A virus aetiology has been postulated: MacCallum and Bauer<sup>11</sup> conclude from their experiments that the evidence "is not inconsistent with the view that the agent is capable of multiplying in tissue culture."

Although series of cases are now being published, the cause of jaundice must have been misinterpreted in many more. The latent period before the onset of jaundice and the accompanying symptoms is long—40 to 160 days; thus the connexion with previous transfusion may be missed. The clinical picture and the biochemical findings are usually indistinguishable from those of infective hepatitis. Most of the cases occurring may well be masquerading under this diagnosis. Although, like infective hepatitis, the condition is usually mild and of short duration, there is an impression that the mortality is higher: for example, among about 200 probable cases, not including yellow-fever-vaccine jaundice, there have been 13 deaths. In most of the transfusion cases, in contradistinction to the vaccine and convalescent-serum cases, it has been difficult or impossible to ascertain the batch of serum or plasma responsible for the condition. This is mainly because the batch and index numbers of the materials used have not been entered on the patient's case sheet. As yet, human serum and plasma processed for transfusion are not covered by the Therapeutic Substances Act, the terms of which would require such details to be recorded. As soon as the war is over steps will have to be taken to bring such transfusion materials within the scope of the Act. In the meanwhile much can be done to prevent the widespread distribution of incriminated batches. Due caution should be observed as regards the transfusion of serum or plasma; if available, blood should be given rather than serum or plasma, and unless there are strong indications for the latter (e.g., haemoconcentration). So far as possible any one case should be transfused with serum or plasma from one batch only; careful records of batch and index numbers of material given should be kept voluntarily by medical officers performing transfusions; and a follow-up should be made for at least 4 months on all cases transfused. The appointment for each hospital or group of hospitals of a full-time transfusion officer, whose duties would include the keeping of the records and the supervision of the follow-up, would facilitate this process. When hepatitis cases are discovered through the follow-up they should be notified to the Regional Transfusion Officer, together with the index numbers of the blood, serum, or plasma given. In this way the Regional Transfusion Officer would be able to arrange for the removal from circulation of icterogenic batches.

<sup>1</sup> *Lancet*, 1943, 1, 83.<sup>2</sup> Laidlaw and MacCallum, *Trans. roy. Soc. trop. Med. Hyg.*, 1937, 31, 297.<sup>3</sup> Soper and Smith, *Amer. J. trop. Med.*, 1938, 18, 111.<sup>4</sup> Surgeon-General U.S. Army, Circular Letter No 95, 1943, Washington.<sup>5</sup> Beeson, Chesnev, and McFarlan, *Lancet*, 1944, 1, 814.<sup>6</sup> Morgan and Williamson, *British Medical Journal*, 1943, 1, 750.<sup>7</sup> Steiner, *ibid.*, 1944, 1, 110.<sup>8</sup> Beeson, *J. Amer. med. Ass.*, 1943, 121, 1332; Steiner, *loc. cit.*<sup>9</sup> MacCallum, *Brit. J. veter. Dis.*, 1943, 19, 63.<sup>10</sup> Beattie and Marshall, *British Medical Journal*, 1944, 1, 547.<sup>11</sup> *Lancet*, 1944, 1, 622.

## CHANGING FOOD HABITS

The science of nutrition has its essential roots in biochemistry and physiology. For the detection and characterization of diseases due to malnutrition a knowledge of pathology is necessary, while the all-round nutrition expert must also be well informed on the agricultural and economic aspects of the production of foodstuffs. So far as animals are concerned the problems to be solved will usually be confined to these four subjects. In human beings, however, complications arise in the fields of sociology and psychology. The mysteries of the kitchen must be explored, and all the fads and fancies of cooking and eating must be taken into account. In recognition of the importance of the "human element" in dietetics the U.S.A. National Research Council has not been content with setting up a committee on the biochemical and physiological sides of nutrition, but in addition has established a Committee on Food Habits whose interests are psychological and cultural. A report of this committee for 1941-3, consisting mainly of a collection of articles by different authors, is now available.<sup>1</sup> Its conclusions are of interest not only in giving an idea of the present state of nutrition in America but also in indicating psychological factors which must operate in various forms throughout the world.

As Kurt Lewis points out, certain foods highly prized by some are less appreciated by others. But this of course we knew from the experience of Mr. and Mrs. Jack Sprat. But to take a case more easily verifiable, the population of the U.S.A. would hardly be tempted to eat live grasshoppers, though these are eaten with relish in some less highly civilized communities. It is clear that "likes" and "dislikes" are conditioned by numerous factors. Some meals and dishes may have such traditional and sentimental associations as to become almost a form of art or folk-lore. Thus "the roast beef of old England" was praised as the food for John Bull in Napoleonic times, and long before then the foreign visitor to this country was impressed by the fact that the English peasant ate much more meat than the peasant on the Continent. Food served with speeches and gold plate at a Lord Mayor's banquet, or with hard words and enamel ware in a convict's cell, forms part of a ritual of pleasure or of pain.

A dietitian who seeks to improve the food habits of a population must therefore know not only what foods are<sup>1</sup> but also what foods will be psychologically acceptable. Lewin regards price, health-giving properties, satisfying capacity, taste, and social desirability as the main factors in deciding what foods shall be bought. From questioning a large group of people he concludes that in America fowl is easily the most popular meat for social occasions, with roast joints a close second favourite. Steak and chops are much appreciated for taste, whereas when money is short the best purchases are thought to be glandular meat, such as kidney and liver, and chopped

meat. In choosing from this wealth of plenty the American housewife is inclined to be more fastidious than her English counterpart and objects to the smell of kidneys during cooking. Propaganda is therefore suggested to indicate ways by which kidneys may be cooked without undue smell and to emphasize the relatively high social status of kidney in the English kitchen—one up for English cooking, for a change.

Another inquiry was made into the "meal patterns" prevalent in the U.S.A. In every country certain foods are preferred at different times of the day. Thus in England a meal of porridge, bacon and egg, toast and marmalade, with tea or coffee, could not be mistaken for anything but breakfast; on the Continent this suffers somewhat from being translated into "ham and eggs." In America cereals, eggs, bread, toast, coffee, and tea are the main breakfast foods: the more well-to-do usually include fruit, but no mention is made of bacon. So the conjunction of bacon for breakfast does not constitute a natural law! Luncheon often consists of salads, sandwiches, and "left-overs." Dinner is the main meal, and meat, potatoes, vegetables, and pudding are the most popular items. Salads are eaten at dinner more often by the rich than by the poor, but with bread-and-butter the situation is reversed.

Natalie Joffe observes that these "meal patterns" are varied among "subcultures" of the population of the U.S.A. who to some degree retain their European tastes and traditions. The Italians, who like their food to be colourful, go for cheese of the gorgonzola type, and readily eat raw vegetables so long as plenty of salad oil is available. They have a cycle of foods to be served throughout the week, including fish on Friday, "pasta" on Thursdays and Saturdays, and meat on Sundays. Canned foods, with the exception of tomatoes, are not popular with them. Immigrants from Central Europe bring with them a taste for whole-grain foods such as bread and porridge; they prepare liver, tongue, and other varieties of meat in many ways, and are fond of sausage, cheese, and soup with dried mushrooms. The Czechs spend much time on cooking, and on Sundays have their traditional dishes of rye bread, pork, goose, sauerkraut, beans, pastry, and beer. The Negro as a rule eats much the same food as his white neighbour, which in the rural south usually consists of meat, meal, and molasses, supplemented by greens and fish. The diets of foreign elements, and particularly those of their children, inevitably veer in the direction of the prevailing American taste. All immigrants appreciate the ready availability of white bread and refined sugar, which are often consumed in such amounts as to upset the balance of diets otherwise adequate. The desire for white bread is largely a matter of taste and ease of mastication. Social motives, however, cannot be excluded, since in some parts of Europe the use of black or brown bread is the mark of poverty. It is noteworthy, moreover, that those who cannot readily obtain their own national foodstuffs prefer American foods in their simplest and most pure form. The best way to please a mixed company who have to eat the same meal is, it appears, by plain cooking and the exclusion of mixed dishes of unknown composi-

<sup>1</sup> Published by the National Research Council, National Academy of Sciences, 2101, Constitution Avenue, Washington, D.C. (Single copies available upon request to professional individuals and agencies in the field.)

tion The preference for white bread may be due in part to suspicion, conscious or subconscious of the nature and cleanliness of the constituents used in making a darker loaf. The emergency ration recommended by Miss Charlotte Chatfield for post-war relief in Europe, which consists of a dried soup of skimmed milk, peas, seasoning, and brewers' yeast, a reinforced cereal, a biscuit, and a peanut-soy spread for use with the biscuit, may be objected to because of its unusual and obscure composition, but populations near starvation will be glad of what they can get. The request of a Chinese delegate that, in order to facilitate cooking, soya-bean meal and peanuts should not be mixed together, but sent separately, is more than a hint that the unconventional mixtures composed according to the formulae of dietitians may not always be received with favour.

In addition to studying spontaneous changes in food habits the committee has been interested in the methods by which the population may be induced to change, or preserve, its habits. The merits of propaganda by the Press, radio, cinema, and personal contact have been examined, and the importance of the way of approach, such as the association of good nutrition with good looks in young women, has been emphasized. Obviously the hint has been taken from the modern advertiser. Rhoda Metraux has inquired into the general reaction of the population to food problems. The answers to questions such as "Why is the Government laying so much stress on nutrition?" and "What do you think about the meat shortage?" have been carefully studied. Meat-packing interests have paid special attention to the most effective means of advertising the nutritive virtues of their products, both to the general public and to the medical profession. Apparently in recent years the consumption of meat has tended to decline, and the desire of the meat industry that health should not suffer from this cause may not be remote from their natural desire to maintain home markets. With their abundant supplies of food the U.S.A., in spite of generous help given to their Allies by Lend-Lease, have not yet found it necessary to adopt rationing schemes to cover the wide range of foodstuffs controlled in this country. Problems that have arisen there as a result of the war may appear to us to be relatively trivial. The increased numbers of operatives working on night shifts have led to the usual difficulties of disturbed meal-times. Food arrangements, as well as lack of social contacts, cause trouble in overcrowded Washington. In Detroit many restaurants have had to close down owing to shortage of staff. On the whole, however, it appears that the state of relative plenty in the U.S.A. allows people still to ask the question "What would be nice to eat?" instead of "What can we get to eat?"

Many of the results of the American inquiry are matters of popular knowledge, and often enough epitomized in homely proverbs and nursery rhymes. But if science is "organized common sense" then clearly there are many common-sense observations of human habits that need organizing in the form of systematic collection and analysis. Human ecology is a science in the making, and in this food habits provide an obvious field of study.

## SEEING IS BELIEVING

We have recently had the opportunity of seeing four of a series of films on anaesthesia produced by Imperial Chemical Industries. These include one film each on open ether, nitrous oxide-oxygen-ether, intravenous barbiturates, and spinal anaesthesia. They are straightforward teaching films for medical students, and are excellent productions which reflect much credit upon the film technicians and the Department of Anaesthetics of Westminster Hospital who collaborated in making them. The presentation of the subjects, the clear exposition of important principles, the animated diagrams, and the photography are all to be praised. Those with an eye for good lighting and photography will be particularly struck by the quality of some of the close-ups—for example, the cerebrospinal fluid dripping from the lumbar puncture needle. Films of this kind would be a great help to students in the abrupt transition from preclinical to clinical studies. Conventional elementary lectures on anaesthesia might well be replaced by the showing of such films, followed by questions and answers and later by practical demonstrations. One advantage the film has over reality is that, suitably conceived, it can offer the student a rapid survey of the subject as a whole, with emphasis on fundamental principles, thus helping him to see in perspective the detail which he must subsequently master, another, and obvious, advantage is that many students can see the same thing at the same time without having to stand on tiptoe or peer through the chink between the anaesthetist's arm and his body.

The films err in some minor points. In the one on intravenous barbiturate anaesthesia not only are proprietary names used for barbiturates and anaesthetics which have official designations, but the proprietary packings are shown in close up. The proprietary names, it is true, are familiar—and, it may be pointed out, not of products manufactured by ICI—but the use of registered trade names to describe drugs is undesirable. There has been a welcome tendency in the U.S.A., and more recently in Britain, for manufacturers to be more modest and less confusing with their labels. But in the teaching film the official designations should be used, and none other. Another fault common to two of the films is that the aseptic precautions, as shown, are vitiated by simple technical "howlers". Thus, although it is emphasized that the operator should perform spinal anaesthesia wearing sterile rubber gloves, he is shown putting them on in such a way that there is an evident risk of contamination of the first glove while donning the second. Again, in the painting of the lumbar region with iodine, the swab is repeatedly wiped over the site of puncture after it has touched adjacent areas of skin.

If, as seems probable, films are to play their part in medical education—and, putting the case in its most modest terms, their claims are at least as strong as those of blackboard and chalk—medical schools will have to provide themselves with substandard (16 mm) projectors and sound equipment. At present the lack of suitable films provides little incentive to the purchase of projectors, and the lack of projectors, and hence of a distributing mechanism, is not an encouragement to the production of medical teaching films on an adequate scale. This deadlock will have to be broken by the provision of at least a nuclear library of medical teaching films, and the question will arise: Who is to sponsor such films and with what immediate and remote objects?

The first interest of a commercial film is in its commerce, and it has numerous reputable ways of bringing its name and its goods to the attention of those it wishes to attract.



The production of educational films is one of these ways, and the pharmaceutical industry has, in fact, stolen a march on the official teachers of medicine. The British Council is producing instructional films to show the foreign medical man what British doctors are up to. But British Medicine—if we may indulge in animism for the moment—has done very little for the *British* student in this field. The perilous effect of the "word" on the mind of the student is well described by Dr. Ff. Roberts in an article in this week's *Journal* at page 284. It looks as if the modern student is in danger of clinging to the "text" as faithfully and as slavishly as the medieval doctor stuck to his Galen. We should not let the saying "seeing is believing" become corrupted to "reading is believing." The word may take possession of a man and prevent him from seeing what is in front of his nose. The medical educationist should read Dr. Roberts's article, and have a look at some instructional films.

### CONGENITAL ATRESIA OF OESOPHAGUS

The oesophagus is gradually but surely assuming a greater importance in the field of practical surgery, and it is both interesting and encouraging to read the survey of his long experience in injuries and diseases of the oesophagus that Prof. Grey Turner gives in his recent Hume Memorial Lectures.<sup>1</sup> British surgery owes no small debt to Grey Turner for his continued confidence in the future of oesophageal surgery and his insistence that, despite all disappointments, the problems must be resolutely faced. The position of the surgery of carcinoma of the oesophagus was discussed in these columns last year.<sup>2</sup> As a contrast to this disease, which so often attacks the elderly, there is another, previously hopeless, which occurs at the very beginning of life—congenital atresia of the oesophagus. Grey Turner describes the successful attack which has been made on this condition. The commonest malformation is that in which the upper half of the oesophagus ends blindly and the lower half opens directly into the lower end of the trachea. The clinical features are characteristic. The child may exhibit cyanosis and choking at birth, but thereafter shows the signs of high obstruction in the oesophagus, for it chokes, coughs, and goes blue with every attempt at feeding, as the milk distends the obstructed oesophagus and overflows into the larynx. Because of the fistula between the lower oesophageal segment and the trachea the stomach fills with air and is obviously distended. Death occurs from bronchopneumonia after 4 to 7 days. Gastrostomy is of little avail, because food flows back from the stomach into the air passages. Relief can be obtained only by closing the fistula between the trachea and the oesophagus and restoring continuity of the latter. The treatment is worthy of consideration is shown by the occurrence of this deformity once in about every 2,500 births; in contrast ectopia vesicae is said to occur only once in 50,000 births. There is little doubt that many cases pass unrecognized under a diagnosis of "pneumonia."

Direct attack on congenital atresia of the oesophagus in a newborn child would seem hazardous, but death is inevitable if nothing is done—and the recuperative power of the newborn may be very great. After waiting three years for a suitable case Grey Turner describes how his assistant R. H. Franklin was able in 1941 to close the fistula between oesophagus and trachea and to do a direct end-to-end anastomosis of the oesophagus. Unfortunately the diagnosis had not been made until the third day, by which time the child already had some pneumonia, and death occurred seventeen hours after the operation. This was the first

attempt at restoration in Great Britain, but much earlier work had been done on the problem in America. Cameron Haight and his associates, for instance, have operated on twenty-one patients, in fifteen of whom it was possible to make an anastomosis; and four of these are well and able to swallow normally. These are all lives saved, and it is clear that further attempts are justifiable. If the diagnosis can be made on the first or second day of life and operation performed at once, then there is hope of further successes. Success will, however, come only if the surgeon has studied the pathological anatomy of the deformity, has practised exposure of the oesophagus in the cadaver of stillborn infants, and "from forethought is able to act with precision"—a dictum of Hume's, whose memory is honoured in these lectures.

### "JEEP" DISEASE

Under this title the condition known as pilonidal or coccygeal sinus is described in an article by Buie.<sup>1</sup> He quotes a statement of Lane's<sup>2</sup> that in 1940 in the United States Navy the number of sick days occasioned by pilonidal disease exceeded those occasioned either by hernia or by syphilis. It would appear that this is to some extent due to the fact that even symptomless sacrococcygeal dimples have been excised because it was feared that riding on jeeps and trucks would play havoc with the condition. It is indeed fortunate that the ubiquitous jeep is not the real cause of this disease, for it is a congenital sinus lined by tissue indistinguishable from skin. It usually becomes infected at the age of 20 to 24, and recurrent abscesses are the result, possibly with intervals of freedom for many months. The condition has received little attention from British surgeons. Lockhart Mummery<sup>3</sup> drew attention to its congenital origin in 1921. In 1933 R. L. Newell<sup>4</sup> gave a full description and considered that it was the result of traction on the skin caused by retrogression of the tail bud. There is evidence, however, to show that the condition is just as common in this country as in America. Complete surgical removal appears to offer the only means of a permanent cure. Opinion is divided as to whether primary union should be attempted or the wound should be allowed to granulate. Newell<sup>4</sup> and Byrne<sup>5</sup> favour primary union, but the area should be made as aseptic as possible before this is attempted. Abscesses should be incised, and excision be performed only when the wound has become reasonably clean. As there may be as many as five or six minute sinuses in the middle line care should be taken to see that all are removed, otherwise recurrence is inevitable. If this method is adopted healing may take place within two to three weeks, but if the method of allowing the wound to heal by granulation tissue is employed it may be three months before the wound is healed. Only sinuses which are causing symptoms should be excised, for there is insufficient evidence to show that trauma causes them to become infected.

### HOURS OF WORK

The correspondence columns of the *Times* have recently published some interesting letters on the perennial problem of "hours of work." They relate especially to the edict of the Ministry of Works, which insisted that the building operatives employed in repairs to houses in the London area should work 65 hours a week for three weeks. As Dr. J. J. Mallon points out in his letter,<sup>6</sup> the Regional Joint

<sup>1</sup> *Newcastle med. J.*, 1944, 22, 1.  
<sup>2</sup> *British Medical Journal*, 1943, 1, 48.

<sup>1</sup> *Southern med. J.*, 1944, 37, 103.  
<sup>2</sup> *U.S. naval med. Bull.*, 1943, 41, 1284.  
<sup>3</sup> *Proc. roy. Soc. Med.*, 1929, 22, 1331.  
<sup>4</sup> *Brit. J. Surg.*, 1933, 21, 219.  
<sup>5</sup> *U.S. naval med. Bull.*, 1944, 42, 386.  
<sup>6</sup> *Times*, July 28.

Committee for London expressed the view that the Government is "ill advised to propose such hours," and they suggest "that the maximum hours of work should not exceed 60". He himself considers that even these hours are too many, and tend to lessen rather than increase production and to add to illness, accidents and absenteeism. He is supported in his view by the president of the London Master Builders' Association, who maintains that the leaders of the building industry have consistently stressed that "where hours in excess of 52 per week are worked output is actually less than with shorter hours". He says that his own experience agrees with Dr Mallon's in proving that men quickly deteriorate under the long hours they have been forced to work during the war. It is only fair to mention the letter of another correspondent, who maintains that there is no need to fear that the men will be overworked by the operation of the 65-hour week, but he gives his case away by emphasizing that the long hours—which include a large number at overtime rates—are fixed in order to "boost" up the pay packets of the operatives. This conclusion was long ago exemplified by the observations made in munition factories, where it was often found that the men preferred the long hours because of the increased pay. Many of them found that by "going slow" they could avoid excessive fatigue and remain in fair health for months and even years. True, their output was diminished rather than increased, but if their employers liked to be so foolish as to pay them for non-existent work, why should they complain?

### MEDICAL MYCOLOGY

The Committee on Research in Medical Mycology (Medical Research Council) is interested in a survey of fungous diseases of man, especially systemic mycoses, occurring in Great Britain, both indigenous and imported. To this end it is seeking morbid material for examination and diagnosis from the following sources. (a) Unquestioned cases of mycosis. (b) Suspected cases of mycosis. (c) Possible but unsuspected cases of mycosis. These would include cases of apparent tuberculous disease, found bacteriologically negative, various granulomata, adenopathies, cold or chronic abscesses, etc., for which no microbic cause has been found. Particular attention should be directed to granulomatous lesions in lymphatic glands, lungs, meninges, etc., not proved to be tuberculous, malignant, etc. Specimens from animals, especially rodents, would also be welcomed. Specimens of tissue should be divided in two: one part for cultural, the other for histological, examination. The tissue for cultural examination should be kept free from contamination or antiseptics and placed in a sterilized, air tight screw-capped or bunged tube, in which also a small pledget of sterile damp cotton-wool may be placed only if there is danger of the specimen drying. When much delay in transport and delivery of the specimen is anticipated it may be sent in sterile 50% glycerin. Tissue for histological examination should be placed in a suitable fixative (10% formol-saline will suffice for the majority of specimens). Dry specimens such as hair, skin scales, etc., may be sent in sterilized corked specimen tubes, or folded in sterilized paper. Pus and other fluids should be sent in sterile, bunged or screw-capped bottles or tubes. Slide smears of tissue, exudate, pus, etc., should be sent unfixed. The specimens, with the relevant data, should be sent to Dr J. T. Duncan, Emergency Public Health Laboratory, Winchester College, Kingsgate Street, Winchester, Hants, who will provide suitable containers if desired, and will return, promptly, containers belonging to other laboratories.

### RURAL HOUSING

City slums have at least the advantage of being obvious to those who pass that way. The country slum is just as bad, and may be worse from the point of view of dampness, but it does not force itself upon the eye, and often its lack of hygiene, amenity, or comfort is camouflaged by the picturesqueness of cottage decay. Slums in the country have been largely neglected by housing reformers, perhaps because of the reflection that, after all, the country dweller has the open spaces at his front door to make up for the insanitary conditions within. Improvement in agricultural housing came to a sudden end on the outbreak of war, and many condemned houses have remained in occupation because new houses to replace them have not been built. The policy to be pursued as soon as house building can restart is the subject of a report by a Rural Housing Subcommittee of the Central Housing Advisory Committee,<sup>1</sup> in which various recommendations are made. This subcommittee takes the view that county councils, with some exceptions, have shown little interest in rural housing. Though the tendency of the time is away from the small authority, the subcommittee feels that rural district councils, whose members are aware of local conditions and preferences, should play an important part in housing, while county councils act as guide, philosopher, and friend. It also recommends that in every county there should be set up a joint committee to advise the local bodies on their health and housing functions. A post-war survey of housing conditions in every rural district of England and Wales should be undertaken, and the working-class houses in each district classified according to accommodation, amenities, and state of repair. In rural Wales housing conditions are worse than in rural England. The prolonged and extreme poverty which until lately prevailed in rural Wales has had a disastrous effect on housing, and a special subsidy is recommended for the poorest districts. Another point made is that in many counties of England and Wales the tact needs to be brought home that rural housing is a major health function, and that a sanitary officer should be placed on the staff of every county M.O.H. to advise on rural housing, water supplies, and sewerage. At present there are such officers in only twenty counties. The maximum extension to rural areas of electricity, gas, piped water, and sewage disposal is, of course, to be desired, together with the provision of amenities, such as a village hall, which develop communal life. A few incidental but not unimportant points are stressed. One is the aesthetic aspect of housing in these days of prefabrication and mass production: it is more than ever necessary to make sure that materials and designs for new houses are not unsuited to the landscape. Then it is suggested that the working man's point of view should be sought on the condition and sufficiency of dwellings in a district, and accordingly that housewives should be co-opted on the housing committees of rural district councils. We cannot understand why two members of the main committee should have taken exception to this very sensible point. Finally there is the question of the week-end cottage. If it is shown that people of higher economic level by taking country cottages for week-ends and holidays deprive those who live and work in the country of accommodation they need, then the habit should be discouraged and indeed prevented, but otherwise the subcommittee thinks that this is not a bad thing to happen, and, moreover, many cottage choice for occasional use, are not the places chosen for permanent homes and the bringing up of families. The report is issued under the auspices of the Ministry of Health.

<sup>1</sup> *Rural Housing*. London: H.M. Stationery Office. (In press.)

## "HAVING YOUR LIKENESS TAKEN" OBSERVATION IN THE STUDENT'S TRAINING

BY

FF. ROBERTS, M.D.

According to the Report on Medical Education of the Planning Committee of the Royal College of Physicians the powers of observation of the average medical graduate are "relatively undeveloped." This indictment of a profession which should be essentially naturalistic, terrible as it is, is none the less true. I have known a greatly enlarged spleen missed for over a year. It would seem impossible, while examining the heart, to miss a tumour of the left breast large enough to prevent the patient from lifting the arm, but I have known it happen. These are only two out of the many which I could quote from my own experience. Sir Walter Langdon-Brown tells me of a candidate who could not say whether a woman whom he was examining was married (a material point in the diagnosis), although she was wearing a wedding-ring. An ophthalmologist informs me that he has seen qualified men examining eyes with great care before discovering they were glass. Clinical notes written by many house-officers are so inaccurate as to be quite worthless for immediate use and therefore totally misleading for future reference. It cannot be denied that accurate observation must come first. Without it diagnosis, prognosis, and treatment must all go astray. No amount of theory, scholarship, or specialized knowledge is of the smallest avail if the practice of taking and memorizing observations is not mastered.

The fault, according to the report above mentioned, is to be attributed chiefly to the manner of the student's training. One may go further and wonder whether there may not be something about the system which actually suppresses such powers of observation as the student may initially possess. We must therefore consider in what respects the training is at fault and what remedies can be applied, but before doing so we must inquire whether any factors more general than clinical instruction itself contribute to such a disastrous result.

When Mr. Pickwick entered the Fleet Prison he first had to undergo the ceremony of "sitting for your portrait" or "having your likeness taken."

"The stout turnkey, having been relieved from the lock, sat down and looked at him carelessly from time to time, while a long thin man who had relieved him thrust his hands beneath his coat tails, and, planting himself opposite, took a good long view of him. A third rather surly looking gentleman, who had apparently been disturbed at his tea—for he was disposing of the last remnant of a crust and butter when he came in—stationed himself close to Mr. Pickwick, and, resting his hands on his hips, inspected him narrowly; while two others mixed with the group, and studied his features with most intent and thoughtful faces."

This is no imaginary picture. As his letters prove, Dickens, himself an extremely accurate observer, was describing a scene which he had witnessed through the insolvency of his "Prodigal Father." Living before the days of photography and finger-prints, these ruffians had to rely solely on their eyes and memory. If they failed they lost their jobs—a terrible punishment before the dole was invented. Well might the stout turnkey boast: "We're capital hands at likenesses here. 'em in no time, and always exact." (*Italics mine.*)

William Beach Thomas describes in *The Way of a Man* how his father's coachman was completely deceived by the number 2, "and since his reading and writing at fault, he received his instructions only by word of mouth. There was no need even to repeat them. He was letter perfect, and was not known to forget or mistake any item."

Mr. B. L. Burman, in *Miracle on the Congo*, quotes the following remarkable testimony by Major Glubb, who commanded the Arabs of Transjordan:

"The Arabs have amazing memories. They can report their movements, minute by minute, for 15 days or more, and remember every slightest detail, the colour of a blade of grass, the shape of a particular palm-tree. But the instant they learn how to read and write it's all finished. They forget everything they ever knew."

If, then, the highly developed powers of observation possessed by primitive man are so easily extinguished by the acquisition

of elementary literacy, what chance is there for the survival, let alone the growth, of the rudimentary powers of observation possessed by civilized youth, in the mental costiveness of pre-clinical education? Ward sisters, with minds unclouded by erudition, often put doctors and students to shame by their shrewd observations.

### The Three Obstacles

Thus handicapped by their upbringing, students encounter three obstacles in their clinical course: the method of teaching, laboratory methods of diagnosis, and the textbooks. By a grim irony, so far from recognizing these as obstacles they regard them as blessings.

### The Method of Teaching

Their undeveloped natural powers of observation lead many students, on entering the wards, to acquire an inferiority complex. The ease and rapidity with which their seniors conduct examinations and make deductions appear to them to be due to some special gift of superior sensitiveness which they themselves can never hope to possess. They fail to realize that what seems to them so marvellous is only the result of interest and practice, and that deductions are only the logical result of observations either made at the time or drawn upon from past experience. Hence when interrogated they so mistrust themselves that they resort to wild guessing and make clumsy attempts to beg the question. Content to accept observational facts from others, they are readily hypnotized by any crankiness on the part of their teachers. A house-physician once told me that a certain patient had a "duodenal ulcer facies." He had been taught, so he solemnly explained, that men with short round faces had gastric ulcers and men with long thin faces duodenal ulcers (or it might have been the other way about). I myself was taught that there was a characteristic facies in diabetes. Unfortunately it is the more conscientious type of student who suffers from self-mistrust. To the man who is sanguine by temperament but without real ability the path is easier. Readily picking up the jargon and bedside manner at their worst, he soon scores a meretricious success which shows him the way to become a "clever doctor." It is self-confidence of the right kind and degree which is so difficult to instil.

*Note-taking.*—While attention is rightly paid to the writing of clinical notes it is forgotten that here lurks a danger, for notes can be written at the expense of the memory. The sensory impression can be so fleeting and its passage from the sensory areas to the motor cortex so rapid that no imprint is made on the memory at the time. The student has just spent two years in scribbling down anatomical and physiological information which, partly through faulty delivery, he has only imperfectly understood. He has thus mastered automatic writing almost like a medium in a trance, and is well trained to practise this accomplishment at the bedside.

*Positive and Negative Observations.*—It is always safer to record a positive than a negative observation. I have often read the words "Liver just palpable" when it was obviously not palpable. If the student writes "Just palpable" he can always say, "I thought I could just feel it," but if he writes "Not palpable" he may be thought careless or defective in tactile sense. The result is that notes are full of incorrect and misleading observations. So far from acquiring a habit of accuracy the student develops a kind of protective woolliness. He may never be wrong, but he is never right. He learns not merely to sit on the fence, but to sit on it with both legs on the safer side.

*The Bantam's Egg.*—A minor factor contributing to the nebulous atmosphere is the traditional practice of using as standards unfamiliar objects such as a goose-quill, millet seed, or bantam's egg. When a friend told me that a certain tumour which he had seen was as big as a bantam's egg, I asked him how big a bantam's egg was. He replied that he had no idea; he had never seen one. Evidently in his student days someone who himself had probably never seen one had taught him to describe a tumour which he was examining as being of that size. He therefore concluded that a bantam's egg was the same size as the tumour. In other words, he was learning not the size of the tumour which was before his eyes but the size

of a bantam's egg which he had little chance of seeing. He was learning not practical medicine but theoretical poultry-farming.

*The Clinical Raconteur.*—We have all been tortured by this sort of thing. "A few months ago I was called into the country to see a lady. She had a temperature of 101° and a pulse of 120 . . . I decided to operate . . ." Information of this kind is quite devoid of any educational value, for, however instructive the experience may have been to the lecturer, he cannot with the best will in the world make it convey much to his hearers. It is like relating one's dreams enthralling to oneself, but boring to one's friends unless, of course, these happen to be of a Freudian turn of mind.

#### Laboratory Methods

For a trenchant criticism of the modern reliance on laboratory methods of diagnosis I commend to the reader a recent review in these columns of W. C. Alvarez's *Nervousness, Indigestion and Pain*. The following is an extract.

"Recently out of 50 candidates asked the simplest way to distinguish between obstructive and non-obstructive jaundice only three said they would look at the stools, all the others said they would have a van den Bergh test done. A test of doubtful validity as opposed to a simple conclusive observation. Candidates often refuse to diagnose a straightforward case of icteric regurgitation without a Wassermann reaction, and will ask for an electrocardiogram without feeling the pulse. When directed to do so it seems to convey no information to them. One could multiply examples."

One has to be a radiologist to appreciate the full extent of his attitude of mind. Special methods seem to have brought theoretical examination to bankruptcy. House-officers refer patients to the x-ray department with the words, "Please x-ray arm," or "Please x-ray spine." The clinical examination of fractures seems to the younger generation completely out of date and unnecessary. "Why bother," I have seriously been asked, "when radiology can do it so much better?" Beyond a doubt laboratory methods contribute materially to atrophy of the senses.

#### Textbooks

The accompanying Table shows the size of the books which I read when a student and the size of the current editions of the same books.

Book	No. of Pages		Approx. No. of Words plus Word-equivalents in Diagrams	
	1907-12	Current	1907-12	Current
<b>Pre-clinical</b>				
Cunningham's <i>Text Book of Anatomy</i>	1,312	1,514	1,050,000	1,250,000
Cunningham's <i>Practical Anatomy</i>	1,117	1,580	507,000	709,000
Halliburton's <i>Physiology</i>	890	930	390,000	418,000
Starling's <i>Elements of Physiology</i>	707	—	209,000	—
Starling's <i>Principles of Physiology</i>	—	1,205	—	841,000
<b>*Total—Pre-clinical</b>	<b>4,026</b>	<b>5,229</b>	<b>2,186,000</b>	<b>3,209,000</b>
<b>Clinical</b>				
Taylor's <i>Medicine</i>	1,058	1,110	615,000	8,900
Rose and Carless's <i>Surgery</i>	1,315	1,618	709,000	890,000
Eden's <i>Midwifery</i>	690	724	311,000	377,000
Eden's <i>Gynaecology</i>	864	940	437,000	527,000
Green's <i>Pulmol.</i>	620	1,136	304,000	575,000
<b>Total—Clinical</b>	<b>4,577</b>	<b>5,528</b>	<b>2,376,000</b>	<b>3,203,000</b>
<b>Grand Total</b>	<b>8,603</b>	<b>10,757</b>	<b>4,562,000</b>	<b>6,412,000</b>

\* Allowing for the reading of two physiology books, the usual practice.

To these, of course, must be added those on all the special subjects. In computing the number of words I have made no allowance for diagrams, because these require as much study as letterpress, and the space they occupy is often compensated for by paragraphs in small type. For comparison I may remind readers that the Bible contains about 800,000 words. Some medical authors make Shakespeare (1,100,000) look puny, but perhaps it is hardly fair to judge by quantity.

The Table shows how, with one exception, these tomes have added to their too too solid flesh with the years, and how in consequence the mental burden increases with each generation of students. Their growth is no doubt partly due to increase in knowledge but chiefly it reflects the expanding

experience of the authors or succession of authors, who forget that the average intellect of successive years of students remains a constant quantity. One may note in particular the rise of nearly 40% in the size of the dissecting manual, one might have imagined that everything worth dissecting had been discovered ages ago. We thought our burden just about as much as we could bear, but our sons have to carry half as much again, one wonders what it will be for our grandchildren and great-grandchildren. It may be objected that students do not have to learn all that is in them. The answer is that they only omit anything at their peril. One glance at the connections of the sphenopalatine ganglion was sufficient to convince me that they were beyond my power to learn, especially as I had no chance of seeing them properly. I therefore decided, to the astonishment of my more conscientious companions, to ignore them. I reckoned that if the rest of my armour were reasonably secure I could afford to have one chink in it. My weak spot escaped the examiners in anatomy and surgery, but was discovered by the examiners in medicine of all people.

The attachment of students to their textbooks is pathetic, and well it may be, for are the books not their bulwarks against defeat, their sure shields against their implacable enemies the examiners? I have often wondered why students, chiefly women, carry their large *Cunningham's* or *Gray's* with them to anatomy lectures. Are they so afraid of being without them even when they should least require them? Our mental outlook, in fact, shows little if any advance from our mediaeval ancestors' apotheosis of Galen, despite (or perhaps because of) the blessings of modern scientific education.

The following typical incident well illustrates the prevailing subservience to the textbooks. A young practitioner referred a patient to me with what he had labelled a dinner-fork deformity. But the wrist showed not the smallest resemblance to a dinner fork. The forearm was perfectly straight over its whole length, but there was a slight swelling over the carpus due to a fractured scaphoid. Here was a case of perverted observation. The young man had evidently argued thus: "This is probably a Colles's fracture. In the pictures I have seen in the books this causes a dinner fork deformity. Therefore what I see before me is a dinner fork deformity." How otherwise could an intelligent man—for intelligent he certainly was—make such a mistake? He could no doubt have written an admirable description of Colles's fracture, but he had not been taught to look. His mind, being completely captive to the books, found no difficulty in interpreting his sensory impressions in a form acceptable to them. The books have become the mirrors in which students see patients, and all the flaws in the reflecting surface distort the mental image.

These unwieldy tomes should be used solely for reference. When students plough through them they merely subject themselves to mental torture. Their memory and concentration are strained in the wrong place. No one will deny that the amount of concentration involved in anteadoce at clinics is only a fraction of that which is demanded of a boy in a classical system or of a person learning to play in a symphony orchestra. After a day spent, if not languidly, at least with nothing to prevent his mind from wandering, the medical student goes home to burn the midnight oil. He opens one of his tomes at page 873 and makes a fierce resolve to read 20 or 30 pages, and he goes to bed wondering how much he will remember. He reserves his brain during the day for the wrestling which must be his at night, he tries to learn from the books what he should have learnt from life. A person who wants to learn bird-watching goes and watches birds with the help of an expert, he does not begin by buying a 1,200-page book on the subject. And yet medicine is or should be just as naturalistic as ornithology. Small wonder that the College of Physicians finds the student lacking in curiosity and initiative. His training, in fact, makes him the reverse of quixotic, for whereas the Don's imagination was so heated by romantic literature that the commonplace seemed exciting, the student's brain at a slightly lower level of cerebration is so chilled by factual knowledge that the exciting seems commonplace.

#### The Remedies

The situation calls for nothing short of a revolution in the method of teaching. The system must be imbued with the

commando spirit. A student will not observe unless he is interested, and the only way to make him interested in a subject which he finds difficult is to make him interested in the growth of his own faculties. Interest and observation reinforce each other, and only by their combined development can self-confidence of the right kind be acquired. At the outset, therefore, he should be put through a rigorous discipline in observing accurately and in giving an account of his observations without the aid of notes. I am told that some such system is used for naval cadets. It would be necessary to work out a graduated system of exercises in observation on a psychological basis, and this would be one of the functions of the staff college which I have recently advocated in these columns. The problem should be studied from every point of view. It is probable, for instance, that medical men have much to learn about the study of the human features from portrait-painters. A great deal, too, might be done in regard to the combination of sensory impressions. I suggest that rubber models might be made of the commoner uterine diseases, and the student taught to palpate them with his eyes fixed on diagrams and post-mortem specimens of the same conditions. Tactile and visual sensations would thus reach the brain together and, combined, would produce a far more lasting impression than if they arrived at different times.

The emphasis being laid on observation, the student would learn to see laboratory methods in their proper perspective, as aids to bedside diagnosis; and whenever a laboratory test disproved a clinical observation which he had made he should not rest until he had discovered whether, and if so how, his senses had led him astray. The time spent at clinics should be a continuous mental discipline calling forth all his powers of attention and concentration. By tea-time he should be pleasantly fatigued by the mental effort (not merely by holding a retractor while his chief removed appendices, as was my fate), and he should be incapable of absorbing any more information for the rest of the day. Apart from reasonable recreation—and Heaven knows he gets little enough—he should spend his evenings in broadening his mind by general literature, nature, or art, and by taking an active part in some form of social service, an avocation which would teach him far more than the lectures on social medicine with which the College of Physicians is so anxious to burden him.

As for the great textbooks, their proper place is the hospital library, where the student should use them only for reference. When some special point puzzled or interested him he should be given every encouragement to worry it out by delving as deeply into the literature as he liked; but for ordinary purposes small handbooks are all that he needs, and these he should know thoroughly. It is the superficial reading of the great books which is so harmful to mind, body, and spirit, and the only way to stop the practice is by so ordering the examinations that learning acquired in this way is unprofitable. Clinical teachers might do worse than model themselves on Agassiz, the great biologist of Harvard University, who would send a student back time and time again to the object he was studying until his description was accurate. Agassiz wanted students, not textbooks. "The book of nature," he used to say, "is always open. Strive to interpret what really exists. If you study Nature in books you cannot find her."

The student should not acquire the large books until the day when he is qualified. On that occasion I would have them presented to him with some such words as these: "You have studied for yourself all the commoner diseases. In these books you will find more about them and about the rarer diseases which you have not seen. Remember that although they are the fruits of great experience, their authors are men of flesh and blood like yourself, capable of error and capable of accepting and perpetuating the errors of others. Be prepared, therefore, to believe that the books may be wrong and your own observations right." If this practice were adopted the student might capture at least some fraction of the thrill which Keats felt "on First Looking into Chapman's Homer," and we should not have so many doctors too inhibited to read books when they can really profit from them by the memory of weary nights spent in reading them for examination purposes.

It may be objected that the changes I advocate are too revolutionary. To this there are two answers: first, the com-

plete failure of the present system is admitted by those more authority than I can command. If the College of Physicians admits it we may be sure that the change is justified. Secondly, we are living in a revolution, and proposals are no more radical than the transformation which has taken place in military training under the force of circumstances. The teaching of medicine has, under the influence of tradition, too long remained static, and must now part of the dynamism which we see infecting all around us.

"But," it may be said, "you are just as bad as all other would-be reformers. You too want to add something to the syllabus—a course in observation." To this I reply that, so far from being an addition, it would be a subtraction. If every student were taught at the outset to be a self-reliant and reliable observer, if his likenesses were, in the words of the stout turnkey, always exact, and if he were to put more trust in his senses and less in his books, there could not in the long run to be an enormous economy in time. Furthermore, we should breed a type of doctor not jaded by the memory of second-hand information, but fresh in spirit and outlook from reliance on first-hand observation. We must resuscitate medical education to its rightful state—a naturalistic study.

### Conclusion

I will close, as I began, with Mr. Pickwick, who surely says the last word on the ideal medical student. Before he was disillusioned by Mr. Benjamin Allen, of "rather a mild appearance," and Mr. Bob Sawyer, "something like a dissipated Robinson Crusoe" (neither of them typical of their class, period, let us hope), that incorrigible optimist, "casting nightcap energetically on the counterpane," uttered a memorable pronouncement: "*They are fine fellows, very fellows; with judgments matured by observation and reflection, and tastes refined by reading and study. I am very glad of*"

Yes, and it is the duty of the medical schools to give these fine fellows every chance to reach this ideal.

### MANUFACTURE OF PENICILLIN

Regulations have now been issued governing the manufacture of penicillin and will form the seventh schedule to the Therapeutic Substances Act. From now on any person manufacturing a penicillin preparation for sale must obtain a licence and comply with prescribed conditions as to strength, quality and purity. Application for licences should be sent to the Ministry of Health, London, S.W.1, the Department of Health for Scotland, Edinburgh, or the Ministry of Home Affairs, Belfast. The Regulations are given in full below.

#### Definitions and Proper Names

1.—(1) Penicillin (crude filtrate) is the solution obtained by filtration of cultures containing penicillin grown on or in a liquid medium, or of extracts from such cultures. Its proper name is "penicillin (crude filtrate)."

(2) Penicillin (dried crude filtrate) is the substance obtained by reducing penicillin (crude filtrate) to a dry condition. Its proper name is "penicillin (dried crude filtrate)."

(3) A penicillin salt is the substance separated by the application of chemical and physical processes from the culture medium in which a mould producing penicillin has been grown, and reduced to a dry condition. Its proper name is "penicillin" followed by word or words indicating the nature of the preparation, as, for example, "penicillin (sodium salt)."

(4) In this schedule "penicillin" means the anti-infective organic acid which is known to be produced by *Penicillium notatum*, "preparation of penicillin" means penicillin (crude filtrate), penicillin (dried crude filtrate), or a penicillin salt or solution thereof.

#### Standard Preparation and Unit of Standardization

2. The standard preparation is a quantity of a dry penicillin kept at the National Institute for Medical Research, Hampstead, London.

3. The unit of penicillin for the purpose of these regulations is the activity contained in such an amount of the standard preparation as may be indicated from time to time by the Medical Research Council.

#### Tests for Potency

4. Preparations of penicillin shall be tested for potency in units which shall be determined, by comparative tests in relation to the standard preparation, by a method approved by the Licencing



authority. The potency so determined shall be expressed in units per c cm. in the case of liquid preparations and in units per mg in the case of solid preparations.

#### Quality

5—(1) Penicillin (crude filtrate) containing less than 10 units per c cm., and penicillin (dried crude filtrate) containing less than 0.75 unit per mg., shall not be issued.

(2) A preparation of penicillin intended for use in making solutions for parenteral injection shall contain not less than 150 units of penicillin per mg.

#### Tests for Sterility

6—(1) The provisions of Articles 16 to 20 of these regulations relating to the application of tests for sterility shall apply to preparations of penicillin with such modifications, if any, as the licensing authority may from time to time approve.

(2) The provisions of Part I (C) of the Second Schedule to these regulations shall apply to a preparation of penicillin which is alleged to contain *Penicillium notatum* or any other organism in living condition.

#### Tests for Freedom from Abnormal Toxicity

7. Preparations of penicillin intended for use by parenteral injection shall be subjected to the following test for absence of abnormal toxicity.

A quantity of the preparation containing not less than 1,000 units of penicillin, in a volume not exceeding 0.5 c cm. of a watery solution, shall be injected intravenously into each of five normal mice each weighing approximately 20 g. The sample shall be treated as having passed the test if either—(a) the injection does not cause death in any of the mice within twenty-four hours from the injection; or (b) the injection having caused death in one only of the mice within that period, further such injections in five other such mice do not cause the death of any of those mice within twenty-four hours from the injection.

#### Tests for Freedom from Pyrogenic Substances

8. Preparations of penicillin intended for use by parenteral injection shall be subjected to the following test for absence of pyrogenic substances.

A quantity of the preparation containing not less than 10,000 units of penicillin, in a pyrogen-free watery solution, shall be injected intravenously into each of three normal healthy rabbits each weighing not more than 2.5 kg. The body temperature of the rabbits shall be recorded one and one-half hours before the injection and either continuously for three hours after the injection or at the end of one, two, and three hours after the injection. The sample shall be treated as having passed the test if the average maximum temperature increase of the three rabbits does not exceed 1.2° C.

#### Container and Labelling

9. The container for liquid preparations of penicillin shall be made of glass as respects which the licensee has satisfied himself that it does not lead to the destruction of penicillin.

10—(1) The label on the container shall indicate whether the preparation is suitable for parenteral injection.

(2) In the case of preparations of penicillin intended only for local application, the label on the container and the label or wrapper on the package shall bear the words "Not to be injected" clearly printed in a distinctive colour.

(3) If a preparation of penicillin as issued for sale is combined with any substance other than a simple diluent, the exact nature and strength of that substance shall be stated on the label on the container.

### AN L.C.C. RHEUMATISM UNIT

A report on the rheumatism unit at St. Stephen's Hospital, Fulham Road, was given at a recent meeting of the London County Council. The clinic was instituted twelve years ago for the purpose of providing beds for patients from the British Red Cross Society's clinic for rheumatism, where no facilities for in-patients existed. Out-patient clinics for patients referred from other council hospitals were started, and in 1943 the number of out-patients was 1,784. In the course of this work it has become obvious that the usual in-patient and out-patient facilities are inadequate for the proper care of these patients, and that the sociological aspect needs to be taken into account. A special almoner has accordingly been appointed to visit the homes and workplaces of the patients, unravel their domestic and emotional problems, and make arrangements where necessary for treatment at a spa or convalescent home. An occupational therapist attends at the hospital for diversional and remedial work, and various kinds of general treatment are

afforded. Treatment of the local manifestations by orthopaedic and physiotherapeutic measures and by rehabilitation in the widest sense of the word is also carried out. Research studies have been undertaken at the unit. Postgraduate teaching takes place under the auspices of the Fellowship of Medicine Post-Graduate Association. The unit is doing its work under difficulties many or most of which are inevitable under war conditions.

## Reports of Societies

### A MIXED PATH. BAG

A general meeting of the European Association of Clinical Pathologists was held at the School of Pathology, Oxford, on June 24. The president, Dr. S. C. DYKE, in taking the chair, pointed out that the meeting was being held in spite of restriction on travel because many members anticipated that they would shortly be returning to resume work in their homelands.

Prof. S. JELLINEK (Vienna), describing the peculiar character of injuries by lightning, said that they caused neither pain nor reaction of the tissue, they could not be classified as burns nor should they be treated as such. He demonstrated numerous photomicrographs of the affected tissue showing screw-like deformities and transformations in a typical geometrical pattern, not applicable by traditional histopathology and intelligible only in the light of Faraday's basic laws on the lines of electric force (phenomenon of polarity).

Dr. K. S. ROSENBERG (Prague) reviewed recent work on the prognostic value of estimating sugar in pleural effusions. In 115 cases of tuberculous effusions he could find no connexion between the sugar level and findings of tubercle bacilli, red blood cells, blood-sugar levels, and the prognosis of the case. Bacterial action did not influence the sugar level. The average sugar level was between 5 and 20 mg per 100 c cm. He suggested that the enzymes of polymorphs might lower the sugar. Three cases of carcinomatous effusions with sugar values of over 110 mg per 100 c cm. were reviewed. The possibility of diagnostic value in these cases was suggested.

Drs. ELIZABETH DELIKAT (Bratislava), S. C. DYKE (Oxon), and Mr. CYRIL L. BUTLER demonstrated findings on a case of hyperproteinaemia and asked for a diagnosis: male aged 46 had suffered from persistent epistaxis, papilloedema, and retinal haemorrhages, and enlargement of the liver and lymph glands. Total serum protein 10 g per 100 c cm, globulin 7 g, albumin 3 g. There was anaemia but no abnormal cells. Histological appearance of the excised lymph node suggested lymphatic leucosis. After blood transfusion the epistaxis ceased and the hepatic and glandular enlargement disappeared. During the next four months the patient appeared well, except for a slight degree of anaemia, persistent papilloedema, and hyperproteinaemia, lately, Bence-Jones proteinuria. Bone marrow by sternal puncture was normal. The general opinion of the meeting was that this would eventually prove to be a case of lymphatic leukaemia.

Dr. I. FRIEDMAN (Prague) made further observations on the growth of *M. tuberculosis* in a fluid medium containing embryonic tissue. Penicillin reduced the danger of contamination. Primary cultures from sputa grew in some cases after 3 to 5 days, usually at the end of the first week. He showed photomicrographs of the morphological features of colonies: Medusa-head-like colonies of the human type; serpiginous colonies with a tendency to a more compact growth of the bovine type; widely scattered colonies or loose groups in or round the macrophages in the avian type.

Dr. J. LUGAR (Prague) discussed the importance of penicillinase for diagnostic purposes in cases treated with penicillin, where it was essential to inactivate penicillin in blood or exudates. Penicillinase was produced by a strain of *B. subtilis* grown in digest broth aerobically at 37° C. for two to three days, and filtered. Sterile filtrate remained stable for at least 6 to 8 weeks in the cold. The potency of penicillinase depended on the conditions of growth: under optimal conditions 1 c cm. of the culture fluid would inactivate 4,000 to 6,000 units/c cm. of penicillin over 24 hours.



Dr. F. PICK (Prague) demonstrated a case of a primitive nervous-tissue tumour more akin to neuroblastoma than to Wilms tumour, growing from the left adrenal. The patient, a boy aged 6, suffered from hyperkeratosis since birth, asthenia, and anaemia. Intermittent haematuria for 5 months. Enlargement of abdomen noticed 6 weeks before death. Tumour weighed 4 lb. 6 oz.; size 8 in.  $\times$  4 in.  $\times$  5 in.; metastases in liver; no metastases in skull or elsewhere. The characteristic histological findings of a neuroblastoma and Wilms tumour were present.

Dr. E. DELIKAT demonstrated an aberrant thyroid removed from the right side of the neck of a man aged 20, originally diagnosed as tuberculous adenitis; also a polyp of the stomach from a patient suffering from macrocytic anaemia with achlorhydria—irresponsive to liver. The removal of the polyp did not alter the course or nature of the anaemia.

## Nova et Vetera

### APPRENTICE BOOKS AT BARBERS-SURGEONS' HALL

The apprentice books at Barbers' Hall date from the year 1657. It is, however, possible to recover the names of a very large number of apprentices of an earlier date than this, as well as the names of their masters, from the *Wardens' Great Account Book*, a huge folio which dates from 1603. The master was bound to present his apprentice and pay the sum of 2s. 6d. to the company, and these records of half-crown payments will be found there. When I had permission from the company to transcribe the records of apprentices I copied every entry from 1603 to 1745. These copies were presented to the Royal College of Surgeons under the terms of permit given me by the Barbers' Company.

Literally thousands of names have been recovered from this source, and when they have been arranged in alphabetical order and annotated they will be of the greatest value for a fuller biography of the surgical profession in this country than has yet been possible. One would like to see some such a series compiled for the surgeons as Munk did for the Royal College of Physicians, and I am not without hopes that this may be accomplished at some future date.

The records in the apprentice books during most of the period are in Latin and give the name, home town, and occupation of the father and the period of time (usually seven years) for which the apprenticeship was to run, as well as the name and occupation of the master to whom the apprentice was bound. The premium paid to the master is not noted in the earlier volumes, but in the eighteenth century it is almost always recorded. In 1719, for instance, the Rev. Wm. Scrafton paid £262 10s. to Samuel Palmer, surgeon, for his son Richard Scrafton for the term of seven years. Richard was afterwards on the staff of St. Bartholomew's Hospital. Less-known surgeons accepted smaller premiums, and in the case of a barber the premium was often as low as £20, and sometimes even less.

One of the first things that struck me in copying these records was the large number of masters whose occupation was not that of a barber-surgeon. Yet all of them must have been free of the company, probably by patrimony. The clerks who kept the books wrote good legible hands, but their spelling of place names seems often to have been on the phonetic principle. For example, Randolph Church, tanner, of Draden, co. Salop, apprenticed his son, Randolph, to James Wheeler, surgeon, for seven years in 1701. The younger Church was baptized at Market Drayton, in Shropshire, August 30, 1683. This apprentice was also later a member of the staff of St. Bartholomew's Hospital.

It was often a bit of a puzzle to settle the correct translation of Latin word used for the parent's occupation. "Agricola" would seem to denote a farmer, but I expect that "yeoman" would be better. The word "lanius" gave me a good deal of trouble. I could not find it in any of the small glossaries of mediaeval Latin at my command. In the end I did what anyone else would have done at the beginning, and found it in Smith's Dictionary as classical Latin for a butcher. Some odd occupations figure at times on these records; I came across at least one example of a longbow-string maker, and occasionally the clerk would air his knowledge of classical words, as when he rendered a harness-maker "Ephippiarius."

If the master happened to die before the apprentice was out of his indentures the boy was "turned over" to another master, and in later examples a proportion of the premium was also "turned over" to the new master. Some of these youths were "turned over" more than once. The age of the apprentice is not stated, but as a general rule it was from 14 to 16 years. Church, it will be seen, was about 18 years old when he was bound. Very few of these boys had the advantage of a university career before taking up surgery. I came across one case in which it was probable that the son of a Leicester-

shire parson had been at Cambridge before coming to Barber Hall. Perhaps he had been sent down. It is unfortunate that the apprentice books do not start at an earlier date than 1657. We miss the details of Richard Wiseman's parentage. His apprenticeship to Richard Smith, surgeon, in 1636-7 is obtained from the *Great Account Book*.

To show that one cannot always trust the spelling of the clerks who kept the books it is only necessary to state that John Knight, who later became Serjeant-Surgeon to Charles II, is entered in the *Account Book* as the apprentice of Laurence Roe. It should have been Laurence Loc, who was at one time surgeon to St. Thomas' Hospital. And I think it is not unlikely that the Thomas Blathwaite whom Peachey was unable to identify is the individual whom the clerk entered as Thomas Brathwaite, who was apprenticed to Latimer Ridley, surgeon, in 1712 at a premium of £50. He was "turned over" to William Dickinson, surgeon, in 1714, and again to Richard Lee, surgeon, in 1719. In the last instance his name is spelled Braithwaite. He took up his freedom in the last-named year.

Never again, I fear, will the surgical record searcher work under such pleasant conditions as I did in the old court room at Barbers' Hall.

R. R. J.

### CENTENARY OF A MEDICAL SOCIETY

In the State of Pennsylvania the Lancaster City and County Medical Society has celebrated the hundredth anniversary of its foundation. The occasion was marked by a public meeting attended by many representatives of medical organizations in Pennsylvania and other States, and a letter was read from the President of the U.S.A., who in his message of greeting noted the great contributions made by the medical profession of Pennsylvania to the life of the nation. A note on the history of the centenary society has appeared in the *Journal of the American Medical Association* of May 27. The Lancaster County Medical Society, it says, was one of the first to encourage the entrance of women into the practice of medicine, and it mentions the names of some notable physicians who have been members. A commemorative number of the Society's *Bulletin* includes facsimiles of the early notices associated with the foundation in 1844 and two accounts of the history of medicine in Lancaster.

A presentation was made to Mr. W. Spencer Howells on his retirement from the presidency of the Pharmaceutical Society of Great Britain; when his successor, Mr. F. G. Wells, handed to him a replica of the badge worn by Mr. Howells during his term of office. The original gold badge, valued at £200, worn by presidents of the Society since the days of William Allen, F.R.S., who first held office in 1841, was stolen by a burglar when Mr. Thomas Mann was president in 1937, and the present replica of it is the only one in existence. The new badge was designed by Mr. Omar Ramsden.

## Correspondence

### Military Psychiatry

SIR,—I am indebted to Dr. B. H. Shaw for drawing attention in his letter (Aug. 12, p. 222) to the apparent discrepancy between psychiatric precept and practice contained in the article "Two Years of Military Psychiatry in the Middle East" (July 22, p. 105). Dr. Shaw suggests, in view of the statement made in the article in question—e.g., that so many of the patients admitted to psychiatric centres and hospitals showed evidence of markedly abnormal personalities prior to their breakdown and that psychiatric casualties are potentially "infective" and constitute a potential menace to the morale of the group as a whole—that it was illogical to return such a high percentage of neurotics and psychotics to duty. He states that the vast majority of these men were in reality most unstable "misfits" and should in consequence have been "eliminated." If the final decision concerning return to duty could have rested entirely on theoretical grounds, few of us would disagree with Dr. Shaw that it would have been preferable for many of these men to have been evacuated from the Middle East and returned to the United Kingdom. The decision upon disposal, however, had to be made with regard to wider issues and against the background of the military situation as a whole. During the period under review the manpower shortage was serious, operational requirements and commitments were heavy, and as a result of the closing of the Mediterranean and of operations in widely scattered and remote

parts of the world the shipping situation rendered it imperative that evacuation of cases should be reduced to a minimum. It was only after careful consideration of these and of other factors—*vs.*, for example, the undesirable effects on morale of evacuating psychiatric cases on a large scale—that the policy of retaining as many cases as possible in the command on at least some form of duty was adopted.

It is, of course, necessary that the statement "returned to duty" should be viewed in its proper perspective, only a relatively small proportion of men in any expeditionary force, even of those on full duty, are actually engaged in a battle area. It may also not be altogether irrelevant to mention the effects of treatment. No extravagant claims are put forward for the results of treatment in chronic constitutional neurotics and psychopaths, but it is reasonable to believe that treatment helped, if not to cure, at least to allow of their return to duty (selected or modified duty if necessary) without undue risks either to themselves or to others. No illusions were entertained that these soldiers might not break down again and they were certainly not discharged to duty in any spirit of easy or undue optimism, but the results in practice sufficiently justified the policy adopted and the actual relapse rate was inconsiderable. That so many of the neurotics and psychotics discharged to duty did in fact make good progress and show a successful readaptation to their duties was due in no small measure to the interest and supervision exercised over them by their unit medical officers and tribute may here be fittingly paid to the invaluable co-operation and sympathy shown by regimental medical officers throughout the Command in the after care of these patients—I am, etc.,

H B CRAIGIE  
Lieut-Col R A M C

#### A National Pathological Service

SIR—We have read with interest the purely destructive criticism of Drs Heaney, Turner, and Haler in your issue of July 15 (p. 95). As pathologists in charge of laboratories, but not directors under the new plan, we should like to emphasize that we consider some such scheme essential for the progress of good hospital and public health laboratory work, and that we have no misgivings about its central co-ordination provided it is our own senior colleagues who do the co-ordinating, as is the case at present in the Emergency Pathological Service and the Emergency Public Health Laboratory Service.

Through their efforts since 1939 a much closer relationship than ever before has existed between laboratories serving teaching hospitals and pathologists working in smaller departments providing a co-ordinated service of routine consultative advice such as is beyond the scope of existing bodies like the Association of Clinical Pathologists and the Pathological Society. We feel that it would be lamentable if in the future we should slip back into the relatively isolated units which existed before the war. It is clear, however, as was pointed out in the letter of June 10 (p. 790), that regional administration should be carried out by senior pathologists with a wide experience of diagnostic laboratory work, the university professors of bacteriology, chemical pathology, and morbid anatomy acting only as advisers in their respective specialties.

We would welcome a scheme in which pathologists can temporarily move from one unit to another, as it is only by daily contact with another pathologist's laboratory that one can appreciate the advantages that his method may have over one's own. We would also point out that if such movements, especially in the case of senior pathologists within a co-ordinated service, were in the main, of a voluntary character they would not then feel that their security was in question. Finally, we consider that coroner's post-mortems should be carried out by the hospital pathologist in the area and not by general practitioners but such pathologists should have had adequate experience and training in morbid anatomy and medico-legal work. Where a pathologist is carrying out coroner's work for a large area it will often be preferable for him to be wholly employed on this work, in which case he should have the status equivalent to other senior pathologists in the service, and have full access to a morbid histology department in his area. We would point out, however, that a formal approach on this

subject to the Coroners' Society before an efficient and well-coordinated service is available in all areas might well be considered premature—We are, etc.,

H B MAY	F E CAMPS
C J C BRITTON	J R GILMOUR
J S FAULDS	D STONE
F C O VALENTINE	C F BAWELL

#### Service Medicine

SIR—I have just read the letter by J A Valentine (April 1, p. 470). I know the time lag of this reply will be great, but I would ask your indulgence to publish this reply from a regular R A M C officer, even though he may be young as regards service.

First may I join issue with J A Valentine when he states that the letter "so accurately" expresses the views of many serving members of our profession. This statement, of course, is utterly and completely false. Now may I pass to the extracts themselves. I have the greatest respect for the "civil" front, but surely the burdens that were borne by the troops in the Western Desert from the days of Graziani's advance to Sidi Barrani until the victorious advance of the Eighth Army were extremely heavy as regards "feeding, comfort, transport, and relaxation (especially alcohol)", but perhaps your correspondent never spent a "hot weather" in the desert, perhaps, too, he has not spoken to anyone who was in Tobruk fortress during the siege, and got their views on "relaxation (especially alcohol)". He cannot obviously realize what a shortage of doctors there was in the early days in the desert, and what a nightmare that must have been to higher authority. The complacent talk of "over staffing" merely shows ignorance or military requirements hospitals have frequently to replace casualties in medical units in the field, supply R M O's temporarily, and, too, of course, at any moment they may have to move to an active theatre of operations, where a full staff is a necessity. For my part, during a long stay in the Middle East I do not think I have once come across a hospital that was fully up to strength all the time in either medical officers or nursing orderlies.

Your correspondent's talk of not having enough work to do merely shows a lazy and indifferent attitude to his job and, too, an ignorance which is nothing short of appalling. Surely he has read the medical statistics of the North African campaign, and, in fact, of any campaign the British Army has taken part in. If so, even he must realize the importance of preventive medicine, inasmuch as casualties from sickness always outnumber, and that by an appreciable margin, the battle casualties. What did this man do with his spare time? one wonders. Is he so knowledgeable that he did not need to spend any time on camp hygiene inspections? Do strenuous antisy measures to combat dysentery mean nothing to him? Does he know all about antimalaria measures, and, if so, is he sure that his troops do—to mention only two of the decimating diseases of wartime? Did he ever lecture his men on V D—another wartime problem? Did he ever inspect the men's food and how it was cooked, where it came from, and what condition it came in, and was there sufficient variety, and did he ever visit the men's canteens to see how they spent their off duty time? Did he ever discuss their problems with them—both problems in their unit and maybe their homes? But one could go on *ad infinitum* in this strain. No, your correspondent condemns himself out of his own mouth. Your good medical officer has always plenty of work to do. Your bad medical officer merely grouches about lack of work when it is all round him. Of "bad staffing" I can only say it is hard to believe that a C O and, too, an A D M S are not equally able to judge as regards the staff under them, and are able to adjust matters to their satisfaction, which, of course, would not probably suit your correspondent. As to equipment, I think it is excellent. There were difficulties in the days of the long sea route to the Middle East, and a lag in supply of all arms—not only medical equipment—was inevitable, but when the materials were available we got the very best. Many of us learnt to improvise—a word apparently foreign to your correspondent.

In conclusion I should like to say that I think a slur is cast on the profession as a whole by your correspondent's ill-fused

remarks that importance is put "first on paper-work, next on the staff, and last of all on the patient." Surely a doctor is a doctor whether in uniform or not. I myself have seen, and so must the great majority of your readers, surgeons and physicians toil for hours on end to save a man's life—in fact many men's lives—when everything seemed hopeless, and those men have recovered. Then, and only then, was the paper-work considered. The advances of medicine and surgery have been great in this war, but always there are the ability and the zeal of the individual doctor necessary to bring those advantages to the patient who requires them. Fortunately there are always the men to do this. My only advice to your correspondent is to go to his C.O. and request that he be allowed to go "back home again and be ensconced in the worries of civil practice." We do not need men like that in the Services.—I am, etc.,

S. F. CRANSTON,  
Major, R.A.M.C.

SIR,—I have read with great interest the many letters which have appeared recently on the subject of Service medicine. May I be permitted to give some of my own views on the subject which may be of general interest. The letters which have appeared so far can be divided into two main classes. There are those strongly in favour, which have come from high-ranking consultants, and those strongly against Service medicine, which come from the more junior medical officers. Unlike the writers so far, I propose to steer a middle course. It is obvious that there are two sides to every question, and while the R.A.F. Medical Services are very good and well equipped, there are many points that jar my still civilian brain. These jarring points, however, are common to all Services, whether medical or not.

There are two main reasons why a military medical service can be so advantageous from the patient's point of view. First, there is general keenness on the part of the unit medical officer, and, secondly, there is the element of compulsion. A keen unit medical officer can do a great deal to improve conditions and morale in a camp. A sanitary inspection should be more than just a latrine tour; it should signify that the medical officer is out to see that everything is being done to keep hygienic conditions up to scratch, with dire penalties for those who fail to do their bit. The unit medical officer should treat his Service patients as if they were his private patients. The other main factor in maintaining positive health is compulsion; if an airman is ordered treatment he must report for it as instructed or disciplinary action may be taken against him. That, in my opinion, is where the medical services of the Forces score over doctors in civil practice.

It appears to me that one of the main reasons why there is such a dislike of Service medicine among the more junior medical officers—apart from those who would probably have joined the Forces in any case had there been no war—is this element of compulsion. One may dislike to have to do this or that, contrary to one's general beliefs, as instructed in a policy letter from higher authority, but it is not for the unit medical officer to lay down policy; his sole job is to maintain the health of his unit, carry out policy, and obey orders.

It has been said that there are too many forms to fill in, but this is not confined to Service medicine: civilian practitioners, too, have their forms. But may I say this in support of most of the forms that I have come across: they usually give the maximum of information in the minimum of space, and accurately completed medical history and case sheets can be of great value. The only drawback about these is that they do not always arrive simultaneously with their owner in a unit.

Medical equipment and stores are extremely good, and we have nothing to grumble about there; the only snag is the accounting of them—a type of higher mathematics which ruffles me. But no doubt this is necessary considering the vast amounts of medical stores and numbers of units to be supplied.

Although anxious to return to the relative freedom of civilian life at the end of the war, I still think we should take the rough with the smooth. We cannot all have the jobs that we, or our relatives for that matter, would like most, nor can we all gain glory and medals on the battlefield. There are

many "stooge" jobs in the Services, and it is up to us to them as best we can. We should remember that we are our own masters, but servants of the State, and it is up to us to keep the medical services running smoothly, no matter how we are or how hard it may be for the individual. No one can penalize us for trying our best, and no one in higher authority can expect more of us.—I am, etc.,

C. M. CHAMBERS,  
Fl. Lieut., R.A.F. Medical Service

### Infant Feeding

SIR,—I was interested to read Dr. P. Boucher's letter (July, p. 160) on some common errors in infant feeding. I agree entirely with his remarks concerning the instructions printed on the labels of dried-milk preparations. I would go further and say that I find it difficult to understand how any infant can be expected to thrive if such directions are rigidly followed.

The boggy of over-feeding is, I consider, even more important. It would appear that at many welfare centres a weekly gain over 7 or 8 oz. is looked upon as a sign of over-feeding, notwithstanding that the infant may be perfectly contented and show no abnormal signs. Many infants in the early weeks of life will gain up to 12 oz. a week or more, and it is usually a small baby that does this and is in need of it. Many infants are made miserable and wretched because the mother has been instructed to reduce the breast-feeding time or decrease the amount of bottle-feed. The effect of this on the nursing mother is that she rapidly loses her milk, because her child is fretful. A vicious circle is set up, and there begins a desperate search after this or that proprietary food. The same end-result is brought about when the mother is first given her instruction with regard to breast- or bottle-feeding if these instructions are too rigid and make no allowance for individual variation.

Ordinarily I see about fifty infants a week, and over the past ten years I cannot remember seeing an infant that had suffered from "over-feeding." No one would think of controlling the weight gain of the young adolescent. Why interfere with the infant's natural appetite?

Dr. Boucher's plea for a common-sense attitude toward infant feeding is a timely one. To this I would add a plea for greater elasticity with regard to instructions to mothers. This may mean more time and trouble to begin with, but will be amply rewarded by a happy and contented infant.—I am, etc.

London, S.W.20.

N. KRAMER.

### Prevention of Industrial Dermatitis

SIR,—Dr. Howard Mumfery in his letter (July 22, p. 128) adopts the attitude that because I am not satisfied with just cleaning the skin I have not an open mind on industrial dermatitis. The whole subject of detergents has been recently investigated in relation to irritants and dermatitis causers, particularly here and in the U.S.A. It may interest Dr. Mumfery to know that in many processes, even where tar compounds are used, it is possible to remove the whole of the irritant from the skin without the use of soap or other detergents provided that an adequate barrier has been used. I am not content just to clean the skin after use, as I am of opinion that a disservice is being done to medicine in general, and industry in particular, where adequate preventive methods are not used when such are available. Industrial medicine is a branch of public health, and I cannot envisage any confidence being shown in our work or progress being made unless we take every step to prevent disease of all kinds in industry. Most employers are guided by the advice of their medical officers, and I cannot do better than quote the words of the great pioneer, Sir Thomas Legge (*Industrial Maladies*, Oxford University Press, 1943, p. 3):

"Unless and until the employer has done everything—and everything means a good deal—the workman can do next to nothing to protect himself, although he is naturally willing enough to do his share."

I shall not be content or even proud of my record of two cases in many thousands of workers this year until I have no cases recorded against my factories in any year. Dr. Mumfery's own article admits a total in 1943 of 203 cases in 3,850 workers (May 13, p. 660), and I would suggest that he tries all the methods available, and does not rely only upon

cleaning the hands after work. I would point out that the cost of protection with an adequate barrier cream is less than 2d. per week.—I am, etc.,

London, N.S.

L. B. BOURNE.

### Chewing-gum or Polypus?

SIR,—Mr. McNeill Love's letter (April 29, p. 600) reminds me of a case I had two years ago in Canada. A sergeant aged 26, a very good technician, reported sick several times with a very vague history of abdominal discomfort. Physical examination was negative. Alkalies had no effect on the complaint, and he continued to smoke and on occasions "go on the beer." It was also discovered that he wanted to get out of the Service. In view of the vague history and the psychological aspects of the case he was considered fit for full duties without further investigations. He was then sent up to the Aleutian Islands, and I was a little surprised to see him back within a month with a letter from his medical officer saying he thought the man had a gastric ulcer. I noticed at this interview that he was chewing gum when he entered my room, but that he was no longer doing so after 20 minutes. On asking him what he did with it he said he must have swallowed it! This time I sent him to the radiologist, making sure that the latter knew the whole history. The radiologist did a barium meal and reported that there was a fairly large filling defect on the lesser curvature in the prepyloric region, and that he thought chewing-gum might be the cause. The same evening, on the sergeant's return, I washed out his stomach with a large stomach-tube, and several pieces of gum were recovered. The treatment was repeated daily for a week, but successive barium meals showed that some filling defect was present at 2 but not at 3 weeks. His symptoms cleared up completely.—I am etc.

W. R. DYKE  
F.L.C., R.A.F.V.R.

### Episiotomy

SIR,—At a London postgraduate course I attended in 1939 the lecturer on midwifery said: "Do an episiotomy in all primips." Since then I have nearly always followed this sound advice, and have always been sorry when I have not, as I have then had to deal with a nasty laceration extending sometimes unpleasantly near the anus, instead of a small clean cut a long way from it. There are points in Dr. Dow's memorandum (June 17, p. 813) and Dr. Barnes's letter (July 1, p. 23) with which I cannot quite agree. Though in theory Dr. Dow's "technique" pictures look like a neat and eminently cosmetic refinement, yet in forceps cases it seems to me there is going to be a rare mix-up around the patient's binder parts, what with the forceps in position, two pairs of artery forceps banging down, two loops of sutures getting in the way, and two suture ends doing ditto, the proceedings being illuminated by a nurse holding a torch or by a flaring paraffin lamp on a table perilously near the operator, in a tiny cottage room almost entirely filled by the large bed. But, the woman being under chloroform, what is wrong with a clean cut with sharp scissors at an angle of 45 degrees to relieve a straining and distressed perineum? Half an inch is all that is necessary in most cases to let the head through quickly and comfortably, and anybody who can see straight can sew up an incision like this as well and thoroughly as he can stitch a cut in any other part of the body and with as accurate apposition.

The pundits will probably say I am all wrong, but I often put in the one stitch, or at most two stitches, required before the placenta is expelled and while the patient is still under chloroform. Inspection of the suture site after expulsion of the placenta has never shown me anything wrong. I should never dream of giving a woman chloroform any length of time after the birth for the sole purpose of stitching her perineum. The G.P. does not give a general anaesthetic to put stitches in bead, arm, and leg wounds and cuts; why should he in perineal ones? Two years ago I had three deep sutures put into what is, I suppose, the most exquisitely sensitive part of the body—the palmar surface of my wrist, which was deeply lacerated by a broken bottle—but I never thought of demanding a general anaesthetic. As to Dr. Barnes's "local infiltration with procaine" I should say that the three or four needle stabs required here would be quite as painful as the two caused by a sharp needle and a skilled hand. In "obstetric units," no doubt, the accoucheur is surrounded by willing helpers to run

about for him and hold things. Also he (or she) has plenty of room and light just where he wants it. Dr. Barnes must visualize a dark little room and the conditions described above in place of her nice operating table and impedimenta.

I cannot see why Dr. Barnes assumes, from Dr. Dow's description, that the latter has not "united the deep layers" with his sutures, and accuses him of "merely uniting the mucous membrane of the vagina and the skin of the perineum." Surely Dr. Dow, or any other capable G.P., would naturally insert his sutures through the whole depth of the tissues he was proposing to, or had already, cut. We are not quite so stupid as not to do that.

And what is all this fuss about chloroform? Dr. Barnes says, "It is well known that a parturient woman tolerates a general anaesthetic very poorly," but she must forgive me if I say that exactly forty years' experience of chloroform invariably used without mishap in midwifery compels me flatly to contradict her. Also see Bourne's *Midwifery*, page 96 ("Parturient women tolerate chloroform well"). In the pre-ergometrine era I certainly had occasional qualms in the case of fat flabby women whom I suspected of springing a p.p.b. on me after chloroform, but I was always ready and waiting for this. Since the introduction of intramuscular injection of this product after or (tell it not in Gath!) just before the expulsion of the placenta, I have made it a routine measure in all confinements to give it, with the consequent complete banishment of the boggy of p.p.h. As for any other danger in chloroform in midwifery, there is none unless it is badly given. Since ergometrine, now many years old, I have never seen the slightest ill effect, nor (publish it not in the streets of Askelon!) is there the slightest objection to giving pitocin (not pituitrin, which causes a nasty rise and more than corresponding fall in blood pressure) when the cervix is fully dilated, inertia is present, and you don't want to put on forceps. Pitocin will often bring the head down while you are boiling up your forceps, and save you the trouble, but it should never be used in breech cases.—I am, etc.,

Stowmarket

H. S. GASKELL.

### Dentition of London School-children

SIR,—I should like to point out some facts which appear to invalidate many of the conclusions drawn by Lady Mellanby and Helen Coumoulos (June 24, p. 837). These authors compare the dental condition of two groups of 5-year-old L.C.C. school-children in 1929 and 1943. They find the condition in the latter year is the better of the two, and conclude: "It is thought that the observed improvement in the dental condition of this age group may be largely due to the changes in feeding habits which have been developing in recent years—in particular to the introduction in 1934 of the cheap milk scheme of the Milk Marketing Board and later to the wartime food policy, which included (a) increased allowances of milk together with cod-liver oil and fruit juices to pregnant and lactating women, to infants, and to young children; (b) the addition of vitamins A and D to margarine; and (c) the addition of calcium carbonate to bread." The extent to which these dietetic measures could possibly have affected the teeth of children of 5 years of age in 1943 can be judged by considering the following facts:

1. The Milk Marketing Board scheme applies only to school-children; thus the children under discussion can have benefited by it at most for a matter of months before the survey took place.

2. The increased allowance of milk to expectant mothers was introduced on July 1, 1940. Thus it could not have affected children who were 5 years old in 1943.

3. Expectant mothers were first eligible for cod-liver oil on Dec. 1, 1942, which again could not have affected the children in the survey.

4. Lactating women have at no time been eligible for supplies of cod-liver oil or fruit juices. The allowance of milk for nursing mothers was introduced on July 1, 1940; so this, too, is irrelevant.

5. Children under 2 years were allowed cod-liver oil from February, 1942, and children under 5 years from April, 1942. Thus the children in the survey were eligible for only a fraction (and that the latter part) of the first 5 years of their life.

6. The addition of vitamins to all table margarine dates from May 6, 1940. As the paper under discussion states on page 839, the teeth of the children in the survey "were in the main formed in the immediate pre-war years and the first year of the war." Their structure cannot, therefore, have been greatly affected by this measure.

7. Calcium carbonate has been added to flour on a national scale only since Aug. 1, 1943. No statement is made in the paper as to the time in 1943 at which the survey was carried out, but even if it was at the end of the year the calcium carbonate could scarcely have played much part in the dental condition of the children.

In short, whatever the causes of the improvement observed, the dietetic measures mentioned above can have little bearing on the matter. I am indebted to the Rationing Division of the Ministry of Food for confirmation of the dates on which the various dietetic measures were introduced.—I am, etc.,

Oxford.

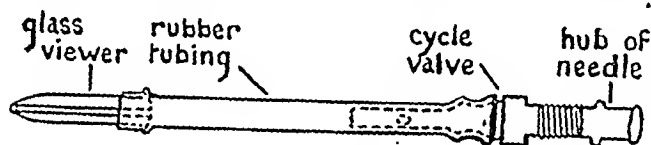
MARY FISHER,

Assistant Medical Officer of Health.

### Syringe for Intravenous Anaesthetic

SIR.—The recent correspondence in the *Journal* about pentothal anaesthesia prompts me to make known this simple apparatus for the intermittent or continuous use of an intravenous anaesthetic.

The apparatus consists of the hub of a needle which is soldered to the open end of a cycle valve, the other end being inserted into a fairly thick rubber tubing whose lumen must



just fit the cycle valve. The other end of the rubber tubing is attached to a glass viewer, one end of which is ground down to fit the needle.

The solution is run through the tubing to expel air bubbles, and the needle is inserted into the vein. The aspiration test is performed by pinching the tubing between finger and thumb, and on release blood will appear in the glass tubing.

The advantages are that the syringe can be disconnected at any time without any return flow of blood, and the needle, in view of this, has very little tendency to clot.

My thanks are due to Mr. S. Yorke, scientific glass-blower to the Chemistry Department of Bristol University, for the glass viewers, which are made from isosal capillary tubing.—I am, etc.,

JOHN A. COCHRANE.

## The Services

Temp. Surg. Lieut. E. W. Guillaume, R.N.V.R., has been mentioned in dispatches for untiring devotion to duty in services to the

The Efficiency Decoration has been conferred upon the following members of the Territorial Army: Col. J. Melvin, O.B.E., M.C., Lieut.-Col. (Temp. Col.) E. C. Woodhead, Lieut.-Cols. E. H. Brindic and F. J. Morris, M.C.; Majors (Temp. Lieut.-Cols.) W. A. Ball, W. C. Barber, F. A. Bevan, J. F. Fraser, H. H. Kenshole, and J. K. Reid; Majors E. M. R. Frazer, G. N. Frizell, E. G. Snaith, M.C., and C. N. Vaisey; Capt. (Temp. Major) J. A. S. Brown, R.A.M.C.

### CASUALTIES IN THE MEDICAL SERVICES

**Killed.**—War Subs. Capt. J. P. Hearne, R.A.M.C.

**Died.**—Capt. J. A. J. Sandilands, R.A.M.C.

**Wounded.**—Temp. Surg. Lieuts. M. J. Brosnan, W. J. B. Rogers, and A. W. O. Young, R.N.V.R. Lieut.-Col. G. N. Wood; Acting Lieut.-Col. W. M. E. Anderson; Majors P. K. Jenkins, M.C., and E. H. P. Lassen; Temp. Major H. Kennedy; Capt. J. H. Patterson; War Subs. Capt. J. H. Beilby, A. P. Hanway, C. J. R. Jacob, H. I. C. Maclean, K. F. Patton, M.C., T. Savage, M. Taylor, S. D. V. Weller; Lieut. G. R. Connolly, R.A.M.C.

## Obituary

SIR ARTHUR HURST, D.M., F.R.C.P.

The sudden death of Sir Arthur Hurst on Aug. 17 has robbed British medicine of one of its outstanding personalities. All his life he had suffered from asthma. For him, as for Lord Chesterfield's son, it was "a troublesome and painful distemper," and it eventually led to his untimely death at the age of 65. Hurst spent his early days in the industrial North and he once told me that it was not till he was 15 years of age that he realized that the trunk of a tree was not naturally black. He was a Demy of Magdalen College, Oxford, and from there he went to Guy's Hospital. Guy's was to remain his great love. He got on the staff at an early age, and he eventually became senior physician. In the last war he was in charge of the Seale Hayne Military Hospital for war neuroses, and after the war he became associated with the New Lodge Clinic. From the beginning of his career he realized the change that had come over clinical medicine, and therefore his private practice as well as his hospital work was based on facilities for accurate scientific investigation. His retirement from the staff of Guy's corresponded with the outbreak of the present war, and, though he continued to visit Guy's regularly, he moved to Oxford and became Radcliffe Lecturer in Clinical Medicine at the wartime undergraduate clinical school. Hurst was editor of the *Guy's Hospital Reports* from 1921 to 1939; he published most of his classical papers there, in addition to important contributions and symposia from his pupils, and he won an international reputation for the *Reports*. He belonged to many societies, and was particularly active in the Association of Physicians of Great Britain and Ireland, which elected him an honorary member to mark its admiration of his genius.



Wandys

Hurst's interests in medicine seemed curiously assorted, but there was a unity about them. He began life as a neurologist, and crossed over to gastro-enterology by the bridgehead of pernicious anaemia, subacute combined degeneration, and achlorhydria. His deafness excluded much interest in percussion and auscultation and partly explained the attraction of radiology for him. In psychology he was a pupil of Janet, and a masterly exponent of the treatment of neurosis by persuasion and suggestion. His very success prevented him from seeing the limitations of the method, and he was always a bitter critic of more dynamic Freudian ideas. This was one of the few directions in which he broke no new ground, in spite of the immense amount of good therapeutic work done by himself and his pupils on shell-shocked soldiers in the last war. He was a pioneer in the study of the movements of the alimentary canal in man and the mechanism of pain. His work on the achalsias was highly original, and his conception of rectal dyschezia was an outstanding contribution to the understanding and treatment of constipation. His work on achlorhydria is a landmark in the history of pernicious anaemia and carcinoma. He lived to see his views on the medical treatment of peptic ulcer generally accepted. He "debunked" many mythical maladies; he bravely opposed the mystical nonsense about intestinal intoxication which was so current in his youth, and in his later years he became rather critical of the doctrine of focal sepsis, which he had once himself expounded with enthusiasm. He attracted disciples and fired his pupils, so that his influence spread far and wide. He was unselfish in matters of priority and publication, and much work which did not appear over his name owed its origin to Hurst.

As a clinical scientist Hurst had his faults, and they sometimes annoyed those who did not know him. A cynic once said



that no one ever ate more of his own words, but certainly no one suffered less indigestion in the process. He was almost too fluent in writing and speaking. His mind, like Nature, abhorred a vacuum, and where more cautious scientists would have suspended judgment he would construct temporary frameworks for his thought, which others took for a permanent abode. His surprising *voltes faces* left them puzzled and rather hurt. After almost a lifetime spent in pushing William Hunter's theories on oral sepsis, for example, Hurst turned to extol the importance of good mastication and to deplore the extraction of preservable teeth. Those who knew him delighted in these sudden turns of thought, especially when they had played a part in inducing them. They were another aspect of his plasticity, his receptivity to fresh impressions, his ability to transmit what was new and good in the foreign clinics he visited and corresponded with. In Archibald Garrod's words, he radiated lines of force, and whether the effect was positive or negative he was always stimulating.

Hurst was a great character. The careful gait, the bent back, the drawn face, the uplifted hand that cupped an ear the better to listen, the penetrating eye—so well depicted in Herkomer's portrait—the husky voice, the dogmatic utterance that was either "always" or "never," with no penumbra of qualification, all contributed to a personality that strongly impressed the patient and delighted the student. The latter loved to take him off at their Christmas plays, both at Guy's and at the Radcliffe, and no one enjoyed the performances more than Hurst. He never bore malice, was never cross or out of temper. He never bullied a student or a house officer, and there was only one—an unbalanced, hypomanic lad—by whom I ever saw him ruffled. Nevertheless, he had the most devastating mannerisms. His deafness had a selective quality and excluded any sound of contrary opinion, whether it was a patient's objection to a test meal or a colleague's argument against his theories. He commonly sat in the front row at medical meetings. If he was interested, he would crane forward to within a few inches of the embarrassed speaker's face. If he was bored, he would switch off his hearing aid, open his bag, spill his papers over the floor and noisily tidy them up. If he disagreed with the speaker he was not afraid to say so, and would trounce a paper hip and thigh, to the discomfort of the speaker and the delight of the audience. Much of his work was carried out despite a continuous state of asthma. He would arrive at hospital at 2 o'clock and give himself an injection of adrenaline; break away from his ward-round for five minutes at 3 o'clock for another injection; and, finally, have an injection at 4 o'clock before he could make the journey home, white and tired but indomitable.

Hurst was better known abroad than any other English physician engaged in the practice of medicine. He loved to travel, and it is sad that he should not have lived to return, with his band of fellow Medical Pilgrims, to the foreign capitals of medicine. The fertility of his imagination revealed itself not only in medical theory and invention but in the charm and diversity of his devices to promote medical friendships. The last time many of his friends will remember seeing him was a dinner in the summer of 1943, at which medical representatives of all the United Nations were present and Hurst was in the chair. He never swerved from the first rule of the Association of Physicians, whose objects are defined as the advancement of internal medicine and the promotion of friendship among physicians, and he was deeply loved. His wife joined with him in hospitality at their beautiful house in Ascot, a hospitality that was bountifully extended to the stranger and the beginner, and many will remember the gay walks with the children through the Great Park, where the boles were silver and not black, and remembering they will sympathize deeply.

Topley once said, "If only one could take Hurst's brain and B.'s physique, what a wonderful physician that would make." I think that for once Topley was wrong. Hurst had great gifts. He was a good draughtsman. He was skilful at modelling in clay. He was fond of the theatre. He was a pioneer motorist. He delighted in his family and his home. He had excellent judgment of books, pictures, and furniture, and often spent the half-hour between lunch at the Athenaeum and the ward-round at Guy's visiting the galleries, antique shops, and auction rooms around St. James's Square. But his asthma condemned him to restrict the range of his exertions

and to concentrate on medicine. Without it he might have been more active, but it is doubtful whether he would have achieved as much. Like St. Paul with the thorn in his side, or Darwin with his vertigo, he was spurred to greatness by his infirmity. But paradoxically enough we shall remember his courage even more than his greatness. For many years he was able to gain freedom from asthma in the pure air of the Swiss Alps. It was a great comfort to him to know that he could escape from the oppression of his malady to a life of normal activity in the snow and the sunshine. But in the early 1930's the charm ceased to work. He was asthmatic in Switzerland, and the magic door to liberty was closed. This was a blow to him, but he bore it with fortitude. In the last few years he had not rallied so well from his bad attacks, and had suffered from tiredness and tachycardia. He had so often seemed at the last gasp with his asthma that there seemed no cause for alarm, and the pressure of his work continued unchecked. As on thousands of other afternoons, he sat down for a few minutes to take some adrenaline and recover his breath. And there he was found a little later, where he had died fighting against a life-long enemy to which he had never yielded.

L. J. W.

Dr. WILLIAM JAKES, of Washington, County Durham, who has died at the age of 93, was well known and much respected among the profession in the North Country. The family were of yeoman stock, descended from the Huguenots. He was born at Howden in East Yorks, and received his early education at the Grammar School at Malton in that county. In his earlier days he was a chemist, and was more mature than the usual student when he attended the medical college at Newcastle-upon-Tyne, where he was well known among his fellows as an enthusiastic worker, gaining several medals and prizes. After taking his M.B., B.S. at Durham he practised at Usworth, a village about a mile from his old home. Jakes was an example of a type of country doctor that was fairly usual in the Northern coal fields about half a century ago. In the district of Washington, traditionally the home of the De Wessingtons, forebears of the great George Washington, the mainstay for many years has been the collieries and the chemical works, but there was a considerable farming community in the surrounding open country, and one or two big houses. Jakes was the best-known doctor in the village and for miles around, and it may be truly said that the great majority of his patients leaned upon him for advice not only on medical matters but in many of the ordinary affairs of life. In my earlier days in the Newcastle Infirmary some forty-five years ago Jakes was a frequent visitor. He often accompanied his patients, and regularly came to see operations on his cases, and sometimes for no other purpose than to attend a post-mortem examination. This was in the days before motor cars, when the journey of seven miles or so imposed a very considerable demand on his time and energy. In the matter of referring patients to the hospital he set a very good example and followed a practice that might be revived, for he always sent with the patient a careful explanatory letter which was of much value. Jakes was also regular in his attendance at medical society meetings and occasional social functions. He was always keen on his profession and very much alive to the interests of that branch which he so well represented. He conducted a large and extensive practice with the help of a couple of assistants, who always recognized the value of the training they received in that capacity. He had a nice discernment for the coming man, and many of the younger consultants were grateful to him for support in their early days. Jakes was an enthusiastic ambulance lecturer and examiner, and from the time of its foundation was medical officer to Dame Margaret's Home, one of the county branches of Dr. Barnardo's foundation. He was a keen gardener and very fond of books, and was at heart always a student. For health reasons he retired from practice a good many years ago, but his name will long be remembered with gratitude in the Washington district.—G. G. T.

Dr. EDWARD SAMUEL GORMAN, who died on Aug. 11 at the age of 72, had been in practice at Rookery Road, Handsworth, Birmingham, for nearly thirty years. Dr. Gorman was an Irishman who came to Birmingham as a young man, having qualified M.B., B.Ch. at the Royal University of Ireland, Belfast, in 1896. Among the early posts he held were R.S.O., Birmingham Infirmary, and resident medical officer, Birmingham City Fever Hospital. In 1904 he took the D.P.H. Cambridge and was medical officer of health under the local authority at Perry Barr until that area was incorporated into Birmingham. As a general practitioner he was a very busy man, well known and held in affectionate esteem by many.



## INFECTIOUS DISEASES AND VITAL STATISTICS

No. 31

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended Aug 5.

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year, for: (a) England and Wales (London included), (b) London (administrative county), (c) Scotland, (d) Eire, (e) Northern Ireland.

Figures of Births and Deaths, and of Deaths recorded under each infectious disease, are for: (a) The 126 great towns in England and Wales (including London), (b) London (administrative county), (c) The 16 principal towns in Scotland, (d) The 13 principal towns in Eire, (e) The 10 principal towns in Northern Ireland.

A dash — denotes no cases; a blank space denotes disease not notifiable or no return available.

Disease	1944					1943 (Corresponding Week)				
	(a)	(b)	(c)	(d)	(e)	(a)	(b)	(c)	(d)	(e)
Cerebrospinal fever .. ..	40	2	15	—	1	34	2	22	—	—
Deaths .. ..	—	1	1	—	—	—	—	—	—	—
Diphtheria .. ..	471	12	100	63	23	493	28	162	66	18
Deaths .. ..	2	—	1	1	—	8	—	2	—	—
Dysentery .. ..	139	13	118	—	2	122	13	95	—	—
Deaths .. ..	—	—	—	—	—	—	—	—	—	—
Encephalitis lethargica, acute .. ..	3	—	—	—	—	1	—	1	—	—
Deaths .. ..	—	1	—	—	—	—	—	—	—	—
Erysipelas .. ..	—	—	37	3	2	—	—	36	3	1
Deaths .. ..	—	—	—	—	—	—	—	—	—	—
Infective enteritis or diarrhoea under 2 years .. ..	—	—	—	—	—	—	—	—	—	—
Deaths .. ..	38	4	12	34	6	33	6	6	82	10
Measles* .. ..	2,154	47	67	83	31	1,903	138	26	18	2
Deaths .. ..	2	—	1	—	—	2	—	—	—	—
Ophthalmia neonatorum .. ..	59	3	15	1	—	75	6	8	—	1
Deaths .. ..	—	—	—	—	—	—	—	—	—	—
Paratyphoid fever .. ..	7	—	1(B)	—	—	5	1	—	—	1
Deaths .. ..	—	—	—	—	—	—	—	—	—	—
Pneumonia, influenza† (from influenza) .. ..	376	19	5	1	—	484	24	1	1	3
Deaths .. ..	1	—	—	—	—	3	—	1	—	—
Pneumonia, primary .. ..	—	12	126	9	—	—	16	126	13	—
Deaths .. ..	—	—	4	—	—	—	—	3	10	—
Polio-encephalitis, acute .. ..	2	—	—	—	—	—	—	—	—	—
Deaths .. ..	—	—	—	—	—	—	—	—	—	—
Polio-myelitis, acute .. ..	8	1	7	—	1	16	2	—	2	—
Deaths .. ..	—	—	—	—	—	—	—	—	—	—
Puerperal fever .. ..	—	1	13	—	—	—	2	9	—	—
Deaths .. ..	—	—	—	—	—	—	—	—	—	—
Puerperal pyrexia† .. ..	154	6	13	2	—	170	12	11	1	—
Deaths .. ..	—	—	—	—	—	—	—	—	—	2
Relapsing fever .. ..	1	—	—	—	—	—	—	—	—	—
Deaths .. ..	—	—	—	—	—	—	—	—	—	—
Scarlet fever .. ..	1,410	45	180	31	37	1,520	138	176	32	42
Deaths .. ..	—	—	—	—	—	—	—	—	—	—
Smallpox .. ..	—	—	—	—	—	—	—	—	—	—
Deaths .. ..	—	—	—	—	—	—	—	—	—	—
Typhoid fever .. ..	15	3	1	20	11	8	1	1	3	1
Deaths .. ..	1	—	—	1	—	—	—	—	—	—
Whooping-cough* .. ..	—	—	—	—	—	—	—	—	—	—
Deaths .. ..	—	—	—	—	—	—	—	—	—	—
Whooping-cough* .. ..	1,768	97	46	30	15	1,614	109	59	10	25
Deaths .. ..	10	1	5	1	—	8	2	2	1	1
Infant mortality rate (per 1,000 live births) .. ..	287	23	36	24	22	263	34	40	36	34
Deaths (excluding stillbirths) .. ..	—	—	—	—	—	—	—	—	—	—
Annual death rate (per 1,000 persons living) .. ..	4,238	839	176	161	117	3,527	509	520	195	126
Live births .. ..	—	—	—	—	—	—	—	—	—	—
Annual rate per 1,000 persons living .. ..	6,838	587	392	390	253	5,745	655	855	435	269
Stillbirths .. ..	—	—	—	—	—	—	—	—	—	—
Rate per 1,000 total births (including stillborn) .. ..	222	14	27	—	—	191	15	42	—	—
Deaths .. ..	—	—	—	—	—	—	—	—	—	—
Rate per 1,000 total births (including stillborn) .. ..	—	—	—	—	—	—	—	—	—	—
Deaths .. ..	—	—	—	—	—	—	—	—	—	—

\* Measles and whooping-cough are not notifiable in Scotland, and the returns are therefore an approximation only.

† Includes primary form for England and Wales, London (administrative county), and Northern Ireland.

‡ Includes puerperal fever for England and Wales and Eire.

§ Owing to evacuation schemes and other movements of population, birth and death rates for Northern Ireland are no longer available.

## EPIDEMIOLOGICAL NOTES

## Infestation Control at Ports

At the annual meeting of the Association of Port Health Authorities of the British Isles, held at the London School of Hygiene and Tropical Medicine under the presidency of Alderman W. E. Coupland, an address was given by Mr. W. McAuley Gracie, director of infestation control, Ministry of Food. Mr. Gracie gave a brief outline of the powers entrusted to him by the Ministry. These were contained in the Infestation Order, 1943. Infestation for the purpose of this Order means infestation by insects, mites, fungi, rats, mice, or other vermin, or other animals, plants, or living organisms likely to cause damage to, or deterioration, waste, or loss of, food. He went on to describe the comprehensive treatment of the general London sewer system in December, last, in which it was estimated that 70% of the London sewer rat population were exterminated. This massive operation in London, employing 1,150 men, had encouraged him to initiate similar schemes in the systems of 330 local government districts in densely populated parts of the country. Mr. Gracie then spoke of another important branch of his responsibility—namely, to ensure that food stocks were protected against the ravages of insects. He could not unfold the whole story, but the main lines of treatment were fumigation, spray, and vacuum cleaning, the types of spray being selected for their toxicity to various insects and with due regard to the nature of the commodity to be treated. He said that increasing resort was being made to fumigation of ships' holds to get rid of the endemic infestation of food by insect pests. He added that he had been greatly concerned at the opportunities for slack and inefficient handling of chemicals of an extremely lethal nature afforded by the unregulated state of the industry, and the medical committee of the Association of Port Health Authorities shared his apprehension. He had long felt surprise that it was possible for methods unacceptable in one port to go unchallenged in another. A memorandum on standards for ship fumigation was, at the time he was speaking, under consideration by an interdepartmental committee under the chairmanship of Dr. M. T. Morgan. On the general matter of the licensing of pest control undertakings, an impartial body had been set up to which difficult and controversial cases might be referred for independent advice and to which appeals against decisions might be made. Dr. G. Roche Lynch had accepted the chairmanship of this Advisory Board, and Dr. G. Monier Williams and Dr. M. T. Morgan were the other members.

## Medical News

Sir Godfrey Huggins, K.C.M.G., F.R.C.S., Prime Minister of Southern Rhodesia, has been appointed a Member of the Order of the Companions of Honour.

The Trustees of the Dr. Jessie Macgregor Prize in Medical Science announce the award for the present triennial period to Dr. Edith Paterson, F.R.C.P.Ed., of the Christie Hospital and Holt Radium Institute, Manchester, for her work on the influence of wave-length, over-all time, and intensity on radiation effects.

Opening a new maternity unit at St. Mary's Infirmary, Armley, Leeds, Miss Florence Horsbrugh, M.P., Parliamentary Secretary to the Ministry of Health, said that more than 300,000 beds in maternity homes had been provided during the war.

News has been received that Mr. W. C. W. Nixon, who, as announced in these columns on Feb. 12 (p. 242), went to Turkey as medical adviser to the British Council there, has been appointed as attached professor of obstetrics at Istanbul University.

Hofrat Professor Adolf Lorenz, the well-known orthopaedic surgeon of Vienna, was 90 on April 21.

The *Schweizer Medizinische Wochenschrift* announces that a medico-historical institute is to be founded at Bonn University.

A new substance with a texture similar to skin, and flexible and transparent as living tissue, has been produced by Dr. Stanley Tylman, of the Illinois Dental College. It can be coloured permanently to blend with the skin of an individual and finished to a paper edge to hide the union. It is intended to be used, not instead of plastic surgery, but for immediate restoration of missing fingers, noses, ears, etc., so that the injured person can continue normal life while plastic surgery is being planned. The U.S. Office of War Information states that it is the result of more than three years' research by Dr. Tylman, and the possibility of using it for mass restoration of maimed Service men is being investigated.

## Letters, Notes, and Answers

All communications with regard to editorial business should be addressed to THE EDITOR, BRITISH MEDICAL JOURNAL, B.M.A. HOUSE, TAVISTOCK SQUARE, LONDON, W.C.1. TELEPHONE: EUSTON 2111. TELEGRAMS: *Antology Western, London*. ORIGINAL ARTICLES AND LETTERS forwarded for publication are understood to be offered to the *British Medical Journal* alone unless the contrary be stated.

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### ANY QUESTIONS?

#### Mass U.V.L. in Industry

**Q.**—*Could you publish a statement about the latest opinion on the use of ultra-violet light in factories for employees, especially in the winter?*

**A.**—The latest opinion on the value of mass ultra-violet irradiation in industry appears to range from very enthusiastic, through all intermediate shades, to very sceptical. There is no doubt that, at any rate in the earlier stages of treatment, while interest is sustained, the subjects enjoy it and a fair proportion say that they feel better for it. There is, however, no scientific evidence that this feeling is accompanied by any measurable effect on general health. Scientific observers find great difficulty in forming an opinion because so many other factors are involved. For instance, the worker has been conditioned to regard the rays as of proven tonic value and as a substitute for the blessings of natural sunlight; he feels that something is being done for his health; he gets a break from work; a shower or physical jerks may be used to reinforce the rays; he accepts the suggestion that exposure to the lamps will mitigate the effects of artificial lighting and ventilation—a suggestion which is, in fact, misleading, since even in the best conditions the worker, fully clothed and behind glass, is inaccessible to the shorter ultra-violet rays known to be beneficial in disease, even on the clear bright days of summer, when they do to some extent get through our atmosphere. In response to inquiries from employers and others the Industrial Health Research Board of the Medical Research Council are now carrying out certain investigations, from which it is hoped that, by the use of requisite controls and statistical analysis of the results, some evidence of scientific value may emerge.

#### Infection with *Oidium albicans*

**Q.**—*What is the best treatment of a vaginal infection by *Oidium albicans*?*

**A.**—Vaginal infection due to *Oidium albicans* usually responds rapidly to local treatment with gentian violet. The vagina should be thoroughly painted with a 2% aqueous solution of gentian violet three times weekly until the condition is cured. So long as the solution does not contain spirit, this painting is quite painless. It is well to continue the treatment after cure is established, and painting should be repeated once in the week after each of the next three menstrual periods.

#### Myocrisin for Arthritis

**Q.**—*May I have details of the exact dosage of myocrisin for rheumatoid arthritis?*

**A.**—A series of observations in America indicated that a lower dosage than has often been adopted in this country was adequate and freer from risk (Freyberg, Block, and Levey, *J. clin. Invest.*, 1941, 20, 401; reviewed in *Ann. rheum. Dis.*, 1941, 2, 279). I adopt the following system: begin with 0.01 g., after 4 days give 0.02 g., and if there is no severe reaction after a further four days give 0.05 g. and continue this dose at weekly intervals till a total of 1 g. has been given, provided that no severe reactions occur. The urine should be tested frequently, preferably before each dose. The sedimentation rate should be tested before the course is started, once or twice during it, and at the end. A full blood count at intervals is also desirable; any decided anaemia or a fall in the number of white cells will indicate the need for caution or for stopping the treatment. Other unfavourable signs will be irritation of the skin, which is as a rule the precursor of a rash usually of urticarial type; but more severe effects such as exfoliative dermatitis and soreness of the mouth may develop, either of which will call for a smaller dose next time, and if the same effect recurs the treatment must be stopped. Increased joint pains, if not excessive,

are a favourable sign, and a slight rise of temperature is not uncommon; it is wise to have a chart kept recording the temperature and any other effects throughout the course. A second course may be given after an interval of three months. It is not uncommonly the case that any decided benefit is not experienced till the second course is well established.

#### U.V.L. and Sulphonamides

**Q.**—*I have been told that ultra-violet light treatment is not compatible with sulphonamide therapy. What is the reason for this if correct? I have a patient aged 7 on continuous 0.5 g. twice daily doses of sulphonamide who has also derived much benefit from U.V. light treatment, but can bath be employed concomitantly?*

**A.**—The only sense in which ultra-violet light and sulphonamide treatment are incompatible is that these drugs have been found in some individuals to cause the liberation of photosensitizing pigments: a drug rash may therefore occur during treatment in areas exposed to sunlight. This distribution is by no means invariable, nor is any rash, whether confined to exposed areas or not, a common consequence of sulphonamide treatment, particularly in moderate dosage. If, therefore, both treatments are indicated, they may safely be undertaken together, the only risk being a small chance of producing a rash.

#### Wasp and Bee Stings

**Q.**—*In this part of England the wasps are in great numbers this year, and stings are frequent. Is any local treatment useful; if so, what? Is there any virtue in the extremely popular remedy, washing blue? Is it rare for general reactions to occur after wasp and bee stings? What is the actual difference between the stings of the bee and the wasp? Are they both formic acid? In one case of wasp sting I was called in to, the girl fainted twice and had felt very ill. One dose of sugar and sodium bicarbonate seemed to produce an immediate improvement; is this rational?*

**A.**—The stings of wasps and bees are rather similar in general structure, one important difference being that the bee sting is barbed and not easily withdrawn like that of the wasp; consequently the whole apparatus of sting and poison glands is usually torn from the bee abdomen. Since the poison sacs remain attached, the "sting" should be removed at once.

The venom of the bee sting is unfortunately not a simple chemical like formic acid: it is a mixture of several substances, including histamine and a toxic protein of low molecular weight, "apitoxin." Less is known about wasp venom, but from the affinities of the two insects and the similarity of the sting mechanism it seems probable that this is a mixture of the same type.

After a sting there is a cutaneous reaction which is probably due to the histamine, and in addition there may be a general reaction caused by the toxic proteins, especially if the sting happened to penetrate a vein. It is difficult to see how local treatment with acids or alkalis can alleviate the pain, though the application of any damp cool substance might be analgesic. In general one can only say that treatment should be symptomatic.

#### Hours of Rest for Adolescents

**Q.**—*Should healthy adolescents (school or university) be discouraged from regularly spending 10 to 12 hours or more in bed during their holidays, or not? The question has no particular reference to wartime.*

**A.**—I do not think this question can be answered without particular reference to wartime, as all the adolescents have grown up in five years of war. Present conditions make great demands on senior boys in schools and young men at the university. Not only do they have their ordinary work and examinations and their games but also strenuous O.T.C., preparing for certificates A and B, and nearly all of them have helped in agricultural work and in some share of domestic duties at school. They have much less fat for energy and much less protein for body-building in their diet than in peacetime. I think they should be encouraged to spend 10 hours or more in bed during at least their first fortnight of holiday, and probably for longer if the strain has been considerable. No recent writer has improved on Clement Dukes of Rugby, who in 1894 (*Health at School*, Livingtons) said: "The tendency . . . is rather towards too little than too much sleep; in fact in public schools, generally, I think the boys are rarely allowed sufficient sleep, especially the younger ones; and were it not for the holidays every 12 or 13 weeks, they could not do their full share of work and continue in health . . . all schools suffer from this deficiency more or less. Parents are only too cognizant of the fact during the first few days of the vacation, and are apt to think that their children will become sluggards; while in reality they are only making up for lost time. I lay great stress on sufficiency of sleep."

Clement Dukes gives the following suggestions for adolescents' hours of sleep: "Under 15: 10 hours (9 p.m. to 7 a.m.); under 17: 9½ hours (9.30 to 7); under 19: 9 hours (10 to 7)." I think, at the

beginning of the vacation—i.e., the first fortnight—at least an hour and preferably one and a half hours should be added to these numbers of hours to make up for lost time. I think the same remarks apply to girls.

### Vaginal Discharge

Q.—A woman of about 30 has, for an indefinite number of years, had a vaginal "discharge" which stains her underclothing brown on its exposure to air, and the fabric is eventually destroyed by the erosive action of the efflux. Since her first baby this state has become worse. She has no vaginal discharge in the ordinary sense, though her labiae are moister than normal. Her health is excellent. Examination reveals nothing. I would appreciate a few pointers.

A.—Even though it is not obvious on examination, this patient must have a discharge to produce this staining of the clothing. Vaginal discharge which is white or cream in the fresh state not infrequently leaves a brown stain on drying. Intermittent escape of urine (stress incontinence) should be excluded, but the most likely cause for this symptom is a lesion of the cervix—erosion, cervicitis, or endocervicitis. This suggestion is supported by the fact that the condition has been made worse by child-bearing. Full examination of vaginal swabs is indicated and also careful inspection of the cervix, followed possibly by treatment with cautery or diathermy.

### Telegony

Q.—One has heard it said as a truism that a pure-bred bitch, if crossed by a dog of another breed or a mongrel, is thereafter useless for pure breeding by a dog of her own breed. It is said that there will be a taint of the other breed even if her puppies are by a dog of her own kind. Is this really so, and if so, is this rule applicable to human beings after a woman has a child by, say, a negro?

A.—A belief in this phenomenon, to which the term "telegony" has been applied, is probably as old as the art of stockbreeding itself. Until comparatively recently it would have been a perfectly reasonable belief. The critical mind of Darwin was satisfied as to the reality of telegony by certain observations, notable among which was the classic case of Lord Morton's mare. This animal, of almost pure Arab blood, was mated to a quagga, a kind of zebra which is now extinct. Mated on two subsequent occasions to a pure Arab stallion, she produced two foals with clearly striped legs and the short, stiff mane characteristic of the quagga. Much later (1896-1901) the experiment was reconstructed with great care and on an ample scale by Cosser Ewart. No evidence in favour of telegony emerged. Darwin had been misled by chance throws of the hereditary dice box; it is, in fact, not very unusual for ordinary foals to be born with stripes. No evidence for telegony has ever appeared in many other carefully planned experiments in which there should have been every chance for its occurrence. At the present time, however, it is possible to go further. Not merely is there no scientific evidence, but enough is now known of the mechanisms of reproduction and heredity for us to be sure that there never could be; it is impossible that the phenomenon could occur. A belief in telegony was not unreasonable in Darwin's day; at the present time it is wholly inadmissible. But it is a superstition which is dying very hard. (For an interesting account see Crew's *Animal Genetics*, Edinburgh, 1925.)

## INCOME TAX

### "Pay as you Earn"

W. B. has taken on work as an "indefinite locum" with possibility of a death vacancy transfer.

\*\* Normally a locumtenent holds a particular engagement for a short period and holds several in the course of a year. In such circumstances the earnings are usually assessed under Schedule D and do not come within "pay as you earn." W. B.'s position, however, appears to be different; he is in effect a temporary assistant employed by the proprietors of the practice, and "pay as you earn" applies.

### Assistant's Board and Lodging

K. S. is employed as an assistant. His employers have themselves, out of their own pocket, defrayed his board and lodging expenses first when he resided with them and afterwards at his present residence. The inspector of taxes contends that he is liable to assessment on the £150.

\*\* In our view the question of liability depends on the precise nature of the arrangements made. Non-liability does not attach only to board and lodging under the principal's roof; it applies if the assistant is boarded elsewhere. But if the facts are that K. S. is liable to his landlady for whatever amounts may be due to her, and the employing firm pay his debt for him, then it would seem that the discharge of that debt is equivalent in effect to paying the amount in cash to K. S., and he is liable to assessment to income tax thereon.

## LETTERS, NOTES, ETC.

### Wanted for Research

Prof. F. C. PYBUS, F.R.C.S., writes from the Royal Victoria Infirmary, Newcastle-upon-Tyne: I am working at the cause of mammary carcinoma and have been feeding some mice of non-mammary carcinoma strain with human mammary carcinoma, which may be supposed to contain the "mammary factor" if the cause is the same in man as in mice. A more direct experiment would be the feeding of some young mice with the milk of a woman who has, or has had, a mammary carcinoma. Such cases are, of course, uncommon, and I am asking your help to get in touch with a doctor who knows of one.

### An Appeal to Good Nature

Owing to the need for severely restricting circulation of the *Journal* while the paper shortage lasts, a number of institutions and individuals connected with medicine and its ancillary services can no longer obtain the weekly copy for which they formerly subscribed. Any member who might be willing to pass on his *Journal* after reading it (making himself responsible for dispatch and postage) would be given the name and address of a suitable recipient if he wrote to the Publishing Manager at B.M.A. House, Tavistock Square, W.C.1.

### Molluscum Contagiosum

Dr. AGNES SAVILL (London, W.1) writes: Regarding the case of molluscum contagiosum for which advice was asked (July 15, p. 101), in my experience recurrences point to the existence of an infecting object being employed, such as a sponge, loofah, favourite face-cloth. In one case a special hat-band conveyed the infection. If this is carefully investigated and the offending object destroyed, recurrences should cease.

### Pest of Flies

Lieut.-Col. R. M. BARRON, I.M.S. (ret.), sends the following suggestions for dealing with flies: "Breeding places outside houses should be searched for, and, if found, dealt with. Flies enter a house on the sunny side to find food and drink and to obtain shelter from the sun. Windows and doors on which the sun shines in the morning should be kept closed while the sun is on them; the windows and doors on the opposite side may be left open. In the afternoon the windows and doors on the sunny side of the house should be closed, and those on the shady side opened. An hour before sunset all windows and doors may be opened, for if some flies have entered to obtain protection from the sun and to obtain food and drink and have found none they will fly out for a further search. These facts can be strikingly observed with tents, especially in the desert, but by following the same rules the nuisance can be greatly avoided. Fly traps may also be used. Portions of net, with meshes as large as those of fishing nets, hung over doors and windows of houses or the entrances of tents will keep out flies.

### Genesis of Shock

Capt. BRANDON LUSH writes: The interesting article by Major Charnley (May 27, p. 716) throws fresh light on the genesis of shock. It shows that, under anaesthesia, local fluid loss is the most important, if not the only, factor in the production of shock. However, the casualties we see are conscious (shock is slight or absent in head injuries) and able to suffer pain. G. W. Crile years ago realized the importance of pain in the genesis of shock and used local anaesthesia (especially nerve-block) to combat it. I feel that pain is the most important factor in the genesis of shock—hence the value of morphine in prophylaxis and treatment. All attempts to reproduce clinical shock by experimenting on animals under anaesthesia are likely to be fallacious. I believe that (references are unobtainable in the field) trauma to a limb rendered anaesthetic by local anaesthesia or nerve division produces no more shock than that expected by fluid loss. Charnley's article also reminds one of Patey and Robertson's suggestion of tight bandaging of a limb to prevent the onset of the crush syndrome.

### Corrigenda

*Sulphapyridine in Bacterial Endocarditis*.—The course of sulphapyridine given to the patient in the case described by Dr. R. P. Lawrie (Aug. 12, p. 224) consisted of 12 g. (24 tablets each of 0.5 g.) and not 0.12 g. as stated.

*Registration of Specialists*.—The first line of Dr. A. Piney's letter (Aug. 19, p. 253) belongs to Capt. Jacobs's letter on page 254. Dr. Piney's letter (dated Aug. 5) should begin: "The current issue of the *Journal* should, I think, be read," etc.

### Disclaimer

Dr. V. N. LEYSHON, Deputy Medical Officer of Health and Tuberculosis Officer, Blackpool, asks us to state that he disclaims any knowledge or participation in the publication of an article in various Sunday newspapers of Aug. 6, 1944, in which his name appeared.

# BRITISH MEDICAL JOURNAL

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## SOME GENERAL CONSIDERATIONS ON HIGHER OR POSTGRADUATE MEDICAL STUDIES

BY

F. M. R. WALSHE, M.D., D.Sc., F.R.C.P.

A far-sighted and comprehensive outlook upon the problems of higher or postgraduate medical studies is not less vital to the future of medicine at this juncture than is a sound and liberal regime of undergraduate medical education.

In a recent article in the *Journal*<sup>1</sup> I ventured to discuss what appeared to me essential defects in the methods and content of our undergraduate teaching, and in some of the schemes proposed for its improvement. The difficulties in respect of higher medical education, if somewhat different and less obvious, are nevertheless real and pressing, and their consideration is complicated by diversity of view as to what we are to include under the title of postgraduate education. Some attempt at definition is clearly necessary, but in the meantime, however we define their scope, higher medical studies present us with a current problem of the first importance. Whatever form the medical services in this country may ultimately take, they will make heavy demands on the services of consultants and specialists, and while the proper Government authority will doubtless enter with zest into the organizing of doctors within the framework of a medical service, the adequate training of those doctors for the diverse functions they will have to undertake within such a service, and the maintenance of professional standards, are responsibilities we dare not delegate to the service is to become in fact what it should be. That this task is recognized as ours finds a welcome confirmation in some remarks of the Prime Minister, recently made at a luncheon of the Royal College of Physicians (see *Times*, March 3), when he expressed the desire that there should be no lowering of consultant standards in the manning of the future medical services. In short, the intellectual traditions of medicine thus rest in our hands, and their maintenance and enhancement are our responsibility. These, we shall have to remember, will go far beyond the immediate utilities of any national medical service.

We may therefore proceed to consider the aims and methods of higher medical studies, and the nature of the institutions in which they may most fruitfully be pursued.

### Role of the Special Hospital and Medical School

While the main academic preoccupation of the great teaching hospitals must remain the training of undergraduates, higher medical studies and research will inevitably continue to be conducted within them, and if the number of whole-time professors and teachers is to be increased it may be hoped that these vital activities will multiply. It is probable, however, that the precise nature of the studies thus followed at any one will depend upon the interests of the then holders of professorial chairs and their teams of workers, and there are special branches of medicine—e.g., neurology, dermatology, radiology, etc.—the development of which cannot be left to chance in this way, but must be pursued methodically in adequately staffed and equipped special hospitals and schools of medicine is to advance on all fronts.

Nevertheless the view has been authoritatively expressed that a day of such hospitals and schools has passed, and that the special branches of medicine may best be developed in the

special departments of large general hospitals. This view is strongly contested here as the product of the organizing mind, concerned only with administrative tidiness and ignorant of the scientific and cultural issues involved. The development of specialization in medicine is inevitable and will be progressive, like it or not as we may, and if every undergraduate teaching hospital is to set up the requisite number and variety of special departments, adequate to conduct high-grade postgraduate teaching and research, the multiplication of hospital and laboratory accommodation and facilities, and of personnel, will be enormous and the multiplication of effort and expenditure wasteful in the extreme—and all this with a quite disastrous loss of efficiency.

In every developed special branch of medicine there must surely be a central hospital and institute that shall form the growing point of knowledge in its special field. Here can be gathered with the greatest economy and efficiency the essential clinical and pathological material and full facilities for its exhaustive study. Moreover, a specially trained group of workers all pursuing knowledge in the same field of medicine within the walls of such an institution will enjoy the stimulus that a team can alone provide and that is so vital to the fruitful activity of the scientific worker.

On the other hand, the one or two men staffing the small special department of the general hospital must perforce work in comparative intellectual isolation, nor can they possibly command the material resources of the central institute.

It is therefore submitted that any attempt to disperse such schools and to divide their activities among a group of general hospitals would be a retrograde step gravely adverse to the future of medicine in this country. Special research and the adequate training of specialists can be competently undertaken only in the special hospital and its attached school.

There is also an essential place for the special postgraduate school not confined in its activities to any special aspect of medicine, but free to cover all fields both in research and in the promotion of higher studies. The British Postgraduate School in London already fills this role, and it may become expedient in time to found comparable institutions in other great centres of medical education throughout the country.

### The Aims and Methods of Higher Medical Studies

There appear to be some who view the postgraduate school mainly as an institution for the provision of what are euphemistically called "refresher courses" for general practitioners, or, in the near future, for young medical officers to be demobilized from the armed Forces and contemplating a first entry into civilian practice. The value of such courses as a long-term policy is dubious; but, however we view their potential usefulness, it is surely clear that their provision, as an exclusive function of a postgraduate school, expresses an impoverished conception of what such a school should occupy itself with. This provision by no means exhausts its proper functions, though it may easily exhaust the staff. There is also to be considered the provision of opportunities of all necessary kinds for the research workers of the future, and also of facilities for the training of consultants and specialists—functions that are not wholly identical. It is here submitted that

<sup>1</sup> "Some Principles of Reform in Medical Education," *British Medical Journal*, Feb. 5, 1944

the primary and essential role of a good postgraduate school consists in the provision of a fair field of facilities, and in the creation of a favourable atmosphere, for advanced and original studies. I should therefore put in the following order of importance the functions of a postgraduate school of medicine: (i) the provision of opportunity for research and the advancement of knowledge; (ii) the training of specialists and consultants; and, questionably, (iii) the provision of "refresher courses." The qualification inserted under the last heading is not to be taken to imply that a postgraduate school has no responsibilities towards the general practitioner, but it expresses the grave doubt as to whether the refresher course itself is the proper way in which this responsibility should be discharged, and as to whether this type of course—if its usefulness be conceded—should be undertaken in a school where really advanced studies are pursued. Indeed, my own view is that these two activities—advanced studies and refresher or examination courses—are incompatible in a single institution; for experience, as will later be indicated, has so far shown that the latter tend to destroy the former.

### Research and the Advancement of Knowledge

It is possible that some may be impatient with the notion that these really are the primary functions of a postgraduate school. Issues of more pressing importance, such as the early provision of consultants and specialists, may appear to demand priority. This question involves our entire outlook upon what should be the training of these categories of doctor. Few will dispute that a purely teaching institution wherein no one is engaged in the forging of new knowledge, or in thinking on broad lines about the problems of medicine, but where all are occupied with the handing on of established knowledge and the imparting of techniques, is a dead school. At the best it is merely a polytechnic primarily devoted to grinding out courses for this or that specialist diploma. Research and the advancement of knowledge not only serve the ends indicated by their names, but they also provide—and can alone provide—the keen and critical atmosphere in the absence of which we cannot hope to train specialists of the first rank. It is therefore urged that original thought and work are vital elements in the life of any school for higher medical studies, whatever else we may ask of it. Surely, also, now is the time to approach the new medical world opening before us with the highest possible ideals, for the dangers to idealism and enterprise in any State service that is based on an immediately utilitarian point of view cannot be discounted by the most ardent champions of the reorganization of the medical profession.

In an earlier article in the *Journal*,<sup>2</sup> entitled "Strategy and Tactics in Research," I ventured to discuss some of the defects in our present outlook upon research problems, and, while I do not propose to weary the reader with recapitulation, some considerations may be restated. The deep searchings as to the very bases of scientific thought that have stirred the world of physics within recent years have had little echo in the world of biology, including physiology and medicine, and we are in some danger of losing sight of first principles of science in our growing preoccupation with experimental techniques. These are now so ingenious and have proved so valuable in the opening up of fresh fields of discourse about medical and physiological problems—as, for example, in the case of the elaborations of electrophysiology—that not rarely we fail to see the wood for the trees. As techniques multiply and grow more specialized, so width of comprehension shrinks. There develops in consequence the tendency to consider research as adequately conducted by the recording of random observations obtained by the use of new techniques, without further consideration of their wider import and relationships. Science thus comes to be viewed as consisting in mere observation and the accumulation of records, without the generalizations and hypotheses and other intellectual instruments that can alone transform information into knowledge and thus lead to advance. The perusal of current physiological and medical journals reveals that a large proportion of their contents consists of these isolated items of information, and the author, especially if he be young, who ventures daringly to attempt some

generalization or synthesis of his findings with those of other workers is in danger of having his contribution declined.

There is, it seems, a pervading intellectual timidity or shyness that shrinks from original thought and, in effect, discourages adventures of ideas. Yet, as Whitehead has remarked, "Part of error is the death of progress." This situation has been candidly summed up by another philosophical writer of to-day: "There is little hope of the good scientist, who is mired in his specialized business, devoting himself to the broken foundations of his science; it would only be bad betting for him as an individual to give up his time and energy to a critical and general speculative investigation, when he has before him the possibility of pushing his specialty a few solid steps ahead. Such a state of affairs is plainly as adverse to true advance as the opposite extreme of unbridled speculation, and we should not remain content to ask of a man what 'discoveries' he has made; we should also proceed to inquire of him what he has made of his discoveries, or, for that matter, of anyone else's."

It should not be too sanguine to hope that we shall in future see at least some centres of higher medical studies that will set themselves to break with this timorous tradition, and will attempt, as among their ideals, the ordering of knowledge and the training of men in the basic principles of scientific thought. At no time in the history of medicine and its daughter science has a deeply thoughtful attitude to research been more imperative than it now is, and it is this conviction that must be the excuse for a digression that may have seemed to the reader of undue length and doubtful relevance.

### The Training of Specialists and Consultants

The wisdom of undertaking this training in an institution wherein original thought and work are actively pursued has already been discussed. In no other way, save by such contacts, can the student be fired to undertake original work himself. To see knowledge being won is, for those who have it in them, the adequate stimulus to add to knowledge. Yet this need not be taken to imply that every would-be specialist or consultant should be expected as a matter of course to undertake research. A man may have the making of an excellent clinician and an admirable teacher without also having a flair for original investigation. This may seem obvious enough, yet the notion encounters some opposition, largely from those who like to sentimentalize research as something inherently virtuous by participating in which we must all be the better. Yet research is a means and not an end, and there is no doubt that hitherto a young man hoping to make a place for himself in clinical medicine has found himself under the necessity of "going through the movements" of doing research, and the publication of an "original paper" has been widely taken as a test of his capacity. Thus it is that medical literature has been burdened with far too much inferior matter in order that men may obtain due recognition of gifts and attainments in quite another field of medical endeavour. Against this danger it is to be wished that the postgraduate school of the future may be on its guard. Gifts for teaching and for research are not necessarily combined in a single individual, and generations of science and of medical students have suffered from the popular and eminently respectable illusion that a distinguished scientific investigator must necessarily be fitted to teach the elements of knowledge in his own field. Nevertheless, the original thinker and worker is a heaven vital to the fruitful activity of every medical school, even though not all teachers or students need be expected to follow in his footsteps.

### The Role of the Special Diploma

The training of the specialist needs to be both theoretical and vocational, covering both a science and an art of medicine. What is implied by this has already been discussed by me in a recent article on the reform of medical education and need not be further elaborated here. The detailed curriculum of studies essential to the full training of the specialist and consultant also need not be minutely discussed. We may, however, make some mention of the specialist diploma examination as a criterion of competence in the field of medicine.

<sup>2</sup> Scott Buchanan, *The Doctrine of Signatures: a Defence of Theory in Medicine*. Kegan Paul and Co., London, 1933.



Within the past few years the number of these diplomas has increased considerably, and the Royal Colleges in this country now grant no fewer than nine, not to mention those given by universities. As to their influence upon those postgraduate schools that provide systematic courses for them, it can scarcely be denied that it is wholly adverse—that is if we accept the conception of the postgraduate school herein submitted. Schools making the provision of the necessary courses a primary activity end by doing nothing else, and their research activities dwindle and die. It would be invidious to seek to exemplify this proposition, but the case may be presented in another way. So far, happily, there has been no specialist diploma in neurology, and up to date the primary aims of the postgraduate school attached to the National Hospital for Nervous Diseases at Queen Square have been to conduct original research and to provide a sound all-round training in clinical neurology and neuropathology to its students, the reward of the latter being the work they had done and the experience they had acquired, and not any label or diploma granted to them. It is interesting to note that this school is the only one of its kind in the country to which, right up to the outbreak of the present war, there was a steady flow of serious postgraduate students from the Dominions, America, and Europe—men and women of professional and other university status desirous of higher training. At a period in the history of medicine in these islands when, owing to the rapid development of medicine in the United States and the Scandinavian countries, the flow of graduates of this type to this country has virtually ceased, this is a remarkable tribute to a school that has been interested in a culture rather than in a curriculum, in a discipline rather than in a diploma. It is not implied that distinguished leaders in medicine and physiology in this country have not continued to attract pupils from abroad, for we know that they have done so, but that no other postgraduate school as such, has commanded the reputation requisite to bring graduates of the best type and in considerable numbers to these shores.

While, therefore, the special diploma can hardly be regarded as an inspiring stimulus to, or eod of, higher medical studies, it possibly has certain useful though restricted purposes. For example, it may assure a working level of efficiency in such special techniques as those of radiology or anaesthetics, and where a large medical service, such as that of mental hospitals or of tropical medical services, requires large numbers of medical officers, the special diploma course ensures that they acquire an adequate familiarity with the branch of medicine in which they intend to practise. But all this is quite another thing than the acceptance of such a diploma course as adequate to the assumption of consulting responsibilities. These require a deeper foundation of experience in general medicine than the special diploma demands or its curriculum provides.

As an element of value in higher medical studies designed for the training of specialists or consultants there are other and more positive defects in the special diploma, as we know it. It tends to focus the candidate's attention upon a curriculum rather than upon the full range of the subject. It promises to better higher medical studies, which are best pursued for their own sakes, in the shackles of the examination system—with us a purely vocational system with no theoretical background, and finally if the special diploma were ever to be accepted as a criterion of consultant status in a highly organized public medical service, it would lead to arbitrary and unworkable restrictions upon consulting practice. Thus, how fantastic it would be though by no means impossible, if no one but the holder of a diploma in psychological medicine were to be permitted to deal with, or to issue certificates in respect of, cases of psychoneurosis, or cases in which a prominent psychological element was present! Such cases, as we all know, loom large in the experience of consultants in every field of medicine, coming disguised as somatic disorders involving the nervous system and every possible organ. Further, a concept of psychosomatic medicine is now being developed which proposes psychological factors of causation for a wide range of somatic illnesses. The practice of medicine would become impossible if all consultants were to be restricted by artificial barriers within the field of medicine, and the general level of medical efficiency would inevitably deteriorate.

The truth surely is that the special diploma tends to breed technicians and not physicians; individuals better able to apply techniques than to make those essential clinical assessments that alone render the employment of techniques, be they of psychology or of bacteriology, a rational activity. It is in the field of therapy that their influence is most baneful. Treatment should be thought of as a whole, "as the total contribution of the physician to the complicated action that is taking place within the patient incessantly." It should not be thought of in isolated categories or in terms of specific instruments or aims. "Therapy is one of the routes by which medicine has been specialized, and by which the specialties have become vicious" (Scott Buchanan, loc cit). A final question arises. The special diploma makes no adequate provision for the postgraduate training in general medicine of any aspirant to consultant status. Hitherto the experience needed by the candidate for the London M.R.C.P. has usefully served to ensure this, but if the easy key of the special diploma opens the door to consultant work, who will trouble to acquire this essential foundation of clinical experience? This examination will fall into desuetude, and our standards will fall with it.

#### The Value of Refresher Courses

Possibly, an equally controversial issue with that just dealt with is provided by the question of the value of the so-called refresher courses. These attempt the impossible—namely, the imparting in too brief a space of time to tired, or even unsuccessful, men of a range and quality of knowledge that cannot be transmitted in this way. As a mode of instruction in specific techniques of diagnosis or of treatment they may have a limited scope of usefulness, but of general cultural value little or none. At best their influence can be but transient. Surely the remedy for the inevitable difficulty of keeping abreast with advances in knowledge and techniques—as this has obtained hitherto under the common conditions of general practice—is not the makeshift expedient of a brief refresher course, but such a replanning of the conditions of general practice as shall prevent the isolation of the doctor and shall keep him in constant touch with hospital and specialist services throughout his professional life. Some such arrangement should be an integral part of any planned medical service. But if the brief and rarely repeated short cramming course is to be retained, then its provision cannot be a function of such a postgraduate school as has been here discussed. The medical staff of such a school could not possibly stand up to the unremitting repetition of such courses without becoming spiritless hacks, and all their more vital activities would inevitably go to the wall. There would have to be organized special institutions for this work, which cannot be combined with the pursuit of higher studies in medicine. It is to be hoped, however, that nothing of the kind will be found necessary in a better-planned medical world.

#### Conclusions

We may easily, at this juncture, aim too low in our plans for the future of higher medical studies, but we cannot easily aim too high. No craven fear of what official organizing zeal may do to us while we are seeking to maintain our standards, or even to enhance them, should lead us to fall short of our traditions. We still have freedom to think about the future of medicine, and this should not come to be construed as freedom not to think. If we set to work now in earnest there should be ample time, while an agreed form of medical service is being hammered out and then begins to grow, to produce the right type of specialist and consultant and the numbers we shall need of them. We have in fact, in the Prime Minister's speech earlier cited, been invited to maintain our standards.

In assessing what should be the criterion of an adequate specialist and consultant training we shall do well to rely mainly upon securing full opportunities for higher studies, and for research for such as have the gift for it, and upon judging men by their work and achievements during their period of training rather than by the hazards of a postgraduate diploma mill. After all, the great names in medicine are those of men who trained themselves after graduation and owed nothing to educational planning. It is clear, of course, that such a diploma system would make the task of the official "grader" of consultants delightfully easy, for it would provide him with those



paper categories of doctors which would be as useful to him—if not to the community—as a really adequately trained body of consultants. Yet it is not our business to turn out numbers of mass-produced "utility" consultants and specialists just to make an organizer's paradise, but to see to it that the community gets a service worthy of us.

So far the examination system has not imprisoned higher medical studies irrevocably in its paralysing grasp, but we shall need all our vigilance to see that it does not. I will go even further. In the past we have not seldom lost for medical science men of outstanding ability because they did not, at the appropriate time, acquire those alphabetical adornments to their names that we have asked of those to whom we have offered opportunities in consulting and academic medicine. This should not be. Surely in a liberal profession based on science there should be a career fully open to talent. Nothing is better calculated to obstruct this than a barrage of diplomas.

## THE USE AND ABUSE OF TRICHLOROETHYLENE

BY

G. E. H. ENDERBY, M.B., B.Chir., D.A.  
*Anaesthetist, E.M.S.*

"In estimating the untoward effects of any anaesthetic agent three factors are always involved—(1) the anaesthetic agent, (2) the patient, (3) the anaesthetist—and only too often the last of these factors is ignored."

Trichlorethylene, a comparatively recent addition to the anaesthetist's armamentarium, has in the last two years come into fairly wide use in this country, and was at first received with applause and thanks for an agent with many useful and unique qualities. The initial enthusiasm, as is so often the case, was soon replaced by an equally severe swing of opinion to the other extreme, in which all its bad qualities and dangers were repeatedly emphasized. It is this latter swing which occupies the pages of so many contemporary journals, and this article has been written in an effort to control and in part to prevent any undue bias, and at the same time to present material from which a more balanced evaluation of this agent can be made. So much that is good can be hidden by a little that is indifferent, and so many are easily biased by the chance observation of a headline, the remarks of a colleague, or even the smell of a particular anaesthetic.

Langton Hewer (1942) first brought his careful investigation of this agent before the Royal Society of Medicine, and in that report gave particulars of its chemistry, physical properties, and anaesthetic quality. No further mention will be made of these particulars, but attention will be focused instead on the use of this agent, with special reference to its limitations and to the bad effects of ignorance and misuse.

### Apparatus

It has become customary to place the trichlorethylene in the chloroform bottle of the Boyle apparatus. This practice is convenient, but at the same time affords scope for a grave abuse of the agent, for only too often the *minimum* which such a bottle will allow proves to be too great for maintenance of the patient, whereas any approach to full delivery, with gas bubbling through the liquid, gives a higher vapour concentration than any patient ever requires. Here then lies a danger, and one into which fall so many who are not conversant with the small amount of trichlorethylene that is needed. It can be stated with confidence that very few patients require more than the minimum vapour flow from such a bottle, and indeed this may often prove an overdose. An extremely small percentage receive the full flow with the plunger elevated to the top, and never has it been found necessary to increase the vapour concentration any further by lowering the plunger towards the surface of the liquid; but on many occasions I have observed administrators labouring under a *full* load of trichlorethylene, with a difficult patient showing a respiratory rate of 60 to 80 a minute. These administrators, too, are the first to complain about the "disadvantage of trilene" in raising the respiratory rate!

Thus the type of apparatus commonly employed is one reason for misuse of this agent, and for a considerable period a drip-feed of the vinesthene pattern was employed instead. This works very well, but the property of trichlorethylene of dissolving fats so readily soon makes all the joints leak, and the apparatus becomes dirty and wasteful. Furthermore, vaporization in the stream of cold gases is difficult. However, it is felt that some device constructed along these lines, by which a very small minimum dose could be given, or alternatively a well-designed vaporizing bottle for the Boyle machine would be a considerable help in avoiding overdosage. Marrett's trichlorethylene-air apparatus has bottles which allow good vaporization of the liquid, and it appears possible with this apparatus to obtain the small minimum dose required.

### Induction and Depth of Anaesthesia

Induction with trichlorethylene is difficult, and it is here that trouble may arise, for in attempting to obtain the requisite depth of anaesthesia there is a tendency to use more and more of the agent. This increase of vapour concentration rarely brings with it the desired diminution of muscle tone, and this, when it was first used, seemed to be a great drawback and disappointment. However, it was soon appreciated that other agents can be easily employed to carry the patient smoothly and quickly into the third stage and to obtain the desired relaxation; the further course of the anaesthesia can then be conducted smoothly and without incident under trichlorethylene. Once the necessary relaxation has been obtained and the stage of surgical anaesthesia reached, this state can be maintained indefinitely on a minimum of the agent, which suffices to hold a steady plane of anaesthesia showing little tendency to change. First-plane anaesthesia is the usual level, though an occasional patient shows signs of the second plane; and it is fortunate indeed that the lighter plane is sufficient depth for the performance of the overwhelming majority of surgical operations. With trichlorethylene it is as a rule impossible to obtain the deeper levels of third and fourth planes, and the recognized signs associated with those levels are certainly not observed. Any attempt thus to deepen the anaesthesia usually meets with one or other of two conditions—(1) a rising respiratory rate, or (2) sudden respiratory arrest. In other words, trichlorethylene has a very limited working range; but for reasons previously stated this is a most useful range, and, furthermore, physiological disturbances occur with considerably less frequency in such lighter planes.

For convenience, and where a barbiturate is not contraindicated, pentothal, or some similar rapidly acting intravenous anaesthetic, is employed for induction, and is followed by nitrous oxide and trichlorethylene on the Boyle machine. The necessary relaxation is provided by the barbiturate, and if sufficient has been given to tide over the time required for the introduction of the trichlorethylene, then such relaxation is maintained for the duration of anaesthesia, and a quiet smooth anaesthesia results. In cases in which a barbiturate is not desirable, or is contraindicated, the induction is made with nitrous oxide, followed by a little oxygen and then trichlorethylene. Cyanosis is avoided, as this tends to persist under trichlorethylene even with an ample sufficiency of oxygen. With adequate well-timed premedication it is possible to produce the necessary relaxation under nitrous oxide and trichlorethylene alone, but in 50% of cases muscular relaxation under this agent is still not adequate—i.e., arms and legs are usually stiff, and vague wandering movements are to be seen in fingers and wrists and feet—and small quantities of ether have to be added to produce it. The very small amount of ether required at this stage is impressive, and relaxation can often be produced with but two or three minutes of ether on the Boyle machine. Once relaxation has been obtained a return is usually made to the trichlorethylene, and no further ether is required for the duration of anaesthesia. It thus appears that trichlorethylene is an excellent "maintenance agent," and its best effects are to be observed when it is used as such.

From the preceding paragraphs it becomes obvious that trichlorethylene is given no part in producing relaxation, and this is even truer when considering the minority of cases which need additional degrees of muscular relaxation. These cases

consist chiefly of abdominal operations, particularly those involving the upper abdomen, and trichlorethylene plays little part in such work. There is, however, one interesting combination which has been used a considerable number of times with complete success—viz., avertin followed by nitrous oxide and trichlorethylene, which allows of abdominal surgery with an adequate degree of relaxation. This combination offers advantages where diathermy is required inside the peritoneal cavity, but attention must be paid to the time of administration of the avertin so that the operation may start 10 minutes after the drug has been given. Lack of attention to this detail soon leads to failure.

The exact relationship between depth of anaesthesia and the degree of muscular relaxation is difficult to determine, but depth alone is not the only major factor. Probably the activity of the respiratory centre has an equally important role, and in this respect it is interesting to note that careful attention to respiration under trichlorethylene will often allow an adequate relaxation for what are sometimes difficult operation fields—e.g., herniotomy and appendicectomy. Raising respiratory rates in such cases almost invariably invoke comments on "tightness" from the surgeon.

#### Amount of Anaesthetic Agent Required

I have stressed the undesirability of using much trichlorethylene, and further details must now be given of the various signs which have been found helpful in judging the need for more or less anaesthetic during the course of the operation. These signs are characteristic of trichlorethylene, and close observation of any patient will show how they form a picture, some details of which are outlined also by other agents, but in which most of the finer lines are individual.

##### (a) Overdosage

Overdosage is considered first, for usually as indicated, our machines give too big a vapour concentration and overdosage is much easier than the reverse. The easiest sign is the rise in the respiratory rate, which may occur soon after the usual induction or at any stage during the course of the anaesthesia. The rise is often quite sudden, and with careful watching is soon detected, although the respiratory rate is usually about 35 a minute before the observer becomes aware that it is too fast. At this point there is only one course of action—removal of the source of trichlorethylene and allowing what is already in the patient to diminish gradually through loss at the expiratory valve. It is then found that the rate gradually subsides to a reasonable level, and over a period of about 5 minutes falls to 20–30 a minute, which is about the average for this agent when used carefully. When this level has been attained a minimum of trichlorethylene should be readmitted for maintenance and a very careful watch kept for a further increase of rate. This may occur a second time, but the condition is just as amenable to treatment as before (or even more so) and rarely does the trouble appear more than twice in the same subject, so the remainder of the operation is free in this respect. It should be emphasized that adequate time must be allowed for the respiratory rate to return to normal. The time varies with the degree of overdose, but usually about 5 minutes is required on the Boyle machine with a total gas flow of about 6 to 8 litres a minute. Some cases respond in a few minutes, others may need 10 to 15 minutes, but all respond in the right direction, and show a marked improvement before they become inadequately anaesthetized as of course all cases eventually will unless receiving a very high percentage of nitrous oxide. High concentrations of nitrous oxide with trichlorethylene have been found undesirable, as there is an increased tendency to tachypnoea, and the reverse is shown when high oxygen concentrations are used. The patient who is allowed to continue with a much raised respiratory rate becomes increasingly difficult to quiet, so that the condition may then persist for the remainder of the operation in spite of otherwise adequate measures. Immediate attention should always be given to this complication.

It is estimated that 90% of all cases under trichlorethylene will show this rise of respiratory rate in response to an overdose of the agent, and most of the remaining 10% experience respiratory arrest. This occurs suddenly, without any preliminary respiratory variations as may be observed with some

other agents. It responds always to a lowering of the vapour concentration, with perhaps a little help from carbon dioxide and oxygen, and of course it causes additional anxiety. Individuals who show this reaction may do so again during the course of the operation with early administrations. It was once recorded five times during one operation, after which a change was made to another agent. These patients seem to jump from first or second plane straight down to respiratory arrest without any intermediate signs. The reaction has never been observed in any case showing tachypnoea.

There still remains one further small group of patients who give trouble from overdose, but of a peculiar type. Here the only observation that can be made is that the respiratory rhythm is "not quite right." On careful examination it is found that the length of each respiration varies, and particularly is this so with the expiratory fraction. Some are short and crisp, others longer and slightly irregular, and yet even with these variations the type of respiration is "automatic," and the patient is of course surgically anaesthetic. These cases respond well to a removal of trichlorethylene and after a few minutes there is a return (often sudden) to the correct satisfying automatic respiration. In these cases there may also be some slight tachypnoea but this is not marked.

It must not be overlooked that a very small percentage of the cases will show no rise or other change of respiratory rate whatever even under an obvious overdose. These cases are few and far between, but their existence may help to explain the delayed recovery sometimes seen, or other peculiar complications which have been described.

##### (b) Underdosage: Patient becoming too "Light"

Two main signs are found to be of service here. They are the respiratory rate and the presence of stridor. As the anaesthesia lightens, the respirations, as already noted, gradually become slower and quieter, until eventually their slowness and quietness become "too flattering," when caution should be exercised. It is here that stridor often makes an appearance, followed by a period of difficult anaesthesia. The stridor may occur suddenly with great severity, but more often it is of gradual onset and the usual clinical picture is of a slow quiet respiration associated with a definite stridor which does not improve but indeed deteriorates until more anaesthetic is given. If the anaesthesia has been of short duration until this moment, then movements of the fingers and feet and sometimes face and head are also seen, but rarely do these signs give any useful information before those previously described.

It must be remembered however that respiratory rate and depth under anaesthesia depend also upon the degree and severity of the surgical stimulus, and upon individual susceptibility to these stimuli in addition to any specific pharmacological action of the anaesthetic agent in use at that time. This must be carefully borne in mind, for an inadequately anaesthetized patient will show many respiratory variations at the onset of operation, and any particularly severe stimulus (e.g., crushing of the sciatic nerve) may temporarily affect one who is otherwise adequately anaesthetized. Also it occasionally happens that in correcting a rapid respiratory rate due to trichlorethylene overdosage the patient swings quickly into the realm of inadequate anaesthesia, and the respiratory rate, which at first was diminishing satisfactorily, starts to rise again in response to an increasing stimulus. This may cause some difficulty at first, but it is soon recognized by the association of other signs, such as stridor, and perhaps muscular activity. Furthermore, if the patient is carefully watched, this state is detected before any further difficulty arises and can be treated accordingly.

#### Abnormal Findings under Trichlorethylene Anaesthesia

##### (a) Cardiac Irregularities

Irregularities occur in about 6% of all cases anaesthetized with trichlorethylene, and careful examination seems to indicate that they are extrasystoles. Unfortunately ECG findings have not been available. The clinical course of these cases is usually along the following lines. At first there is a gross irregular irregularity of pulse lasting for several minutes, which eventually gives place to a pulsus bigeminus—viz. a normal

beat, an extrasystole, and a pause—and this state usually lasts for about another 5 minutes, at the end of which time, and some 10 to 15 minutes after the onset of irregularities, there is a sudden termination of irregularities and a return to a normal regular rhythm, which then remains as such for the rest of the operation. The change to normal rhythm is often sudden, but sometimes pulsus bigeminus is replaced by trigeminus, then an extrasystole at increasing intervals, and finally a normal rhythm with an occasional extrasystole at infrequent intervals. These irregularities are usually seen at the outset of the anaesthesia, and they have always been observed to run the course outlined above, and have never caused any clinical disturbance or upset. The administration of the anaesthetic is not interrupted, and although some cases have occurred during periods of obvious overdose they cannot be associated in general with this state.

Similar abnormal cardiac rhythms are also to be observed under other anaesthetic agents, and the above picture is by no means characteristic of trichlorethylene. More careful observations may indicate that these irregularities are related not so much to the agent as to the type of induction of anaesthesia and to the physical disturbances of respiration consequent on breathing into machines and through valves, or to the presence of laryngeal spasm. However, such obvious signs must not pass unheeded, and always a careful watch should be kept for clinical features in such patients. More careful investigations—by E.C.G. studies, etc.—are obviously desirable.

#### (b) Nerve Palsies associated with Herpetic Lesions

Two papers were recently published in the *B.M.J.* (Carden, 1944; Humphrey and McClelland, 1944) giving details of cranial-nerve palsies together with herpetic vesicles, and the association of these conditions with closed-circuit trichlorethylene anaesthesia. A reaction between trichlorethylene and soda-lime, with the production of a toxic compound, dichloroacetylene, which is responsible for these lesions and in some instances for the death of the patient, seems a reasonable conclusion from the evidence presented. In support of this claim a similar case has been observed at this hospital. This case occurred some considerable time ago, and was among the first 100 cases anaesthetized with this drug.

A strong healthy man aged 26 came to operation a second time for internal derangement of the knee-joint. The first operation, performed under N<sub>2</sub>O-ether, was without complications. The second was done under N<sub>2</sub>O-trichlorethylene after premedication with omopon 1/3 gr. and scopolamine 1/150 gr. Induction was performed on the Boyle machine, and a little ether was added at the start to obtain the necessary relaxation, after which a return was made to trichlorethylene alone. Soon after induction a Waters to-and-fro absorber was introduced into the circuit, and closed-circuit anaesthesia maintained for the remainder of the operation—1 hour. It must be pointed out that this was the second case that morning which had been given closed-circuit trichlorethylene, and the same canister of soda-lime was used for both. It was noted, with the first case, that the absorber became very hot. On recovery this patient had considerably more vomiting than is usual, and there was some headache. The second case gave evidence of a bilateral trigeminal analgesia occurring 24 hours later, with an eruption of minute vesicles around the mouth after 48 hours. On the third day there was some interference with vision in the right eye, but no diplopia or loss of movement. A right facial palsy (lower motor neurone type) developed on the fifth day, and on the eleventh day the ophthalmologist reported two or three small vesicles on the epithelium of the right eye. The patient made a slow recovery, and after three months the facial palsy was cured, but there was still slight hypo-algesia of the face—"feeling of numbness."

The following details of the present condition of this patient (1 year 8 months after operation) were very kindly sent me by Dr. R. J. Isaac.

"Still complains of numbness of whole of face and tip of tongue. Some impairment of sensation of light touch over the whole of the trigeminal area (bilateral). Notices that air dust causes no pain in the right eye. Some impairment of vision in the right eye. No obvious residual 7th-nerve palsy, but slightly more difficult to close the right eye than the left. Symptoms are said to be worse in cold weather."

This case caused great interest, and it was at that time very carefully examined for any evidence which might link the aetiology with the trichlorethylene, but it was decided

that any association was unlikely. This belief was strengthened by the report from the dermatologist, and later from the neurologist, who agreed with the diagnosis of herpes zoster. It was considered, therefore, as a case of herpes zoster complicated by other cranial-nerve palsies, and of chance association with the immediate post-operative period. No further significance was given to this single case until the recent report of cases of a similar nature, when the old notes were inspected and showed the following significant facts:

1. Closed-circuit anaesthesia was used, and the soda-lime had previously been in contact with trichlorethylene, and had shown marked temperature rise.

2. Recovery was slow and vomiting considerable. Indeed, both cases which had had closed-circuit trichlorethylene anaesthesia that morning showed a slow recovery with much vomiting, and a note entered at the time states that "Sister said she thought neither of these two cases had had the 'new' anaesthetic."

Of the very large number of cases that have been anaesthetized with trichlorethylene fewer than 6 have been given closed-circuit anaesthetics. The significance of this one case, occurring as it does in so limited a number of closed-circuit anaesthetics when so many semi-open anaesthetics have been uneventful, cannot be overlooked, and, pending final proof in this matter, trichlorethylene should be rigidly avoided in all closed-circuit machines.

Delayed recovery, prolonged vomiting, marked headaches, and other abnormal findings which have been reported, have not been observed during the routine use of this anaesthetic on the Boyle, the Marrett, or similar trichlorethylene-air apparatus.

#### Conclusion

Trichlorethylene was first used nearly two years ago. Its distribution was then still very limited and a small supply was obtained privately. It has been employed consistently since that date, and now approximately 2,000 cases have received trichlorethylene as either the major or the minor agent, and have been personally supervised. These cases include all the types of operation commonly met with at a large general hospital, except intrathoracic surgery (excluding empyemata) and extensive intracranial operations. Orthopaedic, gynaecological, midwifery, and general surgical cases comprise the bulk of this total. Ages have ranged from 3 months to 90 years, and the patients have shown all states of physical fitness.

At first some difficulty was experienced with this anaesthetic agent, as already indicated, and some of the untoward signs previously described caused confusion. It was noted, however, that these difficulties became more infrequent and less troublesome as further experience was gathered in its use. It is suggested, therefore, that many of the complications and "hazards" of trichlorethylene are not indeed such by nature, but are due to faulty administration and to misuse of a valuable agent.

To obtain the best results from trichlorethylene it is essential to know its characteristic features. It is not enough to place it in the chloroform bottle and to expect similar signs and the same response as are obtained with ether. The whole picture must be carefully understood, and the utmost emphasis must again be laid on the limitations of this agent. When it is used with the knowledge of its peculiarities and a respect for its limitations it attains a position of value which many anaesthetists now recognize.

#### Summary

Details are given of induction and depth of anaesthesia usually obtained under trichlorethylene anaesthesia. No attempt should be made to "push" this anaesthetic for additional depth or more muscular relaxation. It should be used only as a "maintenance agent."

Signs associated with overdose and underdose are described, together with an outline of their treatment.

Details are given of abnormal findings during and after anaesthesia.

My thanks are due to Dr. A. D. Marston and Dr. C. Langton Hewer for their kind help and advice, and to the medical superintendent, Dr. E. D. Grasby, for permission to publish the details of the above case.

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## TREATMENT BY MOVEMENT

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The essence of the treatment of moving parts is movement. The manner in which therapeutic movement is most effectively applied varies from tissue to tissue. Choice of method is also influenced by the nature, position, and extent of the lesion, the integrity or not of such structures as nerve and bone, and the presence or absence of bacterial infection. In affections of moving parts, therefore, a necessary preliminary to treatment by movement may be the elimination of sepsis, the reduction of a fracture, splintage, or operations. The object of all these measures is to put the patient into the best position to benefit from treatment by movement. Speed is essential, for the shorter the period of immobilization the smaller the amount of stiffness and weakness.

The relative gravity of soft-tissue and bony injury must be assessed, and treatment directed to the more important component. Thus, in fracture of the surgical neck of the humerus the injury to bone can be ignored and the associated damage to soft parts treated at once. In other cases—e.g., a Colles's fracture—the paramount consideration is at first the maintenance of accurate reduction. The usual result of fracture or the shaft of the femur is not failure of the bone to unite but a stiff knee. Hence Young's (1942) method of so putting up this fracture that knee flexion exercises can be begun at once provides another instance. Again, the renewed advocacy of plating for fractures of the leg bones (Burns and Young, 1942) clearly results from a wish to facilitate treatment by immediate movement. External splintage entails a stiff tarsus and a prolonged period of rehabilitation during immobilization and after the plaster cast has been removed. Internal splintage means that such stiffness is never allowed to develop. Orthopaedic surgery is undergoing changes as a result of orientation towards measures whose cardinal aim is to keep moving parts moving from the start.

Therapeutic movement may be divided into two categories—specific and non specific. Those movements that bear directly on the patient's disability are termed specific; those that maintain general physical fitness and affect the injured part only incidentally are called non specific. Non specific movement takes the shape of gymnastics, games, and occupations like carpentry or gardening; they are performed under the supervision of the gymnast or craftsman and are not considered further in this paper, which deals with the more individual application of treatment by movement.

## Specific Movements for Muscles

The chief function of muscle is to contract; as it does so it becomes wider. Thus the primary requirement for muscle is a capacity to broaden fully; the secondary to lengthen fully.

**Active Exercises**—These restore mobility and power to muscle and maintain cortical awareness of capacity for movement. They should be graduated and purposive so as to bring both muscle and mind into action. Active exercises represent the essence of the treatment of minor muscular traumata, in which the paramount consideration is healing in the presence of enough movement to ensure a strong and supple scar. Unwanted adhesions are best prevented from forming by full broadening out of the injured muscle; hence an adequate contraction in the position of full shortening must be secured. It is also wise to ensure full elongation of the damaged muscle by voluntary contraction of its antagonist, advantage thus being taken of reflex inhibition of tone. Passive movements can stretch but cannot broaden muscles out; they have therefore no value in the treatment of minor muscular injuries. The brachialis muscle stands alone in its unsuitability for active treatment. A contraction of muscle induced by faradism has neither more nor less local value than an equal voluntary contraction. But the patient's mind is not brought to bear. Thus faradism may occasionally be employed as a useful

prelude to active movement but never as a substitute. Otherwise the patient falls into the error of supposing that his muscles should receive periodic treatment, whereas it is essential to inculcate the idea of restoration of function by his own supervised but unaided efforts. Breathing exercises, post-operative, postnatal, and postural exercises, and precision exercises for neurological disease are all carried out actively.

**Resisted Exercises**—These strengthen muscle and enhance its tone. They are called for when an increase in muscular power is required; hence they provide the keystone of treatment in the muscular wasting that follows disuse, immobilization, operations, or arthritis. In the case of minor muscular tears, resisted exercises should be begun only when union is well advanced, for if started too soon they put excessive strain on developing fibroblasts. These rupture again and a series of relapses leading to chronic traumatic fibrositis results. Sending a patient back to heavy work shortly after minor damage to a muscle is mistaken policy, for he is apt either to hold the part stiffly (thus avoiding therapeutic movement) or to allow a series of excessive pulls on the healing breach, each leading to renewed disablement. Herein lie the seeds of one type of traumatic neurasthenia. Unsupervised use of a muscle and the proper employment of therapeutic movement may thus be seen to have little in common. It is by free active contraction that muscular mobility is maintained in most situations; resisted exercises leading to heavy work may be instituted only when a firm and supple scar has formed.

Occupational therapy stimulates patients' interest and provides them with resisted exercises of a purposive type. The mind is brought to bear, morale is raised and precision is rewarded.

**Deep Massage**—When the movement of a muscle is considerably restricted by the rigidity of the part which it spans, active exercises, even begun soon after an injury, may prove ineffective in maintaining mobility. Still less can they be expected to free scar tissue already formed. This state of affairs exists chiefly near the insertion of muscles into bone and in the muscles of the trunk. Thus the fibres at the iliac origins of the sacrospinalis and gluteus medius, at the scapular insertion of the vertebroscapular, at the thoracic course of the erector spinae, at the occipital attachment of the semispinalis capitis, at the costal attachment of the abdominal oblique muscles, and at any part of the intercostal muscles can seldom be kept adequately moving by exercises of any sort. The only really effective way to restore mobility, and the best way to retain it, in these special positions is by deep massage applied transversely to the affected area. By this means the masseuse separates out the muscle fibres, thus preventing interfibrillary adhesion and rupturing such adherent scars as have already formed. This passive broadening out of muscle is only a therapeutic exaggeration of its normal behaviour. At all accessible situations deep massage is more effective than active contraction in securing full mobility of muscle in cases of recent injury, in chronic cases or in the special situations enumerated above; it represents the only effective method. Active exercises follow the friction; they maintain the added mobility afforded by the massage. Thus rehabilitation by graded exercises and occupational therapy is very seldom called for in muscular rheumatism. Rheumatic—like traumatic—inflammation leads to resolution with fibrosis, not to weakness or wasting. The chief symptom is pain when the muscle moves, the aim of treatment is the restoration of full painless mobility. Accurate deep massage forms the central pivot of treatment, followed by a few minutes' instruction in the maintenance of mobility by active exercises.

**Assisted Exercises**—These are used to elongate muscle and in cases of muscular weakness from severe arthritis or nervous disease. When a muscle needs to be lengthened the patient contracts the antagonists as powerfully as he can, meanwhile the movement is assisted by his own body-weight, by the pressure exerted through the muscles of his other limb, springs, weights acting over a pulley, or by the masseuse. When muscle power is much reduced gravity may have to be offset by the masseuse's help, immersion in brine, or slings.

**Continuous Stretching**—Contracture in muscle due to ischaemia, healed sepsis, or prolonged immobilization can often be partly or wholly overcome by continuous traction with weights or by pressure splintage. Once the increased range of

movement has been secured it is maintained by passive and active movements carried out several times daily. A splint should be worn to prevent recurrence, and is particularly valuable in cases complicated by peripheral nerve lesions. The fingers must not be included in splints worn merely for a nerve palsy; they stiffen quickly, and months of rehabilitation may be required to correct rigidity that need never have arisen.

**Movement under Local Analgesia.**—In the immediate treatment of any muscular injury the unrestricted active movement secured by local analgesia possesses great therapeutic value. Pain ceases; whereupon local inhibition of movement is abolished, a full range of active movement resulting at once. In chronic cases local infiltration is curative only when a muscle is affected some distance from its attachment to the bone. Hydraulic pressure seems ineffective in freeing adhesions within a muscle unless the lesion lies at its most distensible part—the belly. The bellies of the trapezius, latissimus dorsi, pectoralis major, extensores carpi radialis, gluteus medius, and gastrocnemius muscles may be singled out as usually responding well to local infiltration. My view is that the action of such injections is unrelated to the local analgesic that the solution contains: the benefit is due to the physical effect—akin to that provided by natural movement or deep transverse massage—i.e., the water broadening the muscle out. Acute lumbago provides the most spectacular success for local analgesia. The patient, immobilized in bed and aware from past experience that he will remain so for perhaps a fortnight, gets up after his muscles have been anaesthetized and moves freely. Next day, apart from some soreness, he is able to go about his business. This result cannot be attained by mobilization under general anaesthesia; for this succeeds only in stretching the muscle without broadening it out. Doubtless faradism under general anaesthesia would succeed, but it is far simpler to make the patient move the muscle himself during the period of local analgesia. In severe cases the whole lumbar extent of both sacrospinalis muscles must be infiltrated to achieve this satisfactory result.

#### Specific Movements for Joints

Contrary to general belief, mobility is maintained at a joint just as well by passive as by active movement. It is the muscles about a joint, not the joint itself, that are influenced by the type of the movement. Hence, provided that the joint is moved, the agency is immaterial. It is difficult to see how any controversy could exist over this obvious truism. A joint is merely a passive hinge, dependent for its maintenance as such on being periodically moved.

**Active Movements.**—These are employed to retain mobility at a joint and slowly to increase the range. Their cardinal use is to keep normal structures normal. Thus all the joints of an injured part not actually immobilized should be put through their full range of movement daily, preferably actively, and therapeutic occupations chosen that bring the limb into effective play. The treatment after orthopaedic operations and the reduction of most fractures entails the regular performance of a series of suitably graded exercises. In most of these cases passive movements do not hasten recovery. After interference with joints such as excision of a meniscus from the knee, the traumatic arthritis set up by the operation recovers at a fixed maximum rate that is attained only when the proper exercises—first without, later with, weight-bearing—are conscientiously carried out. Inadequate treatment slows recovery and may even prevent it altogether, but there is an intensity of treatment by movement beyond which it is pointless to go.

**Gentle Passive Movements.**—These are used to increase the range of movement at a joint the site of a recent sprain (except the elbow). They are also required to maintain range pending recovery from neurological lesions. Adhesions about a joint are prevented from forming by the fact that the joint is moved, no matter by what agency. A ligament, for example, moves over subjacent bone just as much during passive as during equal active movement. Moreover, the patient is most quickly induced actively to increase the range of movement at a joint by a previous demonstration of the painlessness of the passive range. Full recovery from articular sprains is thus retarded by the present-day insistence on active movements alone in rehabilitation. However much this limitation may

apply to some muscles, active movements have no virtue in passive movements in the treatment of many sprains affecting joints. Indeed, they may be less effective, in so far as they are often performed through a smaller range. Hence the use of passive movements followed by their active repetition achieves the quickest results.

**Forced Movements.**—These are of two types—a quick and a slow stretch. A quick jerk is called for when limitation of movement at a joint is caused by post-traumatic adhesions. Patients should not be asked to rupture their own adhesions. These should be broken passively with or without anaesthesia (according to circumstances) by the surgeon or the masseur. Thereupon the patient must maintain the added range by constantly repeated active endeavours, supervised, and if necessary assisted, by the masseuse. Slow stretching out is indicated in capsular contracture due to immobilization, diffuse scarification or osteo-arthritis. Continued pressure by the masseuse or means of apparatus is required; thereupon the increased movement is retained actively. Resisted exercises for coincident muscular wasting are always called for. Movements especially forced, are contraindicated in the treatment of the joints that rely for their stability on their capsule and ligaments alone. When no muscle controls movement at a joint, sprains may result in permanent laxity. Only harm could result from further overstretching. Moreover, this is not required; for the prerequisite to adhesion formation—namely, healing in the absence of enough movement—is necessarily absent. The treatment of sprains of the acromio-clavicular, sterno-clavicular, sacro-iliac, and cruciate ligaments is protection and modification of rest.

**Deep Massage.**—There exist various ligaments whose mobility is maintained or restored more effectively by massage than by any other way. The outstanding examples are the supraspinous ligaments and those at the knee. Exercises aggravate lesions of the supraspinous ligaments; mobilization under anaesthesia has little effect; whereas adequate digital friction is regularly successful in restoring mobility within a few weeks even in the most chronic cases that have resisted every other treatment. The coronary ligaments at the knee do not span the joint. Hence, adequate mobility after a sprain cannot be retained by moving the knee, whether actively or passively. Rotatory sprains therefore get well very slowly. Nothing is easier than to keep the ligament moving by drawing the finger to and fro across it; and it is only by the masseuse's friction that adequate treatment by movement can be secured. Active exercises are an instruction in gait follow. Any surgeon who cares to order this treatment will find that full recovery is obtained in a matter of many weeks as it formerly took months. The same considerations apply with almost equal force to lesions of the medial collateral ligament—the commonest sprain at the knee. This ligament has a range of movement over the bones, lying anteriorly when the knee is fully extended and being drawn posteriorly as the knee is increasingly flexed. Since synovitis prevents a full range from being attained at the knee immediately, the ligament cannot be put through its full extent of movement by merely moving the knee. Hence unwanted adhesions form. Friction to the ligament moves it passively to and fro in imitation of its normal behaviour and prevents adhesion formation. Active exercises and instruction in gait follow at once. The same happens in cases of chronic sprains here: friction applied to the site of scarring wears down fibrous tissue to such an extent that passive forcing without anaesthesia becomes easy. In this case the massage prepares the way for the mobilization. The speed of recovery from sprains of the tarsal and carpal joints is also enhanced by deep massage, but the results are less spectacular.

**Resisted Exercises.**—These are employed when a diminished range of movement at a joint is desirable. A joint may be so disorganized that all movement is painful, and the patient too elderly for an operation like arthrodesis. This is often the position in advanced osteo-arthritis of the hip. An attempt to stabilize the joint by increasing the strength and tone of the muscles about it may be made by the use of faradism, static contractions, or exercises so resisted that no movement takes place. Exercises are given for the same reason to the short flexor muscles of the foot in the treatment of strain of the mid-tarsal joint or plantar fascia. The increased strength



of these muscles diminishes movement, thus avoiding excessive stress on the joint capsule or fascia. Compensation for over-stretching of the cruciate ligaments, by increasing the strength and tone of the quadriceps muscle, provides another case in point.

### Specific Movements for Tendons

Tendons are treated only passively. Since tenosynovitis and tendinitis are often the result of over-use, exercises merely repeat the causative strains and aggravate the condition.

**Deep Massage.**—In tenosynovitis, the cause of the pain appears to be friction between the surface of the tendon and the inner aspect of its sheath. The phenomenon of crepitus shows that roughening of these surfaces occurs, and the fact that cure follows operations slitting the sheath up shows that the roughening ceases to matter as soon as the sheath no longer fits accurately. Orthodox treatment by immobilization is cumbersome, slow, and uncertain in its results; moreover, in some situations (e.g., at the knee or shoulder) it is barely feasible. Deep massage to the affected stretch of tendon is always the treatment of choice, and is quickly successful. At the wrist, shoulder, and knee failure is almost unknown. In the case of tenosynovitis, it is my belief that the masseuse's transverse friction smooths the roughened surfaces off again. Though the results in tendinitis are equally consistent, the mode of action is obscure.

**Manipulation.**—A minor tear at a teno-periosteal junction can sometimes be stretched out enough to allow healing with slight lengthening. Mills's manipulation for a teno-elbow acts in this way.

### Anaesthesia and Analgesia

These are required when an attempt at the projected movement sets up such pain that the patient cannot allow its performance. Four methods exist, each with its own indication.

**General Anaesthesia.**—Consciousness has often to be abolished when the spinal, shoulder, knee, and tarsal joints require mobilization. Full muscular relaxation is an essential preliminary to forcing movement.

**Local Analgesia.**—Stretching muscles out under general anaesthesia has little or no therapeutic value, since broadening of the muscles cannot be secured thus. On the other hand, active use during the period of local analgesia, by allowing full broadening during a contraction that pain would otherwise have prevented, is a most useful measure, particularly in acute lumbago and minor muscular tears. Local analgesia is also the treatment of choice in ligamentous sprains during the first 24 hours after the accident. Not only is movement facilitated but the reflex that causes oedema, effusion into the joint, and muscular spasm has its point of departure removed for the duration of analgesia. Division of muscular or fascial adhesions with a tenotomy knife under local analgesia, followed by immediate active movements designed to ensure healing with lengthening, is called for in stubborn lesions of the trunk muscles.

**Heat Analgesia.**—Heat increases blood supply and thus enhances the speed of destruction of the substance—Lewis's P-factor—responsible for the pain. Heat applied to a structure before it is stretched enables the patient to permit forcing through a greater range. To this end, the heat must reach the tissue at fault, usually the capsule of the shoulder, hip, or spinal joints. Hence short-wave diathermy is required; radiant heat has far too superficial an effect.

**Massage Analgesia.**—When a soft structure accessible to the masseuse's finger is to be treated by movement, deep massage is usually called for and has two effects. It induces traumatic hyperaemia; hence relief from pain is felt as soon as the friction ends. Like heat, therefore, massage given deeply results in an enhanced oxygenation of P-factor. Unlike heat, it also applies therapeutic movement to the part. Friction should thus be preferred for its double action when accessible structures need to be moved, heat being reserved for those outside the masseuse's reach.

### Rehabilitation

The best rehabilitation is such effective treatment in the first place that little is required. When overriding considerations—e.g., sepsis, more serious injury elsewhere, or environmental lack of facilities—lead to the development of stiffness and

weakness, much time and endeavour must be devoted to the restoration of function. The present trend of orthopaedic surgery is towards the adoption of measures which ensure that treatment by movement can be begun so soon after the injury that stiffness and weakness have not had time to develop. In such cases active exercises maintain rather than restore power and mobility.

Graded exercises form an important part of the technique of rehabilitation. But it is a retrograde step to limit the scope of rehabilitation to active exercises alone. The particular method should be chosen that best brings treatment by movement to bear on the affected part.

Masseuses' main function is the application of treatment by movement. They are skilled in its three main divisions—active movement, passive movement, and deep massage. It is mistaken policy to limit treatment to the use of only one of these three measures. The indications for each kind of therapeutic movement are distinct but by no means mutually exclusive. Though it is undeniable that until lately there existed a tendency for masseuses to administer much misdirected radiant heat and gentle massage for conditions calling for exercises or deep massage, the pendulum is now swinging too far the other way. At present patients whom properly given friction would quickly relieve stand in real danger of being set to perform a series of exercises. Hence a sense of proportion must be maintained and the whole field of treatment by movement surveyed before the appropriate method is chosen and the masseuse instructed.

There is only one difficulty. A decision on the type of treatment best calculated to restore mobility rests on an accurate determination of the site of the lesion and of the nature of the damaged tissue. Deep massage affords effective treatment by movement only when applied to the right spot in the right way. Hence the masseuse must be provided with a diagnosis precise in detail before any question of friction can arise at all. The same applies to local analgesia, whether employed for diagnostic or for therapeutic purposes. Clearly, at a rehabilitation centre or in a physiotherapy department no less than in the other parts of a hospital, the best results are obtained when an exact diagnosis affords the pointer to equally exact treatment.

### Summary of Principles

Most of the muscles of the limbs can be kept strong and mobile by active, later resisted, movements.

The muscles of the trunk span rigid parts and thus require deep massage to restore their mobility; active exercises then retain the added movement. This applies as much to traumatic as to rheumatic fibrosis.

Acute fibromyositis, whether traumatic or rheumatic, is best treated in the first instance by active movement under local analgesia.

Joints under muscular control (except the elbow) should be treated by movement after a sprain. Whether such movement is passive or active is immaterial; in practice, passive followed by active movements secure the best results.

Joints out of muscular control should be treated by rest after a sprain.

A few ligaments are more effectively moved by deep massage than in any other way. Active exercises retain the added range. During the first 24 hours after a ligamentous sprain local analgesia is the treatment of choice.

Tendons are treated by deep massage. No exercises follow.

Rehabilitation entails the selection of the type of therapeutic movement best suited to the lesion present, after precise diagnosis has been arrived at.

Full use should be made of masseuses, whose main function is the application of treatment by movement.

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G. H. Faget and others (*Publ. Hlth. Repts. Wash.*, 1943, 58, 1729) have tried out a number of sulphonamide drugs in the treatment of leprosy. They find that the most effective of these is promin (known as promanide in Great Britain). They do not claim that it is a specific of leprosy, and observe that it has no bacteriostatic action on *M. leprae*, but conclude that it is capable of inhibiting the progress of the disease in a number of cases, the drug for the most part being given intravenously.



## A FATAL CASE OF MUSTARD GAS POISONING

BY

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There have fortunately been no opportunities of seeing the fatal effects of mustard gas on human beings in this country since the last war; therefore it may be of interest to record my observations on a family who became contaminated with mustard gas, and the post-mortem findings on the one patient who died.

## History of Case

Some boys entered a W.D. area and found a few mustard bombs which had exploded and been left covered with bleach powder. They threw stones at them, and one burst into flames, giving off smoke to which a boy aged 8 was exposed for several minutes. Later, when the flames were extinguished, he picked up the bomb and in so doing scattered some of the contents on his jersey and trousers. This was a white powder consisting of bleach mixed with the remains of the liquid mustard in the bomb. The boy returned home about an hour later complaining that his arms and legs were burning. His mother states that the exposed parts of his body, not face, looked as if they were severely sunburnt. She stripped and washed him and put him to bed. She washed his jersey, but the other clothing was left hanging in the room where the mother and four children were sitting for an hour or so before going to bed.

About two hours later the boy started vomiting, as did the other members of the family, and all complained of intense pain and irritation of the eyes. By the next morning five members of the family were suffering from severe conjunctivitis, and the boy had blisters on his penis and thighs, while his elder brother, who shared a bed with him, also had blisters on his thigh and arm.

## Clinical Record and Treatment

The mother and four children were immediately admitted to hospital. The originally contaminated patient was suffering intense discomfort from his eyes; they were watering profusely, and he was quite unable to open them. The penis was swollen and blistered, as were the inner parts of the thighs, while an area of erythema extended over the forearms, abdomen, and thighs. The blisters were aspirated and cod-liver oil applied to the burnt areas. The eyes were irrigated with normal saline every two hours, 10% sulphacetamide (albuclid) drops were instilled every four hours, and 1% atropine drops were put in twice a day until full dilatation was obtained.

During the next 24 hours further blisters developed, spreading peripherally from the original burns and also on the buttocks, which rapidly became very raw. Vomiting ceased, but was replaced by an irritable cough. The respirations rose to 40 a minute, the temperature to 101.2°, and pulse to 140; the boy was restless and delirious, and incontinent of urine and faeces. This stage continued for about 36 hours, with alternating periods of lucidity and delirium. He began to show signs of pulmonary congestion, and was given sulphathiazole tablets. Frequent irrigation of the eyes was discontinued 24 hours after admission, and the exudate merely washed out before putting in the sulphacetamide and atropine drops.

Three days after admission his general condition improved; he was rational and no longer incontinent, and took his food and drinks well. There was slight oedema of the cornea, and the conjunctivitis was still very marked, though he was now able to open his eyes.

The burnt areas, chiefly of first and second degrees, were clean, but the erythematous areas on the legs, arms, abdomen, and chest were gradually extending and being replaced by blisters. The cough was very troublesome at times, chiefly tracheal in type, and a few crepitations were heard at the lung bases. There was some nasal catarrh but no sputum. Inhalations of menthol compound on a Burney Yeo mask gave some relief. The temperature all this time was fluctuating between 98 and 101°, but the general condition was improving, and sulphathiazole was discontinued on the sixth day after admission, 23 g. having been given. At this stage his non-protein nitrogen and urinary calcium were normal, and a sternal puncture showed no abnormal cells.

A blood count taken on the fifth day showed 13,000 white cells per c.mm. with 88% polymorphs, but two days later this had dropped to 3,800, when the sulphathiazole was discontinued. From this date the white cell count and also the haemoglobin fell rapidly and the temperature steadily rose. The boy became very irritable and particularly resented exposure of his skin to the air. The pulmonary signs increased and he appeared to have difficulty in clearing mucus from his trachea.

His abdomen became very distended and tender, especially the right side. His white cell count on successive days was 13,760, 3,800, 1,200, 600, 200 per c.mm., and at this stage the cells were made up of polymorphs 12%, monocytes 14%, lymphocytes 26%, pathological lymphocytes 48%. Blood transfusion been considered when the agranulocytosis developed, but was done as it meant cutting down through burnt tissue. However four or five injections of 10 c.cm. of pentnucleotide had no effect it was decided to start continuous blood transfusion, and between the eighth and tenth days three pints of fresh blood and one of glucose-saline were given. On the eleventh day his abdomen less distended and tender and the bowels were acting. The temperature was, however, 104°, respirations 30, and the cough was troublesome. Mentally he was bright, he was drinking well, his kidneys were acting normally. His condition, however, steadily deteriorated during the next 24 hours, with increasing difficulty in respiration, and he died at 2 a.m. on the twelfth day after the accident.

## Remainder of Family

The mother and three other children were suffering from acute conjunctivitis on admission. They all responded well to treatment with sulphacetamide and atropine, and their eyes were almost normal within a week.

One of the boys who had shared the patient's bed had blisters on the thigh and forearm, and during the next week these extended his penis became blistered, and a well-marked erythema developed on the bathing-drawers area. A very troublesome cough started on the fourth day but soon cleared up. On the sixth day he vomited and complained of abdominal pain, about the same time that his brother also had acute pain due to a duodenal ulcer. The pain in this case, however, subsided in about 24 hours. Another boy, who also shared the bed, had acute conjunctivitis and developed blisters on the buttock and perineum that, although remaining clean, took eight weeks to heal.

Three other members of the family—girls aged 5 and 12 and boy aged 2—were admitted about a week later with severe cough and the two youngest developed a bronchopneumonic condition. These were in bed when the contaminated boy came home, and presumably were affected by vapour from the clothes the following morning.

Several members of the family showed a definite reduction in the white cell counts, which were taken on the tenth day. The mothers were from 4,000 to 6,000 per c.mm., though one boy had a count as low as 2,800. In the course of a week all these counts increased by 2,000 or 3,000, coincidentally with an improvement in the general condition.

## Post-mortem Examination (Dr. Eric Gardiner)

A well-built boy with extensive first-, second-, and third-degree burns on the body, some healed and the remainder healing satisfactorily.

Brain: 55 oz.—rather severe congestion superficially and on section. Pharynx congested. Membranous ulceration of larynx and membranous tracheitis and bronchitis, seen also in section of lung in larger bronchi with some peribronchial consolidation. Right lung: Lower lobe—massive collapse superficially, centre of lung aerated; upper lobe—similar to a less extent; solid oedema of lower lobe. Left lung: Similar condition of collapse but less extensive. Heart: Vessels, valves, and myocardium normal to naked eye. Stomach: Mucous membrane congested. Duodenum: Ulcer 1 cm. in length; ulcerated completely through mucous membrane on to muscular coat. Jejunum and ileum: Mucous membrane congested, fading out in ileum. Caecum: Area of ulceration finger-print sized. Colon: Slight congestion. Liver: 36 oz.—smooth; terminally congested. On section, pattern blurred and surface glazed (cloudy). Spleen: 4 oz.—swollen; firm and deeply congested. Kidneys: 8 oz.—deeply congested; surface veins prominent; capsulae adherent in patches. Cortex—radial lines of congestion; pelvis congested and oedematous. Patches of congestion in ureters. Adrenal glands oedematous; bladder normal. Section of tibia: Red bone marrow pale; considerable pallor in head and upper end of shaft. Vertebrae, deep brownish colour on section.

Summary.—A membranous ulcerative laryngitis and a membranous ulceration of the main air tubes of the lung had led to a massive collapse of that organ—the immediate cause of death. Further changes were noted in the glands of the body and in the bone marrow, consistent with and consequent upon the changes in the blood. The cause of death was: (a) agranulocytosis; (b) multiple burns from mustard gas.

## Summary of Microscopical Examination of Tissues (Prof. G. R. Cameron)

Severe pulmonary oedema and haemorrhage, with macrophage infiltration, acute desquamative bronchitis and bronchiolitis, slight peribronchitis—no bronchopneumonia; acute desquamative tracheitis with false-membrane formation; acute ulcerative laryngitis with false-membrane formation; acute ulceration of first part of

nodenum; cloudy swelling, congestion, cast formation in kidneys; cloudy swelling and early necrosis in liver; distension of spleen with red corpuscles; depletion of lymphoid tissue in spleen, mesenteric, inguinal, and pre-aortic lymph glands, with lymphoblastic proliferation; disappearance of granular polymorphonuclear leucocytes and myelocytes from bone marrow.

### Comments

The outstanding features in this case are:

1. Terminal pulmonary oedema and haemorrhage, both of which appear to have developed within the last one or, possibly, two days of life, judged by the relatively slight cellular reaction in the lungs.
2. Acute bronchitis and bronchiolitis, which must be grouped with the laryngitis and tracheitis, since all show the same degree of inflammatory change and epithelial damage. These changes are of minor standing than the pulmonary oedema and haemorrhage, and are to be attributed to inhalation of mustard vapour.
3. Ulceration of the duodenum (and of the caecum) of some days' duration—probably at least a week; it is certainly not terminal.
4. Depletion of lymphocytes, with lymphoblastic proliferation, suggests a longer process—i.e., is not terminal.
5. Haemorrhages in the adrenals.

The mild degenerative changes and slight necrosis of liver and kidneys are difficult to separate from post-mortem change—a source of error which has to be seriously considered here, since the necropsy was delayed for about 30 hours. However, the presence of granular and "calcium" casts in the kidneys, evidence of some damage to these organs during life. These changes do not, however, suggest sulphathiazole poisoning if the findings described in monkeys with this drug (Climenko and Wright, *Arch. Path.*, 1941, 32, 794) are applicable to man.

### Discussion

In the boy's case the contamination was due partly to mustard vapour and partly to a mixture of liquid mustard and bleach powder. The contamination of the family was due to vapour given off from the boy's clothing, which was hanging in the living-room.

In the war of 1914-18 it was found that the majority of mustard gas casualties were due to vapour. These were caused not by inhaling the gas directly on the field of battle, but by a contaminated man going into a billet or dug-out, hereupon the liquid contamination on his clothing evaporated, resulting in a high concentration of vapour in a confined space, which caused many casualties indirectly among hitherto unaffected and uncontaminated men. This is well illustrated in the present case, for one individual was contaminated by liquid and seven others became vapour casualties indirectly. The obvious warning is, *Never take contaminated clothing into confined space.*

**Initial Symptoms.**—Apart from the burning sensation of the skin in the contaminated boy, vomiting was the first symptom in all the patients. This is now well recognized clinically in mustard gas poisoning, and is followed a few hours later by irritation of the conjunctiva.

**Burns.**—The burns were chiefly of the first and second degrees. It does not seem to matter greatly what treatment is used for these, so long as attention is paid to *strict asepsis*, according to those who have had most experience, acriflavine solution, liquid paraffin, tulle gras, etc., will all give satisfactory results, and it is suggested that the treatment which is most readily available and understood by the nursing staff should be used. It is important to aspirate the blister fluid under aseptic precautions in the early stages, and to preserve as much of the blistered skin as possible. In this connexion methyl salicylate limits the effusion, but is expensive, is not always readily available, and is irritating to the scrotum and face; in the whole, therefore, it is not applicable to large numbers of cases. Fomentations should not be used, nor should tannic acid, as recent work has shown that when a large area of burnt skin is tanned there is a possibility of absorption of uric acid, giving rise to liver-cell necrosis (personal communication from Prof. Cameron). That fresh patches of erythema and blisters continue to develop for seven to ten days is a well-established clinical fact, and is not, as is sometimes thought, due to reinfection. Healing of the burnt area

is often very slow. One of the boys with a second-degree burn about 3 in. by 2 in. on the perineum took eight weeks to heal, although there was no secondary infection.

**Eyes.**—Miss Ida Mann, in a personal communication from the Nuffield Laboratory of Ophthalmology, classifies the clinical signs of mustard gas burns of the eyes into four grades as follows:

**Group 1. Very Mild.**—Lids and sometimes conjunctiva red, cornea clear. Sometimes slight oedema of the lids and lacrimation. No photophobia. No treatment required.

**Group 2. Mild.**—In addition to the above there is superficial corneal haze, lacrimation and/or discharge (profuse), photophobia and/or blepharospasm. Treatment consists in keeping the eye clean, using mydriatics and only non-irritating antiseptics. Do not bandage the eye; reassure the patient, as there is a large element of fear. Recovery should take place in one to three weeks, and is complete.

**Group 3. Severe.**—In addition to the above there is deep corneal haze—(a) without new vessel formation, (b) with new vessel formation. Treatment is on the same lines as with Group 2. The case takes several weeks to recover, and if Group 3 (b) there may be relapses and prolonged disability, with final recovery.

**Group 4. Very Severe.**—As above, but with iritis, copious and prolonged discharge, and inability to open the eyes for a period of weeks or months. Partial recovery follows in about nine months. There is a risk of ulceration following prolonged degenerative processes, occurring after five to ten years. Treatment is by mydriatics, cleanliness, and non-irritating antiseptics.

The present case would appear to fall into Group 2 or Group 3 (a). Discharge was not a feature and there was not much corneal haze. In all cases intensive irrigation is irritating and harmful. A non-irritating antiseptic would seem to be indicated when secondary infection is present. Mydriatics relieve the pain and spasm.

**Trachea and Lungs.**—Tracheitis is an early symptom, and should be relieved by inhalations. An irritable cough starts on the second to fourth day, and bronchitis or pulmonary oedema develops, or the condition gradually subsides in a few days. The usual remedies are applicable here.

**Blood.**—The obvious question of the cause of the agranulocytosis was whether it was due to the sulphathiazole, of which the patient had received 23 g., or whether it was due to the mustard gas. I understand from Prof. Cameron that this condition was recognized in the last war as an occasional sequela of mustard gas poisoning and that much experimental work has confirmed its importance. The post-mortem findings did not suggest that the agranulocytosis was due to the sulphathiazole, and the fact that some of the other cases which had no sulphonamide also showed a marked diminution in their white cell counts eight to fourteen days after the contamination strongly suggests that the mustard gas was the causative agent. The question naturally arises whether sulphonamides should be used in dealing with mustard gas cases, and investigation of this problem is urgently required. It is known that mustard has an affinity for lymphoid tissue, and the relatively greater proportion of this tissue in children may make them especially susceptible.

**Intestinal Ulceration.**—Ulcers of the duodenum are well known as a textbook complication of burns, although I believe they must be relatively uncommon. This is probably due to the fact that patients often die before the ulcer has time to develop. The symptoms of pain and tenderness on the right side of the abdomen with general distension were obviously due to the ulcer found after death. A similar ulcer was present in the caecum. Haemorrhage and acute ulceration of the mucosa are, however, commonly found in experimental mustard gas poisoning.

**Convalescence.**—Convalescence tends to be prolonged, and good nourishing food, with extra milk and especially an excess of vitamin C, is important. The vitamin C should be given in large doses of 500 mg. 12-hourly for three doses, followed by 50 mg. twice a day, proportionately less being required for a child.

I was fortunate in being able to call upon the expert knowledge of Capt. K. Hill, R.A.M.C., in treating these cases, and to have the opportunity also of discussing them with Prof. G. R. Cameron and Surg. Lieut.-Cmdr. G. Foss, R.N.V.R. My thanks are due to all of them for their expert assistance, to Miss Ida Mann for her classification of eye cases, and also to Dr. E. Gardner for his post-mortem report.

# HEPARIN IN INTRAVENOUS INFUSIONS, INCLUDING PENICILLIN THERAPY

BY

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The general, if not the only, anticoagulant used in blood transfusions in this country and in the United States is sodium citrate (0.3 g. per 100 c.cm. of blood). It has proved very satisfactory. It is cheap, and has, it is believed, no deleterious effects. It is not here proposed that heparin should be substituted for sodium citrate, as has been advocated by Hedenius (1937), who administered enough intravenous heparin to give the donor's blood a coagulation time of about 30 minutes; he has used this method hundreds of times with complete success. Rather it is suggested that a very small amount of heparin be employed in addition to the citrate added to blood, or to an infusion of crystalloid solution if this is preferred.

Although there is no essential difficulty in administering either a transfusion of blood (fresh or stored), plasma, serum, or an infusion of crystalloid solution, it sometimes happens that the infused substance fails to run smoothly through the apparatus long enough to give the amount intended. This is generally due either to spasm or to a thrombosis of the recipient's vein. Spasm is seen particularly after dissection of the internal saphenous vein at the ankle, and can be relieved by placing hot-water bottles along the course of the vein; it is then often surprising how, in a few moments, the blood or solution will begin to run freely. We have all met with the patient who has had several transfusions and who, again requiring one, presents no suitable vein that has not been "used" and thrombosed. It is important that a vein should not be obliterated by a transfusion, and it should be possible to use the same vein an indefinite number of times. It generally is; it sometimes is not.

Why is it that sometimes everything works smoothly and there is no residual thrombosis, and at other times thrombosis occurs and the flow stops? The condition is generally due to a thrombotic process starting, presumably, at the site of venepuncture, or to an irritating solution being infused, such as is unfortunately common in intravenous penicillin therapy.

## Prevention of Thrombosis

To counteract the incidence of thrombosis in the recipient's vein it is suggested that heparin, in an amount equivalent to 1 Toronto unit per c.cm., be added to the fluid to be introduced. G. Murray (1940) reported on the use of continuous intravenous heparin in over 400 cases without a single case of thrombosis at the site of venepuncture, even though in some instances the needle was left *in situ* for two weeks and though, as he was deliberately prolonging the coagulation time of the recipient's blood, he was using a concentration considerably greater than that suggested here. It may be argued that in a transfusion on account of haemorrhage, or in a transfusion being given during or immediately after an operation, the coagulation time of the recipient's blood is liable to be prolonged. Hedenius has shown that there is a threshold for heparin in the blood below which no alteration in the coagulation time is apparent. This threshold is 0.25 mg. per kilogramme of body weight. In a patient of 8 st. this would amount to 14 mg. of heparin, and in a patient of 10 st. to between 17 and 18 mg. Now, 1 Toronto unit of heparin contains 0.01 mg. of the substance; therefore a litre of blood or crystalloid solution heparinized with 1 unit per c.cm. would contain 10 mg. It will be seen that to reach the threshold it would be necessary to infuse  $1\frac{1}{2}$  litres in an 8-st. patient. As the amount of heparin contained in this  $1\frac{1}{2}$  litres is destroyed hourly by the body, and as it is very improbable that there would ever be an indication to carry on an infusion at the rate of  $1\frac{1}{2}$  litres an hour, it is concluded that the threshold is not reached, and therefore that the coagulation time of the recipient is not affected. This is borne out by the observation made in a few cases.

It might be said that there may be toxic effects of the heparin *per se* and that harm may result. Experimentally, Howell and Murray have been unable to show any change

in the red and white counts or in the platelets, even where the animal's blood has been rendered incoagulable; and G. D. W. Murray (1940) has given to patients as much as 600,000 units over a period of 40 days without ill effect. Nor have anaphylactic phenomena been encountered where heparinization has been repeated.

We have recently used heparin in all infusions of blood (fresh or stored), plasma, and solutions of crystalloids. The heparin is added to the infusing fluid by injecting it through the cork of the bottle by means of a hypodermic syringe. The amount used has been 1 unit per c.cm. of fluid—equivalent to 1 c.cm. of heparin B.D.H. per litre. The infusion is then carried on in the usual way. We have not had to dissect a vein in this series, and this step should only very rarely be necessary.

Between 50 and 60 cases have received heparinized intravenous therapy, and most varieties of shock, haemorrhage, prolonged sepsis, and anaemic states have been included in this series. There has been no tendency to a recurrence of haemorrhage, and in post-operative cases we have seen no evidence of bruising or haemorrhage in the area of the operation scar. In 8 cases the coagulation time was estimated before infusion and immediately afterwards. In no case was there any significant alteration, the maximum rise in coagulation time being 30 seconds and the maximum fall in value 20 seconds, these variations in the value clearly being within the limits of the margins of error of the test. There has been no evidence of toxic or deleterious effects as a result of the heparin.

## Use of Heparin with Penicillin

It is suggested that heparin should be of value in preventing the thrombosis and phlebitis which are frequently seen when penicillin is given by intravenous drip. Penicillin, or at least the impure solution of penicillin available at present, irritates the endothelium of veins, causing a chemical phlebitis and a subsequent thrombosis. However, G. D. W. Murray (1940) has found experimentally that the incidence of phlebitis and thrombosis caused by the intravenous injection of sodium ricinoleate—a powerful intravenous irritant—can be reduced from 90% in controls to less than 20% in heparinized animals. According to Surg. Cmdr. C. A. Green (personal communication), penicillin is not destroyed or affected by heparin. We have in several cases employed heparin with penicillin to try to prevent thrombosis or thrombophlebitis. At first we used 1 unit of heparin per c.cm. of penicillin solution, and in five cases the full amount of penicillin was given without thrombosis, but in one the drip blocked after four and a half days. In a second batch of penicillin 1 unit of heparin per c.cm. did not suffice to prevent thrombosis, so 3 units per c.cm. were used. With this dosage it has been possible to give the required amount of penicillin without accident. At the rate of penicillin drip which we are using—i.e., 35 drops a minute—it would not seem possible to administer enough heparin to affect the clotting time.

## Conclusion

Apart from difficulty with the penicillin cases, infusion has been conducted with noticeable ease in every case except one. This patient was receiving fresh heparinized blood for a secondary anaemia and toxic state following prolonged suppuration. In this instance the needle was not inserted fairly into the vein and there was leakage into the perivascular tissues. After the needle was inserted into the other arm all went well and an infusion of 4 pints of blood was successfully concluded. The original vein did not thrombose.

In no case has thrombosis of the recipient vein been seen, nor has there been any bruising of the tissues around the site of puncture. Objection to the use of heparin in infusions has been raised on the question of cost. At present heparin B.D.H. costs 8s. 6d. for 5 c.cm., which contains 5,000 units of heparin; to heparinize effectively 5 litres of blood, plasma, or other fluid, a cost of approximately 1s. 8d. per litre cannot, therefore, be regarded as excessive when the advantages of the method are considered.

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## Medical Memoranda

### Solitary Neurofibroma in the Stomach

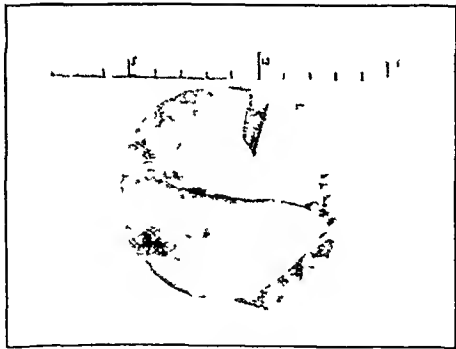
In the stomach, and generally in the digestive system, benign tumours, especially neurofibromata, are seldom seen. These tumours always take their origin from the gastric plexus and grow between the two layers of muscle below the mucosa. According to Askanazy, the nerve tissue seen within the tumour is sympathetic. Usually such tumours are associated with a diffuse neurofibromatosis of the skin. Leriche, and Gerhardt and Westphal, have reported numerous neurofibromata of the alimentary tract in patients with typical von Recklinghausen's disease. Kohltz described an intestinal neurofibroma in a patient with no other signs of neurofibromatosis, and Askanazy writes of a case in which the stomach and small intestine contained as many as 15 neurofibromata, the largest being the size of a walnut. Despite a search of the available literature, I have not found a previous report of an isolated neurofibroma of the stomach. The following case, in which the tumour was larger than any gastric or intestinal neurofibroma hitherto recorded, may therefore be of interest.

#### CASE HISTORY

On July 2, 1943, a woman aged about 50 was admitted to hospital in a very weak condition. She complained of nausea and occasional vomiting. According to her story, she was taken ill suddenly, a year previously, with violent abdominal pains, and ever since that time had suffered from prolonged, but not severe, abdominal pain with a sensation of gastric distension.

On examination the belly was soft and not resistant. A hard mobile tumour the size of a fist was felt in the centre of the epigastrium. The tumour moved with respiration. On x-ray examination a fairly regular filling defect was seen towards the middle of the stomach. Radiographs showed a large, irregular, and somewhat rough shadow. Nothing unusual was noticed in the intestinal canal. A provisional diagnosis of pedunculated tumour or a phytobezoar was made, and it was decided to operate.

On July 10 laparotomy was performed under local analgesia, and at the middle of the lesser curvature a smooth round tumour about 3 in. in diameter, covered with mucous membrane and attached by a short broad pedicle, was seen. The tumour was resected, and the wound healed by first intention. The patient speedily recovered strength and was soon herself again. On July 30, 1943, she returned to her home.



**Pathological Examination** (Prof. Oberdorfer, Cancer Institute of the University of Istanbul).—A round solid tumour, the size of an apple, weight 200 g., covered on all sides by mucous membrane and with a small broad pedicle, which had no mucosal covering. On section the tumour was seen to be of whitish medullary tissue, clearly distinct from the mucosa. Histological examination showed that the mucous membrane of the tumour was partly atrophied and partly degenerated by inflammation. The muscularis mucosae was somewhat thickened, and both under the mucous membrane and within the muscularis mucosae the infiltration of spindle-cell elements with especially elongated nuclei was clearly seen. Among these cells was a plexus of corrugated and sometimes parallel fibrils. Particularly in the neighbourhood of small vessels, of which there were many, there was a tendency to orderly arrangement of cells. Near the mucosa there was a considerable inflammatory infiltrate consisting chiefly of plasma and eosinophil cells. Fibroma and myxoma were excluded by the histology of the tumour, and a diagnosis of neurofibroma was made.

After the pathological report had been received the patient was given another thorough examination and neither on the skin nor on other parts of the body was anything found to indicate general neurofibromatosis. This case must therefore be accepted as an isolated neurofibroma of the stomach.

AVNI AKSEL,

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### Herpes Zoster with Underlying Pleural Rub

The following case is of interest because it illustrates one difficulty which may be encountered in the differential diagnosis of pleurisy. It is well recognized that pre-herpetic pain may be mistaken for pleurisy of pulmonary origin, but in this case of herpes there was in addition a pleural rub.

A woman aged 46, with a 20 years history of asthma and bronchitis, was admitted to hospital complaining of three days' pain in the left side of the chest on deep respiration and coughing. During the previous month her cough had been worse, with green and yellow sputum, but no haemoptysis. She was afebrile, pulse 80, respirations 20. Physical examination showed no abnormality except rales over the whole chest and tenderness over the seventh and eighth intercostal spaces in the posterior axillary line on the left side. No pleural rub was heard at this time. Radiographs showed evidence of chronic bronchitis but no abnormality in lung or in pleura in the area concerned. On the fourth day after admission a small crop of typical vesicles of herpes zoster appeared over the tender and painful area. Three days later a pleural friction rub appeared, directly under the area of the vesicles. The rub persisted for several days, and was not heard after the fourth day. The same time, but the vesicles healed slowly, with scarring in the usual manner. No other evidence of pulmonary or pleural involvement appeared and she was discharged two weeks later. The blood sedimentation rate remained throughout within normal limits.

The interest of this case lies in the coincidence of the herpes with underlying pleural rub, and it was thought that this was due to herpetic lesions occurring on the surface of the parietal pleura. A similar case was reported by W. R. Brain (1932, 1940). It appears to be uncommon for a pleural rub to be heard with herpes zoster.

We wish to thank Dr. N. G. Hulbert for his help and for permission to publish this case.

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### Perforated Solitary Diverticulum of Caecum

Diverticulosis is a common condition of the large bowel, and much has been written about it. The condition was described by Cruveilhier in 1849, and in 1858 a case was reported to the Pathological Society of London (Jones, 1858-9). Since that time many statistics have been published. Generally speaking, the results show that diverticulosis and diverticulitis are rare under the age of 30, that they predominate in men, that they are usually confined to the distal half of the large intestine, and that single diverticula of the caecum are very rare. The case presented is that of a girl of 17 with a solitary diverticulum of the caecum which had become acutely inflamed and had perforated, giving rise to an "acute abdomen".

#### CASE HISTORY

The patient had had rheumatic fever twice in 1937 and once in 1938, but no previous attacks like the present one (Nov. 1942). Twenty-four hours before admission to hospital she had a sudden acute pain in the right iliac fossa and vomited shortly afterwards. The pain continued increasing in intensity up to the time of admission, and she vomited twice more. Menstruation was imminent, and the patient suffers from dysmenorrhoea. Examination showed her to be a well built, apparently robust girl, tongue dry, pulse 112, temperature 100. There was nothing abnormal in the chest. The heart was not enlarged, mitral first sound roughened, pulmonary second sound accentuated. The abdomen did not move well on respiration. Tenderness was marked in the right iliac fossa directly over the caecum. Guarding was present. No mass was palpable. A diagnosis of acute appendicitis was made, and laparotomy was done.

**Operation.**—The abdomen was opened through a McBurney incision, and on opening the peritoneum free faecal matter was seen lying over the caecum. The cause of this was found to be a perforated diverticulum on the lateral side of the caecum. The diverticulum was cone shaped and the base was about half an inch across. This area was acutely inflamed, and at the top there was a perforation about the size of a split pea. The edges of the perforation were sutured and invaginated with two further rows of sutures. The wound was cleaned, and gloves and towels were changed. The appendix was normal, but it was removed. Sulphanilamide suspension was injected into the peritoneal cavity, and the wound was closed with drainage.

The patient made an uninterrupted recovery, and 15 days after operation a barium enema was given. The report was "Apparently normal colon." The patient was discharged five months later. A further barium enema was given. The report was "Rectum and colon as far as caecum distended with barium. Large gut fills easily and slides up and down in ascending colon leaving no pockets of barium. Supine. Some segmentation of barium, but no pocketing. No abnormality detected to-day." The following day "Apart from a small amount of barium in the ampulla of rectum all the barium has been evacuated spontaneously—i.e., large gut is functioning well and without any disability whatsoever."

Two weeks later the patient came up complaining of a sudden onset of numbness and tingling in the right hand. There was pronounced tenderness over the roots of the fifth, sixth, seventh, and eighth cervical nerves. This responded rapidly to short-wave therapy, and the patient has been perfectly well since.

## COMMENT

The case is unusual in view of the age of the patient and the nature of the lesion.

(a) *Age*.—Diverticula may be either congenital or acquired, and in this case, in view of the patient's age, the absence of the usual predisposing factors, and the broad neck, it is concluded that it represented one of the congenital type. Congenital diverticula have been described in ages down to 6 years (Hartwell and Cecil, 1910), but they are very rare: in 10,167 necropsies none were seen (Fifield, 1927).

(b) *The Nature of the Lesion*.—Cases of solitary diverticula of the caecum (Gabriel, 1937; Gordon-Taylor, 1938) and of perforated diverticulitis of the caecum simulating appendicitis have been reported (Fifield, 1927; Pereira, 1927), but these were of the typical indurated type in which differential diagnosis from carcinoma can only be made histologically after removal, or of the acquired type in which acute inflammation has supervened in the early stages and the narrow neck was ligated and the diverticulum removed. I was fortunate enough to see an example of the latter type, before any inflammatory changes had taken place, while operating on a ruptured ectopic pregnancy. There was a small diverticulum in the lateral wall of the caecum with a narrow neck, which was readily reducible. The remainder of the large bowel appeared free from diverticula.

The question arises, Why should this virulent infection occur in this one wide-necked congenital diverticulum? I do not attempt to answer this, but one wonders if the rheumatic condition played any part.

I wish to express my thanks to Mr. G. F. Stebbing and Dr. W. G. Evans for the radiological reports.

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### Definitive Hosts of a Species of *Diphyllobothrium* causing Mass Infection of Trout in Reservoirs: Preliminary Note\*

The reported infection of the trout in a South Wales reservoir with plerocercoids of a tapeworm of the family *Diphyllobothriidae* (Duguid and Sheppard, 1944) has stimulated interest in the subject. The naturally infected definitive host in this outbreak was not identified. It has been suggested that the movements of population from endemic Scandinavian areas brought about by the war may have caused the spread of infection through the agency of man (*Lancet*, 1944).

In investigating an epizootic in the Dublin district it has been found that sea-gulls and cormorants from the area are infected with an adult tapeworm of the genus *Diphyllobothrium*. In our opinion these birds are the naturally infected definitive hosts of the parasite in this district. Trout from reservoirs near Dublin are heavily infected with plerocercoids of the family *Diphyllobothriidae*. Specimens showing all degrees of a gradual development from the typical plerocercoid as found in the fish to the fully developed tapeworm were present in the intestines of greater and lesser black-backed gulls (*Larus marinus* and *L. fuscus*), herring-gulls (*L. argentatus*), and cormorants (*Phalacrocorax carbo*).

So far as we can ascertain, the fact that gulls and cormorants act as definitive hosts of a species of *Diphyllobothrium* which in its plerocercoid stage occurs in fresh-water fish has not previously been recorded in these islands.

Investigation of the infection at Poulaphuca reservoir, near Dublin, is proceeding, and fuller details will later become available.

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## Reviews

### THE ENDOCRINE SYSTEM AND SEX

*Endocrine Man. A Study in the Surgery of Sex.* By L. R. Broster, D.M., M.Ch., F.R.C.S. With foreword by Sir Peter Chalmers Mitchell, D.Sc., F.R.S. (Pp. 144. 12s. 6d.) London: William Heinemann, 1944.

The misuse of endocrine therapy, too often seen in the recent past, could only be countered by exact experiment and a broad biological outlook. Mr. Broster's work on the adrenogenital syndrome has made him a recognized authority on the experimental and clinical aspects, and now in *Endocrine Man* he places his results in their appropriate position against a general biological background. He aims to do so in a way which he hopes is "not too technical for the keen and intelligent layman with a knowledge of general science." How far he has succeeded in this it is perhaps easier for the lay rather than the medical reader to assess; certainly there is plenty to interest the latter. The broad thesis is a consideration of the "instinctive tripod": tropisms, and the autonomic nervous system lying below the threshold of consciousness, and cerebral control which is associated with it. Instinct in its turn is defined as "inherited modes of reaction to bodily need and external stimulus"; one of the main pillars upon which the whole edifice of life has been constructed. Unlike the nervous reflexes, which are local and instantaneous, the instinctive responses are delayed, more complex, and influence the body as a whole. Delicate nervous impulses more and more become the rapid instrument of instinctive expression; and, although they multiply and increase its range, it is not reasonable to suppose that they entirely supplant the more primitive chemical tropisms. Indeed, Dale's work proves the contrary. The biology of the primitive instincts of growth, self-preservation, and reproduction are then discussed in some detail.

Coming next to his special topic Mr. Broster takes the view that, though the sex-determining mechanism normally depends on the chromosomes, this can be overridden by other factors. There is a male phase even in the female foetus, and over-activity of the adrenal cortex during that phase may upset the original female genetic bias. Since abnormal behaviour on the part of one gland upsets the balance of the others, the original genetic pattern may become obscured by polyglandular interaction. Though the pituitary, in Langdon-Brown's phrase, is "the leader of the endocrine orchestra" in post-natal life, the author thinks that during foetal life the adrenal cortex acts as leader. The functions of the individual endocrine glands are next considered with special reference to the light they throw on the problems of intersexuality.

Symbiosis and parasitism are discussed on the broader biological basis, and applied to "Siamese" and included twins, teratomata and new growths, as well as the occasional hostile parasitism shown by the foetus towards the maternal tissues. The final section, on the nature of man, deals with his evolution, attributing his rise to a somewhat sudden development of a brain which is giving him increasing mastery, though this form of control has masked but not mastered his animal instincts. The nervous and endocrine systems have been integrated and cannot be separated in a way which has hitherto been the method of their study, for each is dependent on the other.

This in briefest outline is the argument of a thought-stimulating book, covering a large field. The utilization of a central theme from which the argument develops is an attractive idea, and presumably represents the development of the author's own thoughts on the subject.

### INDUSTRIAL MEDICINE IN THE U.S.A.

*Essentials of Industrial Health.* By C. O. Sappington, M.D. (Pp. 626: 63 illustrations. 42s.) Philadelphia, Montreal, London: J. B. Lippincott Company, 1944.

It is difficult to compare British problems of industrial medicine with those of the U.S.A., largely because they have no comprehensive national scheme of legislation such as our Factories Act. Each of the 48 States has its own special department concerned with labour and conditions of work. As a result there is wide variation in health provisions for the workers, and lack of universal standards. The absence of an American



National Health Insurance system makes the duties of the industrial medical officer and his ethical relationships with the general practitioner frequently at variance with accepted practice in this country. But the fundamental reasons for the existence of a health service in industry are similar—the care of the worker's health at the place of work by every possible means.

This book is different from others on the same subject which have recently come from America—it is the product of one writer. There is editorial sense of proportion and balance not found in similar textbooks written by groups of experts. While the author surveys the field widely—incidentally making few references to significant research work in this country—he nevertheless gives a wealth of detail on many important subjects, which obviously come from extensive personal experience over many years. Job analysis in relation to capacity for work and preplacement medical examination, to take two important examples, are discussed at some length. Neither of these subjects has been sufficiently studied in this country. In chapters on industrial health exposures and hygiene Dr Sappington comes to the crux of industrial medicine—the need for the factory doctor to have an intimate knowledge of his industry and its different occupations, with a view all the time to prevention of accidents and ill-health. Obviously it is the author's view that occupational disease, though vitally important to workers in a few specialized industries, is not by any means a synonym for industrial medicine.

Any problem concerned with industry is difficult to divorce from wartime measures. The remarkable growth of American industry in its change over to products for war created a demand for more doctors for the factory, but as here these doctors have largely been appointed to the big concerns. The U.S. Census of Manufacturers in 1937 showed that out of 166,794 different manufacturing plants 160,245 employed 250 or fewer wage earners and out of 8,769,231 workers in these plants 3,810,626 worked in establishments employing fewer than 250 persons. This proportion compares closely with British figures, and shows that the difficulty of providing medical supervision on any comprehensive scale is similar. One important lesson learnt from reading this book is the urgent need for an authoritative British textbook of industrial medicine. In this respect we lag behind.

### SULPHONAMIDE TREATMENT

*Sulphonamide Therapy in Medical Practice.* By Frederick C. Smith, M.D. M.S., F.A.P.S. Foreword by George Morris Piersol, M.D. (Pp. 368. Illustrated. 5s 00.) Philadelphia: F. A. Davis Company, 1943.

The time has not yet come for a definitive work on this subject which that appears has an ephemeral value in being up-to-date, but is liable to supersession from that point of view within six months. If comprehensive enough, it will retain its value rather longer as a source of information about the treatment of less common conditions. Frederick C. Smith's *Sulphonamide Therapy in Medical Practice* differs from other similar books in its arrangement. After an introductory section, mainly on pharmacology and methods of administration, it deals alphabetically with diseases and their treatment with sulphonamides, starting with abscesses and appendicitis and finishing with urology and wound infections. At first sight this policy appears contrary to the most fundamental principle in this form of therapeutics—that one should treat not a disease but an infection by a particular micro organism. Although this principle might well be more strongly emphasized in the text, it is not disregarded, and the arrangement chosen is perhaps justified in the score of ready reference and the direct applicability of the information to the individual diagnosis.

Different conditions are discussed rather unequally: there is naturally a longer section on pneumonia, and very short ones on atelectasis, filariasis, nephritis, and smallpox, but that on mastoiditis, consisting of 13 full case histories illustrating the author's content on that a mastoid wound can be closed without drainage if the cavity is filled with sulphanilamide or sulphazole, is disproportionately long. On the other hand, the section on gas gangrene is quite inadequate, citing only experimental evidence with no indication that there is any published experience to support it, although the first item of this

nature appeared in a well known American journal seven years ago. In spite of such defects, which are perhaps inevitable in any attempt to deal in this way with so vast a subject, and of a somewhat superficial outlook, this book will be found a useful source of information. There is a brief appendix on penicillin.

### PAEDIATRIC HISTORY

*Pioneers of Pediatrics.* By Abraham Levinson, B.S., M.D. Second edition, revised and reset. (Pp. 119. Illustrated. 52 00.) New York: Froben Press.

Under the title of *Pioneers of Pediatrics* Dr. Abraham Levinson has traced the history of this branch of medicine by means of short biographical sketches. It is a method which makes for easy reading, the author writes in an attractive style, and he has collected a large number of well chosen portraits to illustrate his text. Towards the end of the book he turns to what more resembles a history of disorders, for there is a chapter on "Investigators of Alimentary Disturbances in Infancy" and another on "Pioneers in Infant Feeding." In the latter some mention might have been made of the late Eric Pritchard. Indeed, British paediatricians of the past deserve rather more space. Cheadle is dismissed in three lines in company with Moller, and is erroneously credited with confusing scurvy and rickets. And there is no mention of John Thomson or Samuel Gee. In France Armand-Delille gets three lines, but there is no account of Marfan or Nobecourt. Of the American pioneers there is a fuller account, and the author, in any case, disclaims any attempt at presenting an exhaustive treatise. It is an attractive little volume, but the absence of an index is a pity.

### Notes on Books

The exiled Poles who have come to this country since the war began have succeeded to a remarkable degree in making known among British people the science and learning of their country. In this they have been assisted, so far as medicine is concerned, by the foundation of a Polish Medical School within the walls of Edinburgh University and by the establishment in Edinburgh of the Paderewski Hospital. These enterprises, together with much else about Polish medicine, are described in one of a series of booklets entitled *Polish Science and Learning*, edited by the Association of Polish University Professors in Great Britain (Oxford University Press, 2s. 6d.). Here will be found articles by Polish doctors on medical education in Poland, Polish hospitals and sanatoria, the State Institute of Hygiene, the Polish system of social insurance, and the epidemics in Poland between the two world wars. The booklet includes also a full report of the Polish Committee of Health, set up by the Ministry of Labour and Social Welfare to deal with the problems of reconstruction. This report was the theme of Prof. Jurasz's recent Lloyd Roberts Lecture at the Royal Society of Medicine (*Supplement*, July 22, p. 18), but it is interesting to have a full account of the manner in which a Government in exile is anticipating in detail the health services which it hopes to institute on its return. The whole issue is full of ideas of reconstruction, and it is evident that the spirit of Copernicus, who was an economist and statesman as well as the father of modern astronomy, is stirring in a nation "which in the course of its history," as one of the writers says, "has risen again and again after the most dreadful ordeals to play a constructive part in the march of mankind."

### Preparations and Appliances

#### HOT-AIR STERILIZER

Sterilization by hot air at 150 to 160° C. is required for certain powders and oils and is the best method for glass apparatus, including all glass syringes. It also has some advantages for surgical instruments. A suitable oven for this purpose is rarely available in surgical units, whose staffs may therefore be interested in the "Stellax" Hot Air Sterilizer, of which we have received particulars from the manufacturers, C. H. Blackburn and Co. Ltd., 10, Graves Inn Road, London, W.C.1. This apparatus is made for heating by gas, electricity, or internal spirit burners, the last named having the advantages that sterilization temperature is reached very rapidly and that operation is still possible when for any reason electricity or gas is not available.



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THE HEARING AFTER OTITIS MEDIA  
IN INFANCY

In the treatment of acute otitis media, a potentially dangerous disease, attention has always been centred on achieving arrest of the inflammatory process in order to avoid the possible complications rather than to preserve the hearing. Naturally, danger to life is the first consideration, but the restoration of hearing is also important, and in more recent years this functional objective has not been neglected in the preoccupation of saving life. It is, however, commonly supposed that if the surgical treatment is satisfactory—by which is meant that the suppuration ceases and the tympanic membrane heals—the hearing will also be good, whether the treatment has been conservative or operative. But this seems to be largely a clinical impression unsupported by systematic testing of the hearing after recovery in a series of cases. On the other hand, as Nils Lundgren<sup>1</sup> points out, impaired hearing in children, as well as in many adults, is generally thought to be due to a previous attack of otitis. When observations have been made the hearing has been tested usually with the whispered voice unchecked by audiometric examination, or reliance has even been placed on the statement of the patient only. Bunch and Grove<sup>2</sup> examined audiometrically, between the ages of 7 and 16, a group of children who had had severe or recurrent attacks of otitis before the age of 5. Appreciable loss of hearing was found in 19%. This is one of very few such systematic examinations with the audiometer, and gives no information concerning the effect of treatment, whether conservative or operative, upon the preservation of hearing.

Generally, an operation which conserves the middle ear is recommended for a purulent otitis media which has not subsided at the end of four weeks; but there is no unanimity about this, and some have been inclined to recommend operation much earlier. This attitude, which had a number of supporters about ten years ago, is no longer the fashion, and the analogy with appendicitis is quite false. Early operation is therefore reserved for cases in which the threat of impending complications makes it urgent. Observations which Nils Lundgren has made were planned to elicit the influence which the line of treatment adopted, whether conservative or operative, may have on the hearing, and also on the relation between the duration of the otitis and the hearing. The investigation was based on a follow-up of 448 children up to the age of 3 who were treated for acute suppurative otitis media at Lund in the clinic of Prof. Dohlman during the period 1930–6. The follow-up was conducted during the years 1942–3, so

that the children had reached at least 7 years of age and were therefore able to co-operate in a reliable audiometric examination. The number of ears concerned was 709, of which 102 were on the right side, 85 on the left, and 261 bilateral. Conservative treatment was applied to 618 ears, and the simple mastoid operation was performed on 91. Of the 448 children treated 320 were re-examined (71%), and of the 709 ears treated 507 (72%) were re-examined. Cases of otitis due to tuberculosis, diphtheria, and scarlet fever were excluded from the survey. It soon became clear that impaired hearing was rare after an otitis of short duration, and the cases were therefore divided into two classes: of short duration—that is, of less than five weeks—and of long duration—that is, five weeks or more. It is to be noted that the hearing defects recorded are not necessarily due to the primary attack of otitis, but sometimes to recurrences also, which occurred in 129 cases (31%). Conservative treatment had been applied to 265 of the children re-examined, representing 413 ears, and of the 91 cases of mastoid operation 63 were re-examined.

In non-recurring otitis 223 cases (78%) were found to have normal hearing, and 61 (22%) had hearing defects. An analysis of these cases showed that the majority of the short cases of otitis recovered good hearing, and that the incidence of impaired hearing increased with the lengthening of the course of the attack. Thus in attacks lasting three weeks or less the incidence of hearing defects later was about 5%. For periods of four and five weeks the incidence rose to 19%, and there was a still higher rise after that. In 129 cases of recurrent otitis good hearing was found in 67 cases (52%). Here again the recurrences of short duration showed better hearing than those of long duration, and an analysis revealed that the short recurrences did not influence the incidence of impaired hearing. Thus the incidence of impaired hearing in the recurrent cases of otitis was 48%, compared with 22% in the non-recurring group.

The figures also support the general opinion that myringotomy has a favourable influence on the duration of the disease, as in 58% of cases subjected to myringotomy the duration was one to three weeks, as compared with 29% for spontaneous rupture. The figures also indicate that the tympanic membrane regained a normal appearance in most of the short cases of less than three weeks' duration, whilst the number of cases showing deformity of the tympanic membrane increased with the duration of the otitis. In non-recurring otitis there were persistent perforations in 3% of cases, whilst in recurrent otitis this figure rose to 12%.

In 709 ears with acute otitis the simple mastoid operation was performed 91 times, or in 13%. Re-examination of 63 of these cases showed that 30 of them (48%) had recurrences, compared with 31% for the cases treated conservatively, though all were soundly healed at the time of the re-examination. Of the 63 cases 32 (51%) gave a normal audiogram, whilst 31 (49%) had hearing defects which were more common in the older children. In 42 of the 63 cases subjected to operation this was performed within five weeks of the onset, and good hearing was found in 25 and hearing defects in 23. On the other hand, in the 15 cases in which the discharge had lasted for five

<sup>1</sup> *Acta oto-laryngol.*, Suppl. 53, Lund, 1944.<sup>2</sup> *Ann. Otol. Rhinol. Laryngol.*, 1930, 39, 1.

weeks or longer, with an average of seven weeks, there was full recovery of hearing in 7 cases and hearing defects in 8, but most of these hearing defects were much greater than those in the former group. Thus in the 63 cases subjected to the mastoid operation hearing defects were discovered by audiometry in nearly 50%, and in 19% these defects were gross enough to be discoverable by the whispering test. This percentage of hearing defects after the simple mastoid operation contrasts with the statements commonly made that as a rule the hearing returns to normal after this operation.

In comparing the results of conservative treatment and the simple mastoid operation certain difficulties arise. The cases treated conservatively must include a proportion of mild cases which heal quickly in three weeks or less, whilst those treated by operation include cases of extensive disease with more or less serious changes in bone. It is clear, too, that a case of otitis which heals in four weeks under conservative treatment is not comparable with a case subjected to operation in the fourth week, as the healing process in the ear in the latter case must last some weeks longer. A more useful comparison therefore, can be made by estimating what happens after about five weeks or longer, keeping in mind that after five weeks the percentage of impaired hearing in conservatively treated non-recurring otitis rises steadily, and is nearly identical with that of recurring otitis. The average in these cases gives 51% of good hearing, which is the same (51%) as the average for good hearing after the mastoid operation. It appears from this that operation is the best form of treatment if the suppuration has persisted for six weeks without showing signs of improvement at the end of four or five weeks, for impairment of hearing is more severe where the suppuration has persisted for five weeks or more before operation. The best prospect, therefore, of recovery of good hearing is to perform the operation before the suppuration has continued for more than five weeks.

The author has analysed his figures in greater detail than can be given here, and they have yielded important information on other points, but they give concrete support to the clinical impression that the mastoid operation should be performed late but not too late, and that a vast number of the hearing defects found in adult life have their origin in childhood.

## CIVILIZATION AND MEDICINE

Once man turned from merely being a food hunter to becoming also a food-producer, civilization could begin. But its course has been interrupted and powerfully deflected by recurrent war, pestilence, and famine. Moreover, civilization itself has played a part in the propagation of disease. Prof H E Sigerist, well known as an authority on the history of medicine, has traced out some of these interactions in a fascinating way.<sup>1</sup> It was hunger in addition to their characteristic aggressiveness which drove the Germanic tribes westward to destroy the Roman Empire. It was plague that changed Justinian's empire from Roman to Byzantine Greek, wherein Con-

stantinople remained static for nearly a thousand years. It was the Black Death that changed the face of Europe and cleft the Middle Ages in twain. But this great disaster nevertheless played an important part in clearing the way for the rise of a new economic order, and incidentally killed off nearly all the lepers, who thenceforward ceased to be a social problem. This epidemic, by the way, was not called the Black Death, as here stated and generally believed, because of the lividity of sufferers from the haemorrhagic type that name was only given by later centuries, for contemporary writers it was the "Great Death." When Sir Arthur Shipley said the struggle for supremacy between insect and man was still in doubt he was not jesting. The mosquito has laid fertile fields desolate, has sapped the vitality of nations, and is still a world problem. The rat flea has slain its millions by plague. Charles V overthrew Francis I and sacked Rome, only to be defeated in his turn by the louse at Naples. Apart from such vectors, human carriers of typhoid fever and dysentery have brought wars to an inglorious end. The advance of medical science has changed all that, so that wars can now be fought out to a more bitter finish.

Until the Industrial Revolution population did not change much in density, and it found authority unable and unwilling to face the new problems thus created. Yet as long ago as 1700 Ramazzini had called attention to the importance of industrial diseases. Apart from this, a low standard of living, poor housing conditions, and lack of food and clothing and fuel have always been major causes of disease. Tables of mortality, grouped according to income level, bring that out clearly. Nor, as Dr Sigerist shows, is that simply due to an inferior earning capacity of the incompetent. In the depression in the USA between 1929 and 1932 the disability from disease increased in accurate proportion to the fall from the previous income level, whatever the social class.

Dr Sigerist develops in an interesting way the evolution of medicine through magic, religion, and philosophy towards a scientific basis. So long as disease and death were regarded as imposed by external agents, human or divine, magic seemed the logical antidote. From the belief in the mystical properties of herbs a number of useful remedies were empirically discovered. Religion brought in the idea of disease as a punishment for sin, for which sacrifice and penance were the appropriate penalties. Magic and religion mingled in such superstitions as touching for the King's Evil, a corollary to the doctrine of the divine right of kings. It originated in France, and Dr Sigerist states that Henry I was the first English king to practise it. But Sir Raymond Crawford traced it back to Edward the Confessor, whom he regarded as more Norman than Anglo-Saxon. The influence of religion was undoubtedly responsible for the care of the sick and suffering, previously hospital services, apart from ancient Greece, were reserved for the soldiery. By philosophy Dr Sigerist apparently means the basing of medical practice on some theoretical conception. Thus, the doctrine of signatures, in addition to its magical aspect, maintained that similarity of structure in a plant to the diseased organ indicated the appropriate cure. The doctrine of humours also falls into this class. Thus Galen in main-

<sup>1</sup> *Civilization and Disease*. Oxford University Press (22s. 6d.)

taining that a disease which was hot and moist was to be cured by drugs that were cold and dry was a true "allopath" in the way which we, despite the homoeopaths, are not. Iatrochemists and iatrophysicists were similarly chained to a formula.

The scientific study of medicine began with Vesalius and his anatomy, to be followed by Harvey's application of physics to physiology. Yet in the seventeenth century disease was still interpreted in the traditional philosophical way, until Morgagni related disease to a lesion in some organ. From the organ, pathology proceeded to investigation of the tissues and then of the cell. Meanwhile, therapeutics lingered until the study of function and of invasion by various types of parasites led to new pharmacological conceptions. That all this led to a too materialistic view is now realized, and in the development of psychotherapy, not divorced from religion, Dr. Sigerist hopes much. Incidentally his analysis of tarantulum as a mass neurosis is full of interesting information. The crisis through which civilization is now passing he sees as the result of technology outrunning sociology; in that process medicine has shared. We have built ingenious machines but not the requisite social and economic organization to match. We have developed rapid transport without methods of peaceful co-operation between nations. The machine age calls for social and economic adjustments, not just in the medical world but everywhere. The health and welfare of every individual are the concern of society, and the conclusion is that human solidarity, beyond the boundaries of nationality and race and creed, is the true criterion of civilization.

### FURTHER NOTE ON PENICILLIN PRODUCTION

Two recent articles in American chemical engineering journals<sup>1,2</sup> give an illuminating picture of the effort that has gone to produce the penicillin now being used so extensively for the Allied Forces and to which we referred briefly in a recent annotation. In reviewing these two articles we are not unmindful of the contribution to the common store that has come from this side of the Atlantic, but, for reasons that will appear later, British production is at present only a fraction of the American. Pure sodium penicillin has a strength of 1,650 Oxford units per milligramme. The therapeutic concentration of penicillin—i.e., the strength required to check bacterial growth in body fluids—is 200 units per litre, or less than one-eighth of a milligramme. The maximum concentration of penicillin in the original culture media used to grow the mould was about 2,000 units, or 1 mg. per litre. At least half of this was lost in the process of concentration and extraction. Penicillin is extremely labile, and easily destroyed by heat, contamination by bacteria or moulds, and traces of metals or foreign chemicals. It can be preserved only under dry sterile conditions. The difficulties were so great that it seemed doubtful whether penicillin ever could be produced on a commercial scale. The decision to try to manufacture penicillin involved the expenditure of millions of dollars, and at the time the decision was made, in 1940 and 1941, the sceptic might well have doubted whether the drug was worth the trouble.

Fortunately the discovery was fairly early made that the yield of penicillin could be increased tenfold or twenty-

fold by adding corn-steeping liquor to the medium on which the mould was grown. The next step was to apportion available resources most wisely between the three different methods of growing the mould—surface culture, submerged culture, and culture on bran. Surface culture, in which the mould is grown on the surface of a thin layer of medium in flasks or milk bottles, is the original laboratory technique. It has the advantage of being relatively fool-proof, but the disadvantage of requiring a vast amount of space and labour. To process 10,000 gallons of medium requires as many as 100,000 or 125,000 bottles, which is several days' run in even the largest of the plants. In the submerged process the mould is grown in tanks containing several thousand gallons of medium; the difficulties of aerating and agitating these large volumes of fluid without allowing contamination to occur are immense, and they have taxed human ingenuity to the utmost. In the bran process the mould is grown on the surface of moist bran in trays or drums. The difficulty here is that bran is a poor conductor of heat. It is therefore difficult to sterilize the bran initially and difficult to dissipate the heat that is produced by the fermentation process. When the fermentation cycle is complete the penicillin still has to be harvested. The concentration is only of the same order as bromine in sea-water. Separation and recovery have to be carried out with extreme care owing to the instability of the penicillin, and the material is finally frozen and dried from that state in the same fashion as dried plasma is produced. An immense amount of special equipment has been needed for this purpose. Penicillin as finally supplied to the physician is a yellow or brown powder, containing 100 to 500 units per mg., or about 8 to 30% of sodium penicillin.

All this has needed the erection of more than a score of factories and the expenditure of 20 million dollars. The decision to manufacture the major proportion of supplies of penicillin in the U.S.A. and Canada has largely turned on the demands it has made on labour, factory space, and technical equipment at a time when we were already fully engaged in our war effort. Production is finally expected to reach  $200 \times 10^3$  units a month, or 9 lb. of pure penicillin a day. A severe case requiring penicillin therapy will need about a million units, for which the present cost is 47.5 dollars—a cost that will certainly fall. It is clear that it will not be long before penicillin is generally available. Some of the unwise publicity that the drug has received may then recoil in disappointment. Penicillin is the best of all antiseptics for serious wounds. It is superior to the sulphonamides in the treatment of venereal disease. For both reasons it is of immense value to the military physician, who has his patients under his complete control. On the other hand, penicillin is not a cure-all and it is not effective by mouth. For general illnesses it must be given by frequent or continuous injection. Adequate treatment of an illness with penicillin is as difficult as the treatment of diabetic coma with insulin. Inadequate treatment will merely waste and discredit a drug which it has taken so much thought and labour to produce.

### ECONOMY OF DRUGS IN WARTIME

A revised edition of the M.R.C. War Memorandum No. 3 on *Economy in the Use of Drugs in Wartime* has been published by H.M. Stationery Office, price 3d. This memorandum, first printed in March, 1941, expresses the considered opinion of the Therapeutic Requirements Committee set up by the Medical Research Council in consultation with the Ministry of Health. The body of the memorandum takes the form of a list of drugs grouped

<sup>1</sup> Elder, A. L., and Monroe, L. A., *Chem. and Metallurg. Engng.*, March, 1944.  
<sup>2</sup> Cozhill, R. D., *Chem. and Engng. News*, April 25, 1944.

according to their therapeutic value and their availability in wartime, the main lines of the original list being followed. Some change, however, has been made in the method of classifying the drugs. As the war has proceeded it has become increasingly difficult to keep separate the ideas that a drug, on the one hand, may be readily available and, on the other, may be essential to the practice of medicine. The shortage of one drug may lead to an unusually large demand for another, which in consequence becomes in short supply. Stocks of drugs of all kinds tend to be smaller in time of war, and changes in the supply position may occur quickly; too rigid grouping may thus defeat its own object. The classification adopted in the new edition is as follows: (A) drugs which are important therapeutic agents and which should be made available so far as practicable; (B) drugs which are needed for certain purposes but of which supplies are limited; (C) drugs which are not essential and do not justify importation or manufacture for home use in wartime. The group "A" now aims at indicating simply those drugs which are eminently of value as therapeutic agents. It is left to the good sense of the prescriber to use drugs in group "B" only for the purposes for which they are known to be of substantial value; he should not prescribe any "B" drug as a placebo. The committee makes it clear that the list is primarily intended to secure the wisest economy in the use of drugs for consumption in this country and that other considerations may affect the importation or manufacture of drugs for the export trade. Responsibility for providing drugs and therapeutic substances is now vested in the Ministry of Supply, which acts in consultation with the Ministry of Health. Both Ministries are represented on the Therapeutic Requirements Committee.

In April, 1942, a memorandum on *Economy in the Use of Bactericides*, prepared by the Therapeutic Requirements Committee, was issued by the M.R.C. and reproduced in our issue of April 11. This document has now been revised and appears as an appendix to the new edition of the main memorandum.

### PROGNOSIS IN GASTRIC CANCER

Carcinoma of the stomach claims every day over forty victims in Great Britain alone. Its prophylaxis, early diagnosis, and surgical treatment are consequently problems of the first importance. Carcinoma probably never develops in a healthy stomach, so that the study of the causes, prevention, and treatment of precancerous gastric conditions, such as achlorhydric gastritis, chronic gastric ulcer, and adenomatous polypi, holds out much hope for reducing its incidence in the future.<sup>1</sup> Early diagnosis depends largely on improving the education of the medical student, so that the practitioner of the future will learn that digestive symptoms occurring after the age of 40 which do not promptly disappear with simple treatment call for thorough investigation. Given the opportunity, the biochemist, radiologist, and gastroscopist can diagnose carcinoma in a large majority of cases by the time that the first symptoms have appeared and before any tumour is palpable. Unfortunately, however, the surgeon rarely sees a case in which symptoms have not been present for many weeks or months before the patient has undergone a thorough examination. Even with the delay in diagnosis which is still almost universal the prospects of successful surgery in carcinoma of the stomach are better than is generally believed. This is well seen in surveys recently published on work done in the Mayo Clinic.<sup>2,3</sup> The pro-

portion of patients with cancer of the stomach admitted to the clinic and considered suitable for operation rose from 54% in 1928 to 67% in 1942, and of these the percentage in whom the growth was resected increased from 48 to 58, whilst the operative mortality fell to 6.7% in 1942, the lowest on record in the clinic. The last figure does not leave much room for improvement, but one can still hope that the operability rate will materially increase with earlier diagnosis and by extending the scope of partial gastrectomy. Of over 10,000 patients who survived resection between 1907 and 1938 29% were alive at the end of five years, after which the chance of survival was about the same as for persons of comparable age in the general population. Actually 6.3% had lived for twenty-five years or longer. It is important to remember that complete gastrectomy does not interfere with nutrition and that it does not necessitate any considerable dietetic restriction. The development of microcytic or macrocytic anaemia is also easily prevented.

The operability of cancer of the stomach has shown considerable advances during the last few years owing to the fact that lesions formerly regarded as inoperable on account of their inaccessibility are now being successfully removed. This is true particularly of lesions involving the cardia, which can often be successfully removed by the transpleural approach, the advance being thus perhaps more due to the work of the thoracic than to that of the abdominal surgeon.

### WHAT THE PUBLIC KNOWS ABOUT HEALTH

The Ministry of Health determined recently to find out how far its statements about venereal diseases, published in the newspapers and popular magazines, had attracted the attention of the public and what was the state of public knowledge about these diseases. The task was entrusted to a body called the Wartime Social Survey, which is the Government's social research unit and exists to provide any Department with information not available from other sources which may be needed for the shaping of policy or administration. The results were given to the June meeting of the Royal Statistical Society in a paper by two of the investigators—Kathleen Box and Geoffrey Thomas. A sample of people aged between 14 and 50, equally divided between the sexes and from different occupation groups, were chosen by the interviewers, who were told to abandon the interview if the informant seemed reluctant to answer owing to a distaste for the subject or excessive shyness. It is worthy of remark that only 3% of the interviews were abandoned, and that 60% of the people were "very interested, helpful, and willing." Of the sample taken, 86% had seen the Ministry's statements, and 72% said they had read them. Of the men 81% and of the women 62% answered that they knew what venereal diseases were, and of these, 11% of the men and 6% of the women declared that they "knew all about venereal diseases." Of the remainder 17% of the total sample were "not quite sure" or returned a vague answer, and 11% "did not know what these diseases were." It appears that rather more than a quarter of the people interviewed, whether or not they knew anything about venereal diseases before they saw the Ministry's statements, had learned something from those publications. The results suggest—and it will not surprise anyone even to-day—that the group most in need of education is the under-20 group, and that men in the later age groups and in the higher income groups are, on the whole, the best informed.

A further inquiry was undertaken to discover how much parents knew about the causes, dangers, and methods of

<sup>1</sup> Hurst, A. F., *Lancet*, 1938, 1, 553.

<sup>2</sup> Walters, W., *Proc. Mayo Clin.*, 1943, 18, 595.

<sup>3</sup> *Arch. Surg.*, 1943, 46, 939.

prevention of diphtheria. A sample of parents with children under 14 years was interviewed, and the inquiry covered two types of districts—those in which there was a high rate of immunization and those in which there was a low. Asked "What do you know about the cause of diphtheria?" 51% of the parents simply did not know, 24% declared it to be poor health, bad sanitation, or dirt, and 25% thought it due to contagious illness or germs. The extent of knowledge was greatest in the upper economic group. The percentage of parents in good immunization areas who did not know the cause of diphtheria was 27, and in the bad areas 56. But three-quarters of the parents knew what the dangers of diphtheria were, and 60% in all the groups believed in immunization as a preventive.

The Wartime Social Survey is now engaged in experimentation on a method of obtaining month-to-month statistics relating to the incidence of illness in the whole population between the ages of 16 and 64. It is hoped that if this method is successful it will be possible to keep a constant check on the health of the people. The figures will permit of analysis into age groups, occupations, and certain environmental factors. The organization is also spreading itself into other fields, such as the cooking habits of the people, the meals eaten by people doing different sorts of work, public attitudes towards food rationing and shortages, clothing needs in selected occupation groups, the response to the "coughs and sneezes" posters, domestic heating and lighting problems, and, in Scotland more particularly, housing questions. Such methods are no doubt very useful provided their limitations are understood and they are not regarded as a kind of magic. In eliciting opinion as compared with facts they may prove very deceptive.

### TRACING A CARRIER THROUGH SEWAGE

A new example of what can be done by modern bacteriological detective methods is described in a recent paper by G. J. G. King.<sup>1</sup> An essential proceeding in this investigation was the phage typing of paratyphoid bacilli, which was described by Felix in this *Journal* last year.<sup>2</sup> The definition of separate types of *Bact. typhosum* by their susceptibility to different strains of bacteriophage, originally developed by Cragie and Yen, has been practised extensively in this country by Felix and now extended

to *Bact. paratyphosum* B. This method, to which there is no alternative among the enteric group of organisms,

bles type distinctions to be made which serve the same purpose as, for example, serological typing among haemolytic streptococci. It can thus be decided at least that a particular case or carrier is unconnected with a prevailing epidemic if the type of his organism is different from that prevalent in the district. The story told by King concerns paratyphoid fever in Glamorgan, where an outbreak due to Type 1 occurred in 1941. During this epidemic a single strain not then identifiable as belonging to any recognized type was isolated from a case in another part of the county. In March, 1943, the sewage effluents from a factory were examined for a purpose unconnected with the earlier outbreak, and by the use of desoxycholate citrate broth *Bact. paratyphosum* B was isolated and found to belong to the newly recognized Type 3A. The evident existence of a carrier among the employees of this factory demanded the examination of individual samples of faeces, and this led to the identification of the source of the

organism found in the sewage. This proved to be the man who had had the disease in 1941 and whose strain differed from that in the prevailing epidemic. Re-examination of the culture obtained from him two years previously and not then identified showed it to be of Type 3A. This episode gives some idea of what can now be done both by the use of highly selective culture media and by phage typing, studying the epidemiology of enteric fever. It is the first occasion on which the existence of a carrier has been detected by finding his organism in sewage.

### IS NITROUS OXIDE "SAFE"?

Academic discussions about the "safety" of any particular anaesthetic agent, or the pathological effect it produces on the various organs of the body, are meaningless without any reference to the fact that during the administration the patient should receive an adequate supply of oxygen. Complete oxygen lack means death in a few minutes, but even partial oxygen lack, if prolonged, may result in irreparable damage to nervous tissue. In extreme cases of oxygen deprivation death has resulted after a period of unconsciousness and convulsions. In others varying degrees of mental impairment have become evident. Anoxia is an inseparable partner of nitrous oxide, an agent that has been lauded for many years as "harmless" and "non-toxic." Informed opinion is still not agreed about the precise mechanism whereby this gas produces anaesthesia; but no one doubts that deprivation of oxygen inevitably accompanies anaesthesia from nitrous oxide. It is in addition a "weak" anaesthetic, and muscular relaxation is difficult to attain with it. Therein lies the pitfall for the unwary. A desire to benefit the patient by "pushing" this gas by cutting down the oxygen instead of reinforcing it with a more powerful agent may have unfortunate results, as Courville<sup>1</sup> in America—and occasionally the coroners' courts in this country—has shown. Nitrous oxide and oxygen has a wide sphere of usefulness, and when given by an expert is a safe anaesthetic and is followed by a minimum of after-effects. Nevertheless the fact that nitrous oxide is harmless when used to produce a minute or so of semi-asphyxial unconsciousness in the dentist's chair should not lead the inexperienced to suppose that it is equally harmless when used by them in abdominal surgery. It is true that after adequate morphinization good results are obtained by the few experts in the use of this gas. A special and potentially dangerous technique is followed. This in inexperienced hands is fraught with disappointment if not carried out boldly, and with danger if it is. It is also true that during abdominal operations surgeons are sometimes deliberately led to believe that only nitrous oxide is being used when in fact the gas is surreptitiously diverted over one of the more potent liquid anaesthetics. Nitrous oxide here could well be replaced by compressed air, or, alternatively, equally satisfactory results would follow the old-fashioned method of pouring the liquid anaesthetic on an open mask. The teaching that nitrous oxide is "harmless," "non-toxic," and "the least dangerous anaesthetic" should always be qualified, and the limitations and indications of this anaesthetic carefully defined. Statements about its harmlessness should not be made by physicians unfamiliar with the requirements of modern surgical technique. "A whiff of gas" may be dangerous if taken literally, and the phrase "fit for gas" when it is meant to imply "unfit for anything else" should disappear from the case notes of ill patients requiring extensive operation.

<sup>1</sup> E.P.H.S. Bull., 1944, 4, 81.

<sup>2</sup> British Medical Journal, 1943, 1, 127.

<sup>1</sup> Courville, C. B., *Untoward Effects of Nitrous Oxide Anaesthesia*, 1939, Mount View, California.

## Reports of Societies

### TREATMENT WITH PENICILLIN

At a meeting of the Fever Group of the Society of Medical Officers of Health, with Dr ANDREW TOPPING in the chair, a discussion on penicillin was opened by Sir ALEXANDER FLEMING, who demonstrated graphically blood levels and rate of disappearance of penicillin after administration by various routes. He also described the slide cell and the capillary culture methods of estimating penicillin content of the blood by bacteriostatic tests.

#### Ten Civilian Cases

Dr A. DOLPHIN (L.C.C.) gave an account of 10 cases treated at the North Western Hospital, L.C.C. 6 cases of puerperal septicaemia, of which 3 were due to anaerobic streptococci, 2 to *Staphylococcus aureus*, and one to *Strept. haemolyticus*; 3 cases of suppurative meningitis, of which one was caused by the *Strept. haemolyticus*, the others by pneumococci. The tenth case was an infective endocarditis due to *Strept. viridans*. In each instance the causative organism was isolated and proved to be penicillin sensitive.

In all three anaerobic streptococcal septicaemias there were lung complications on admission, after two days treatment with penicillin blood cultures became negative, accompanied by decided clinical improvement. The improvement was not maintained, though the blood remained sterile, and two of the patients died from multiple lung abscesses, the third from intestinal obstruction due to multiple peritoneal adhesions. This patient gave a strongly positive blood and cerebrospinal fluid Wassermann reaction before penicillin administration, thereafter the blood W.R. became practically negative but the CSF W.R. remained strongly positive. At no time was the drug detected in the CSF.

The first patient with *Staph. aureus* septicaemia had mitral stenosis, haematuria, and skin petechiae. The blood became sterile after two days' penicillin treatment. Death occurred 11 days later from uraemia, confirmed at necropsy by the presence of chronic nephritis lesions. The other patient was treated on the 9th day of disease, and after a first course of 790,000 units she relapsed and two further courses were necessary before recovery.

The patient with *Strept. haemolyticus* septicaemia was treated on the 12th day of disease. She recovered, but was left with permanent valvular heart damage, probably well advanced before treatment.

The haemolytic streptococcus meningitis case—an infant of 5 months—received treatment on the 8th day of disease. The drug was given intrathecally, intramuscularly, and (after bilateral mastoidectomy) into the mastoid wounds. The CSF became sterile, but subarachnoid block developed and signs of local cerebral irritation. The mastoid wounds were reopened and the brain unsuccessfully needed for pus.

Of the two cases of pneumococcal meningitis one had severe septicaemia on the 29th day of disease and subarachnoid block when admitted for treatment. Penicillin was injected into the cerebral ventricles, as crura magna, spinal theca and intramuscularly. The blood became sterile, but the meningitis did not respond and the patient died on the third day of treatment. Necropsy was refused. The second pneumococcal meningitis case likewise did not respond to penicillin owing to subarachnoid block, confirmed at necropsy.

Treatment of the *Strept. viridans* septicaemia was started on the 4th day of disease when the patient appeared to be dying. After 24 hours on penicillin the blood was sterile, the temperature normal, and the general condition considerably improved. Subsequent blood cultures were sterile, and the patient had not relapsed.

All the septicaemias except the last case were treated by intermittent intramuscular injections of 15,000 units of penicillin, with intravenous injections initially in a few cases. The injections were given 3 hourly at first, and therapy was stopped gradually either by lengthening the intervals between injections or reducing each dose. The last case was treated by continuous intravenous drip, 100,000 units in 24 hours, treatment lasted 13 days and was stopped suddenly. A constant blood bacteriostasis was maintained, but the method had the serious disadvantage that thrombophlebitis was a common occurrence and all the available veins might be used during a prolonged course of treatment.

Dr Dolphin added that a falling pulse rate was a more reliable guide to successful therapy than the temperature, because fever often increased when penicillin was first given. The earliest signs of success were better appetite and sleep and relief of pain and malaise. Occasionally the blood urea rose during therapy, and a falling white cell count, if originally high, or a rising count, if originally low, because of previous administration of sulphonamide, were favourable signs.

### Discussion

Dr W. GUNN (L.C.C.) suggested that the results appeared worse than the clinical facts indicated, all three anaerobic streptococcal cases were very toxic and obviously bad risks, and two of the three meningitis patients were moribund on admission. It was probable that a more generous dosage, preferably using a continuous method, would have yielded better results. Intermittent administration with consequent intermittent bacteriostasis and gradual withdrawal of the drug might conceivably induce drug resistance, as Schmidt and Scaler<sup>1</sup> showed experimentally with pneumococci in mice. The last case described—a bad risk—was treated by the intravenous route followed by sudden withdrawal with conspicuous success, as was a more recent case of staphylococcal septicaemia after mastoidectomy not included in this series. Only extreme scarcity of the drug could justify inadequate dosage, which, as seen in the fifth case requiring three courses of treatment, was liable to prove uneconomical in the long run.

Dr J. M. ALSTON (L.C.C.) described the case of an elderly man with an anaerobic streptococcal septicaemia who responded repeatedly though temporarily to intravenous injections of a crude preparation of penicillin. He was struck by the marked and immediate clearing of the mental condition in desperately ill patients after quite small doses. In animal experiments he had found *Leptospira icterohaemorrhagiae* sensitive to penicillin, but treatment of affected guinea-pigs had to be undertaken early and with big dosage.

Dr ROBERT CRICKSHANK (L.C.C.) stressed the value of quantitative blood culture in the prognosis of generalized infections. For example, in staphylococcal infections an increase in the bacterial count from 20 to over 100 organisms per c.c.m. of blood within 24 hours meant a grave prognosis. Staphylococcal septicaemia was often complicated by renal damage, which resulted in a reduced excretion of penicillin, so that the drug could still be demonstrated in the blood 6 to 12 hours after the standard intramuscular dose of 15,000 units. The outstanding feature at necropsy in the patients with anaerobic streptococcus septicaemia was the multiple lung abscesses secondary to the primary septic thrombophlebitis in the pelvic veins. If these infections could be diagnosed and treated early, he was sure that penicillin therapy would be effective.

### PENICILLIN FOR CIVILIANS

The following brief memorandum on the selection of cases for treatment with penicillin under the arrangements for civilian—noted in these columns on Aug 19 (p. 250) has been issued by the Ministry of Health.

The list of diseases for which penicillin may be used is as follows:

1 Conditions which should be admitted to hospital if the case is otherwise suitable for treatment with penicillin.

*Staphylococcal Infections*—Septicaemia. Early acute osteomyelitis. Severe carbuncle, cavernous sinus thrombosis, or any other life endangering infection.

*Haemolytic Streptococcal Pneumococcal, and Meningococcal Infections*—Any life-endangering infection (septicaemia, pneumonia, meningitis) which has failed to respond to adequate sulphonamide treatment.

*Gas Gangrene*

2 Conditions deserving special consideration, which may be treated if supplies are sufficient: (a) Injuries of the eye and infections of the conjunctiva and cornea. (b) Sepsis in wounds and burns. (c) Infections of the skin resistant to other forms of treatment (syphilis, impetigo, etc.). (d) Sulphonamide resistant gonorrhoea. (e) Acute empyema and pyogenic infections of the pleura as a complication of tuberculosis. (f) Traumatic lesions, including compound fractures of any bone, extensive muscle injuries, facial injuries, injuries necessitating suture of tendon or nerve, thoracic injuries (haemothorax), and post-traumatic pneumonias.

If supplies are sufficient, approved departments and hospitals specializing in ophthalmology, neurosurgery, thoracic surgery, burns, etc., may be given a supply of penicillin.

3 Conditions which will not be treated are those caused by organisms not known to be susceptible to penicillin (including rheumatic fever, ulcerative colitis, and all other intestinal infections). Bacterial endocarditis and syphilis will also be excluded.

<sup>1</sup> Schmidt, I. H., and Scaler, L., *Proc Soc exp Biol Med*, 1943 4, 353.



## ACADEMY OF MEDICAL SCIENCES OF THE U.S.S.R.

The announcement just received of the formation of an Academy of Medical Sciences of the U.S.S.R. indicates a recognition in that country of the need to reverse the trend towards narrow specialization which has characterized scientific progress (including medicine) in recent years. The academy, whose members to start with will number 56, is to be set up under the People's Commissariat of Health, and will have three departments: (1) medical biology; (2) hygiene, microbiology, and epidemiology; and (3) clinical medicine. Each of these will be composed of several scientific institutes, 25 in all, many of which will be, in effect, an extension of the appropriate section of the All-Union Institute of Experimental Medicine which is being merged with the academy. An organizing bureau has been set up under the chairmanship of the People's Commissar for Health of the U.S.S.R., and among the first members are N. N. Burdenko, A. I. Abrikosov, N. I. Grashchenkov, B. D. Petrov, and S. G. Suvorov. Commenting in *Izvestia* recently on the tendency to work in isolation in the medical field, Abrikosov said there had been no exchange of experience and achievement between medical men, no mutual help, and no co-ordination of work. In addition, there had been mistakes in the direction of scientific investigation. Biology, histology, physiology, pathological morphology, and general pathology and pharmacology (including chemotherapy), which would be the field of activity of the department of medical biology, were of the first importance to an understanding of the nature of disease and the discovery of new methods of diagnosis and treatment. They were the foundation of medicine itself; without more knowledge of the structure of chemistry and normal functions of the human organism further advance in medical science would be impossible. It was hoped that the new academy would not only benefit medicine in the U.S.S.R. but would attain a position of repute in the estimation of medical men the world over.

## BIRMINGHAM ACCIDENT HOSPITAL

The new reception and out-patient departments at the Birmingham Accident Hospital were opened on Aug. 14 by the Minister of Health. The Lord Mayor of Birmingham as president of the hospital was in the chair. Declaring the new block open, Mr. Willink said he appreciated being able to lay aside wartime duties for a day to see something that was of a constructive nature with important implications for the future. In spite of much difficulty Birmingham had, in the middle of a war, gone ahead with an experiment on accident treatment that was being closely studied by other communities. His advisers at the Ministry felt that this type of hospital would have a permanent place in the future hospital services. Three qualities of the hospital impressed him. First, imagination had been used to transform an old building so effectively, and to link it with close ties to industry; he liked the idea of special rehabilitation workshops; secondly, the full development of modern resources and medical skill; even the waiting hall was a bright and cheery place; and, thirdly, this was an example of citizenship and of co-operation—a spirit which he had hoped would pervade the new national health service. He saw here close collaboration between the city authorities, the university, and the hospital. It was clear that the people as a whole, and especially those in industry, were taking a deep and personal interest in the development of new and specialized methods of accident treatment.

Mr. George Tomlinson, Parliamentary Secretary to the Minister of Labour, who was also there, said that the success of modern hospital practice was largely due to the application of sound common sense in the treatment of humanity. Many big words, sometimes frightening ones, were used to describe the work of the medical profession: occupational therapy, for instance, was no more or less than curing by work. Rehabilitation, in the real sense of the term, must include a full sense of security. A scheme which did not recognize its economic implications could not be successful. Before the war 200,000 persons were unemployable through disablement. Because of the urgency of national effort all but 18,000 of them had taken up work in some form or other. Rehabilitation was one of the great social advances which had emerged from this war.

L. Dungal (*J. Amer. med. Ass.*, 1944, 125, 20), during an epidemic of measles in Iceland in 1942, injected 302 persons with convalescent serum. 139 (70%) remained free of symptoms and most of the rest got the disease in a much milder form than the unprotected. The dosage was 1 c.cm. of serum for each year of age, but never less than 2 c.cm. and up to 20 c.cm. for adults.

## Nova et Vetera

## THE DOCTOR'S OATH

No document in all medical literature is quoted so often as the so-called Hippocratic Oath. Books and articles on it mount to a veritable library. There are many and divergent opinions on its origin, meaning, and application. Perhaps no part of it has been so debated as its ethical rules. To these have been ascribed a timeless validity. Critical reflection may raise a doubt. "With purity and holiness I will pass my life," for example, presupposes recognized standards of these qualities. But neither the purity nor the holiness of a small Greek sect or guild in the fifth century B.C. meant at all the same as they mean in our Western civilization two and a half millennia later. Attention is often directed also to the prohibition of abortion. This was, in fact, practised freely in Greek times. Why not in a world in which it was considered justifiable to expose infants? Moreover, there are open references to abortion in books of the Hippocratic Collection. With many such points in mind scholars have divided up the Oath, distributing its parts to various dates between the sixth century B.C. and the third A.D.

Dr. L. Edelstein of the Institute for the History of Medicine at Johns Hopkins appropriately opens a new series of publications from that institution with a searching and original review of the whole problem.<sup>1</sup> He reaches the conclusion that the Oath is, in all essentials, a single document. He regards it as uniformly conceived and saturated throughout with Pythagorean philosophy, which should, perhaps, be called the Pythagorean religion. In spirit and letter, in form and content, it is a Pythagorean manifesto. Dr. Edelstein believes it to be intelligible only as such. He holds that the Oath was outlined towards the end of the fourth century B.C. He gives good reason for believing it to be post-Aristotelian, and about a century later than Hippocrates of Cos. Apart from evidence as to its nature, we know that it would have been timely in the later fourth century, when many attempts were made to improve medical conditions, while at the same time Pythagorean ethics were being elaborated and formulated. Specifically it is often noted that the Oath is *not* a legal enactment. It is rather a solemn promise, guaranteed only by the conscience. This is in full keeping with the ethics of the Pythagoreans. They insisted that all instruction must be based on willingness of pupil and teacher, on voluntary rule as well as on voluntary obedience. As Plato saw it, the Pythagorean "way of life" meant no political or group movement; Pythagoras wished to stir the conscience of the individual, and this desire appears vividly in the Oath. If Dr. Edelstein is right or substantially right—and we believe that he has made a very strong case—most of the difficulties and contradictions of this venerable and venerated document fade happily away.

## CLIMACTERIC YEARS

It would be amusing to make a list of authors whose names we all know but whose works we have never read. Richardson would be high in the list and Edmund Spenser not very low down; still, curiosity has tempted people not sitting for examinations to try *Clarissa Harlowe*, and a good many have begun the *Faerie Queene*. A name to put very high up is Salmasius. More school-boys than those of Macaulay remember that John Milton had a controversy with Salmasius (Claude de Saumaise), and some of us recollect Dr. Johnson's remark: "As Salmasius reproached Milton with losing his eyes in the quarrel, Milton delighted himself with the belief that he had shortened Salmasius's life, and both perhaps with more malignity than reason."

The year before Salmasius wrote his defence of Charles I he published a dissertation on climacteric years, which, it is safe to say, not even Macaulay's school-boy has read. I possess a copy which once belonged to Sir George Buchanan, F.R.S., given to me by his son the late Sir George Seaton Buchanan. "Climacteric" has still a faintly medical aroma.

<sup>1</sup> *Supplements to the Bulletin of the History of Medicine*. Editor, Henry E. Sigerist. No 1. *The Hippocratic Oath*. Text, Translation, and Interpretation by Ludwig Edelstein. Baltimore: The Johns Hopkins Press, 1943. (51 25: 10 subscribers to the Bulletin of the History of Medicine, \$1 00)

I think it is now old-fashioned to use the word as a synonym of the menopause, and hardly anybody calls the sixty-third year of life the grand climacteric. I cannot honestly say that I have read every one of the 820 pages of this book, although it has some medical interest it is not primarily a medical book. Indeed, Salmasius is quite clear that the subject of climacterics belongs not to medicine but astrology, and most of the first seven hundred pages are concerned with astrology—viz., what Greek and Roman writers said, and how climacteric years were computed.

Most of us know just as much of the technique of astrology as we can learn from *Guy Mannering*, and I cannot recommend Salmasius as a guide to its mysteries. He was no doubt an extremely learned man, but his arithmetic is weak and his illustrations of working rules inconsistent one with another. Possibly he did not check his arithmetic because the further he went with his studies the stronger became a conviction (expressed, the reader will recall, by Dominie Sampson) that judicial astrology was pure nonsense. Possibly the problem of twins first excited a doubt—be comments on the different fates of Jacob and Esau, who, however, were not identical twins—but, anyhow, his last hundred pages vigorously assail the whole doctrine and do have a medical flavour. He returns more than once to the problem of alcoholism. It is indeed rather hard to see how the importation of wine into what was once a water-drinking country could be allowed for in judicial astronomy. He wants to know what the stars could do about new diseases, and discusses smallpox (that part of his book was annotated by Sir George Buchanan). He also is sarcastic (writing in Latin gave him an advantage in times when sexual perversions were not topics of polite conversation) on the influence of the stars on the variations of homosexuality in different places or in the same place at different times. Indeed, his onslaught on stellar influences is so vigorous that one might think it odd he should give so much attention to what was essentially, in his opinion, so silly. That, however, would be unjust. Salmasius, like his great predecessor Scaliger, wished to know what the Greek and Roman writers had said and believed—whether rightly or wrongly—on all subjects which seemed to them important, and, coming after Scaliger and being intellectually a much smaller man, his harvest of valuable information was inferior.

Johnson said of the controversy between Milton and Salmasius "No man forgets his original trade: the rights of nations, and of kings, sink into questions of grammar, if grammarians discuss them." Salmasius was certainly more interested in grammar—in Johnson's sense—than in the question whether there were any basis in fact not for judicial astrology but for belief in climacterics.

Sir Humphry Rolleston in his Liacre Lecture (*Some Medical Aspects of Old Age*, London, 1922) concluded that "The conception of the climacteric disease is interesting historically only and it may be agreed that apart from accidents of environment the progress of senescence in healthy men is gradual and inevitable." One must, however, note that the old doctrine did not imply a sudden deterioration, but a change, whether for better or worse. Some men go downhill rapidly after retirement, others seem to have taken a new lease of life. Without a large collection of minutely and accurately recorded diaries kept by men from say, the age of 60 to death, we could hardly test the hypothesis. No doubt a diligent student could assemble a goodly number of diaries fulfilling the condition, but the statistician would object that diarists are not a random sample of mankind, so the grand climacteric is likely to remain of antiquarian interest only. M G

### HISTORY OF COMPARATIVE ANATOMY

Prof F J Cole of University College, Reading, has furnished zoologists and anatomists to-day with a delightful retrospect of the older naturalists from the times of Aristotle, Galen, and Pliny to the beginning of the eighteenth century. The interest of readers of this work, *A History of Comparative Anatomy*, is maintained throughout by the variety of aspects from which the subject has been viewed, and by the manner

in which the author has considered the character and work of each individual in accordance with the period in which he lived—e.g., before the old prejudice against the dissection of the human body had been overcome, and "zootomists" were compelled to limit themselves to dissection of apes, dogs, and pigs in order to gain an insight into the anatomy of the human subject, or, at a later period, before the use of the compound microscope and the various methods of injection of vessels and other cavities had been evolved, or before the employment of preservatives such as turpentine or alcohol in the form of brandy or rum. Prof Cole also clearly distinguishes the different lines of approach which inspired the work of the early naturalists. Thus human anatomists, from the sixteenth century onwards, have, in order to understand more fully the mechanism of the body, tended to study the structure of the various organs and systems in relation to their function. Among these may be mentioned Harvey, John Hunter, Malpighi, Perrault, Stenon, Swammerdam, and Tyson, who established the physiomorphological aspect of comparative anatomy, whereas others, apparently inspired by simple curiosity, collected and dissected any material which came to hand, without system or definite object as contrasted with the study from a medical or utilitarian standpoint, such as that which activated the researches of Pasteur and others at a later date. As an example of the collector type of naturalist, F Ruysch of Amsterdam may be cited, an illustration of whose work is shown in Fig 199, a pictorial museum exhibit composed of various emblematical representations grouped in a "grotesque arboreal" fashion on an hexagonal wooden stand—e.g., "a skeleton in extremis, grasping the emblem of insect mortality, the may fly."

The book is well illustrated and the reproductions of many of the original figures show the great exactitude and artistic capacity of some of the early naturalists, or their draughtsmen as evidenced by the drawings of Leonardo da Vinci, Swammerdam, Leeuwenhoek and others. The figures as a whole are most instructive and would have been even more so if the lettering and numbers had been more fully explained either in the legends or in the text. The work concludes with an appendix consisting of biographical notes and a bibliography. It represents a valuable and critical survey of the history of adult comparative anatomy, which will be a welcome addition to the libraries of all who are interested in the progress of biological science.

## Correspondence

### Military Psychiatry

SIR,—The letter of Dr B H Shaw on military psychiatry (*BMJ* Aug 12, p 222) points out apparent contradictions in the article by Lieut-Col H B Craigie entitled "Two Years Military Psychiatry in the Middle East" (July 22, p 105).

Dr Shaw directs attention to the high proportion of psychotic and neurotic casualties returned to duty with the Middle East Force, and contrasts these figures with Lieut-Col Craigie's statement that such men's "presence constitutes a continued if only potential menace to the morale of the group as a whole." As Consultant in Psychological Medicine to the Director of Medical Services of the Middle East Force during the whole of the period in which fighting took place against the Italians and Germans in the huge area known as the Middle East, I venture to submit a few words of explanation and amplification of Lieut-Col Craigie's remarks.

Evacuation from the Middle East was always a difficult problem even if it was desirable for most cases of neurosis. Man power was a serious matter also, and use was made of every available soldier. The policy of the Psychiatric Services therefore was always directed to treatment and rehabilitation by all possible means followed by a careful estimation of the potentialities of each invalid on recovery. The result was that a great many such recovered men were regraded in medical category and were replaced somewhere in the military machine. It may well be that Dr Shaw has pictured these recoveries returning to combat duties with fighting units. This was not

<sup>1</sup> *A History of Comparative Anatomy from Aristotle to the Eighteenth Century*. By F J Cole (Pp 524, illustrated 30s). London: Macmillan and Co. 1944.

become negative after 3 to 6 weeks, although sometimes persisting much longer. In cirrhosis there is little change from month to month, so that repeated observations help to decide between these two. In arsenical jaundice—i.e., jaundice

TABLE II.—Serum Colloidal Gold Reaction in 319 Cases

	Precipitation Number						Totals	% Pos.
	5	4	3	2	1	0		
Obstructive jaundice .. ..	0	0	0	3	0	39	42	7
Infective hepatitis .. ..	84	24	22	10	7	11	158	93
Cirrhosis and subacute hepatitis ..	12	0	0	0	0	0	12	100
Arsenical jaundice .. ..	5	5	4	6	7	35	62	44
Weil's disease (jaundiced) ..	0	0	3	2	3	11	19	42
Weil's disease (not jaundiced) ..	0	1	1	1	1	10	14	29
Toxic jaundice .. ..	0	0	0	1	0	2	3	
Amyloidosis .. ..	0	0	0	1	1	5	7	
Liver abscess .. ..	0	0	0	0	1	2	2	

occurring during antisyphilitic treatment—and also in Weil's disease negative results are frequent (about 60%) and make the distinction from biliary obstruction more difficult, but fortunately this is rarely a clinical problem. The rather striking difference between the infective and the arsenical cases has been noted elsewhere (MacLagan, 1944b), and suggests a probable aetiological difference in the two groups. In liver abscess and in amyloidosis results have been mainly negative.

As with most other liver function tests some positive results occur in heart failure, in severe chronic anaemia, and in various acute and chronic infections, of which the following are the most important: glandular fever, atypical pneumonia, infective endocarditis, advanced pulmonary tuberculosis, and rheumatoid arthritis (MacLagan, 1944a). In this group the liver involvement was obviously only an incident in the primary disease, but such conditions might complicate obstructive jaundice, when due allowance would have to be made. In practice they can usually be eliminated without difficulty by other means.

Finally, it should perhaps be emphasized that the results given here are not the same as those obtained with Gray's (1940) original technique, which has been adversely criticized by Mateer *et al.* (1942). The technical details referred to above must be followed exactly if comparable results are to be obtained.

## II. Serum Alkaline Phosphatase

This estimation, like the gold reaction, does not test any known function of the liver, and raised values are found in infancy and in a variety of bone diseases. In spite of this the test has been much used in jaundice since Roberts's (1933) observation that the level is usually higher in obstructive than in other types of jaundice. The 136 results in Table III were obtained by the method of King and Armstrong (1934).

TABLE III.—Serum Alkaline Phosphatase in 136 Cases

	Range of Values (Normal 3–13 Units)							Totals
	0–13	14–24	25–35	36–45	46–55	56–80		
Obstructive jaundice .. ..	0	3	7	13	11	9	43	
Infective hepatitis .. ..	6	35	6	0	0	0	47	
Cirrhosis and subacute hepatitis ..	0	6	3	2	2	1	14	
Arsenical jaundice .. ..	8	12	2	0	0	0	22	
Toxic jaundice .. ..	1	3	0	0	0	0	4	
Amyloid disease .. ..	0	0	2	1	0	0	3	
Liver abscess .. ..	0	0	2	0	1	0	3	

It will be seen that the test is of some value in distinguishing biliary obstruction on the one hand—usually over 35 units—from infective hepatitis and arsenical jaundice on the other—usually below 25 units and may be within normal limits. However, 15 of these cases fall into the doubtful range (25–35 units), and 3 of the obstructive cases were below 25 units, this is about the same degree of overlap reported by others (Gutman *et al.*, 1940; Giordano *et al.*, 1939; Higgins *et al.*, 1944). If, however, cirrhosis has to be considered the test is of much less value, as figures over 35 are frequent in this condition. In liver abscess and in amyloid disease a raised phosphatase is often present, and may be the only biochemical indication of disturbed liver metabolism.

## III. Galactose Index

This index (MacLagan, 1940) is the sum of the four blood-galactose values at 1/2, 1, 1½, and 2 hours after the oral

administration of 40 g. of the sugar. The estimations were performed mainly on capillary blood as previously described, the results being read from the table given below (see Appendix). This table is based on figures given in the reference cited above and does not involve any alteration in the method. The normal limits for the galactose index, based on 50 normal subjects, are 0–160 (0–110 for male medical students). The test is contraindicated by nausea or vomiting from any cause.

TABLE IV.—Galactose Index in 145 Cases

	Range of Values (Normal 0–160)							Totals
	0–160	161–200	201–300	301–400	401–500	501–600		
Obstructive jaundice .. ..	23	3	7	4	2	0	39	
Infective hepatitis .. ..	4	5	15	8	3	1	36	
Cirrhosis and subacute hepatitis ..	0	1	8	2	2	0	13	
Arsenical jaundice .. ..	0	1	2	6	1	2	12	
Toxic jaundice .. ..	0	0	2	1	1	0	4	
Hyperthyroidism (from MacLagan and Rundle, 1940)	11	7	16	4	3	0	41	

It will be seen from Table IV that the index is nearly always above normal in infective hepatitis, arsenical jaundice, and cirrhosis, but is frequently normal in jaundice due to biliary obstruction. Considerable impairment of function can, however, be demonstrated in certain cases of obstructive jaundice, particularly after the first three weeks, in febrile or cachectic patients, and after repeated attacks of obstruction (MacLagan, 1941). The only normal results in the toxic and infective group were in 4 cases of infective hepatitis in young adults from the Services, a class of patient in which liver function is no doubt above the average. The test is therefore of some value in distinguishing these two groups if interpreted with due regard to clinical data. A normal result in an elderly jaundiced patient is of particular diagnostic value, and has so far been seen only in obstructive jaundice. It is also useful as an extra aid in cases in which the gold and phosphatase tests are equivocal and for assessing the degree of liver damage when present.

The test has also been much used in hyperthyroidism, in which there is impaired tolerance in a high proportion of cases (Althausen *et al.*, 1940; MacLagan and Rundle, 1940; Barnes and King, 1943; and Table IV). Some workers have found it as sensitive as the B.M.R. in diagnosis, although Rundle and I got values decisively above normal in only 75% of our cases; it is agreed that the test is less affected by iodine therapy than is the B.M.R. There is some difference of opinion as to the mechanism involved, since both liver damage and increased intestinal absorption have to be considered. Most recent articles express the view that both factors contribute to the results in hyperthyroidism (Lichtman, 1941; Grauer *et al.*, 1942; Rosenkrantz *et al.*, 1942).

## Discussion

It is now generally agreed that a combination of liver function tests yields more information than any one test, and this is particularly true of those described here. Liver function tests are useful in three principal types of case.

1. *Suspected Liver Disease in Non-jaundiced Patients.*—The three tests appear to be sensitive enough to detect cirrhosis, and in common with others they also indicate hepatic involvement in a variety of other diseases such as hyperthyroidism (galactose index), heart failure and various infections (serum colloidal gold reaction), and in liver abscess and amyloidosis (serum alkaline phosphatase). In this group the pigmentary tests—serum bilirubin and urinary urobilin estimations—reach their maximum degree of usefulness and should not be omitted, but they may sometimes be completely negative in cases with known liver damage.

2. *Jaundice of Known Origin.*—The galactose index will reveal liver damage in late biliary obstruction, the other two tests being of no value in this respect. Either the gold reaction or the galactose index may be used to follow the course of a hepatitis, and will often give positive results for some weeks or months after the disappearance of clinical or latent jaundice. In cirrhosis and in subacute hepatitis all three tests have been positive, and the galactose index appeared to have some correlation with clinical severity; so far as could be judged from this small series (13 cases).

3. *Jaundice of Unknown Origin.*—Haemolytic jaundice is usually diagnosed by clinical and haematological methods, and will not be considered here. The way in which these tests can help in the more difficult task of distinguishing obstructive from toxic and

infective jaundice is indicated in Table V, which shows the typical or average results in the types most commonly encountered

TABLE V—Typical Results with 3 Tests in Jaundiced Patients

	Gold	Phosphatase	Galactose Index
Obstructive	Negative	Over 35	Frequently normal
Infective hepatitis	Positive	Under 25	Raised
Cirrhosis and subacute hepatitis	Positive	Raised	Raised
Arsenical	44% pos.	Under 25	Raised
Weil's disease	42% pos.		

The interpretation of the results in these cases must always depend partly upon clinical data and can never be completely rule of thumb. Nevertheless there are many instances in which a slight acquaintance with the history permits an almost certain diagnosis on the basis of the tests. Considering the gold and phosphatase tests first, three particular combinations appear to have diagnostic significance. (A) A negative gold reaction with phosphatase above 35 units suggests biliary obstruction. (B) A positive gold reaction with phosphatase below 25 suggests parenchymatous hepatic disease and absence of biliary obstruction. (C) A strongly positive gold reaction (4 or 5+) has not been seen in obstructive jaundice and appears to be diagnostic with any phosphatase level. In such cases a phosphatase above 35 suggests cirrhosis rather than acute hepatitis.

It will be evident from Table V that the chances of making the distinction are greater in infective hepatitis and cirrhosis than they are in arsenical jaundice and Weil's disease but fortunately the two latter conditions do not usually present great diagnostic difficulties. When the gold reaction is positive possible complicating diseases must be considered, but these rarely cause serious trouble in interpretation.

The constancy of these findings is illustrated in Table VI which includes all jaundiced patients on whom both tests were

TABLE VI—Combination of Two Tests in 100 Jaundiced Patients

	1	2	3	4	Totals
Gold Phosphatase	Negative Over 35	Negative Under 35	Positive Over 25	Positive Under 25	
Obstructive jaundice <sup>1</sup>	22	9	1 (1+)	0	32
Infective hepatitis	0	7	1 (5+)	23	36
Cirrhosis and subacute hepatitis <sup>2</sup>	0	0	4 (All 5+)	6	10
Arsenical jaundice	0	6	1 (5-)	12	19
Toxic jaundice <sup>3</sup>	0	2	0	1	3
Totals	22	24	7	47	100

<sup>1</sup> Due to pancreatic carcinoma in 14, gall stones in 9, hepatic metastases in 6, and other causes in 3. Diagnosis established by re-exposure in 14, laparotomy in 1, and by other methods in 2.

<sup>2</sup> Diagnosis established by necropsy in 3 cases, biopsy in 2 and clinically in 3.

<sup>3</sup> Due to T. T. in 2 cases and to sulphuramide in 1.

<sup>4</sup> Figures in brackets indicate strength of gold reaction.

done. It will be seen that out of these 100 cases 75 fall into group A, B, or C (columns 1, 3, and 4) and in all of these the findings were in keeping with the final diagnosis. The galactose test was confirmatory in 26, omitted in 41, and atypical in 8. The atypical galactose tests were 4 cases of biliary obstruction with secondary liver damage and the 4 cases of infective hepatitis in young adults referred to above.

In the remaining 25 cases (column 2 and one case in column 3) the results did not always give a definite answer, but in some instances the galactose test provided further information. They may be classified as follows: (1) Three cases of obstructive jaundice with negative gold reactions and phosphatases of 16, 25 and 29, and galactose indices of 118, 126, and 114 respectively. In view of the ages of the patients—72, 62, and 40—the normal galactose tests here were felt to be strongly in favour of what proved to be the correct diagnosis. (2) A group of 22 cases with negative or weakly positive gold reactions in which the findings were conflicting and of little diagnostic value. These consist mainly of obstructive and arsenical jaundice but include some cases of infective hepatitis and toxic jaundice. The galactose test was omitted in 18 of these and in some it would probably have helped. In two of the obstructive cases a later repetition of the tests showed a rise of the phosphatase to a diagnostic level.

The final assessment of the three tests in these 100 jaundiced patients is therefore that the distinction between biliary obstruction

and generalized liver disease could be made in at least 78, which include about the same proportion of the obstructive and of the non obstructive cases. It is out of course suggested that these rules of interpretation will be infallible but since no exception to them has been observed in this series they appear to be reliable enough to form a useful diagnostic guide.

As a matter of practical convenience it is easier to do the gold and phosphatase tests first and to reserve the galactose for cases in which the first two are atypical or in which the degree of liver damage is of interest. The galactose index has, however, a special place in the investigation of hyperthyroidism.

### Summary

The clinical value of laboratory tests in the diagnosis of liver disease has been reviewed with special reference to the serum colloidal gold reaction (319 cases), the serum alkaline phosphatase (136 cases), and the galactose index (147 cases).

The first two tests taken together, often give valuable diagnostic information when considered in conjunction with clinical data. A jaundiced patient with a negative gold reaction and a phosphatase above 35 King Armstrong units probably has biliary obstruction, one with a positive gold reaction and a phosphatase below 25 units probably has not. A 4 or 5+ gold reaction is against biliary obstruction whatever the phosphatase level.

The galactose index is useful as a confirmatory test in special cases and for assessing the degree of liver damage when present. It is also of value in the diagnosis of hyperthyroidism.

The results given indicate that out of 100 jaundiced patients the distinction between biliary obstruction and generalized liver-disease could be made in 75 cases with the gold and phosphatase tests, and in a still higher proportion if the galactose index was included.

I am much indebted to the medical staff of the Staines County Hospital and of Sector 7 for permission to investigate their patients, and to Prof. A. D. Gardner, Dr. E. N. Allott, Dr. A. J. Amor, Major J. Marshall, and the Middlesex County Medical Society for various sera.

### APPENDIX

Table for Blood Galactose Method of MacLagan (1940)

NII (x 0.00) x sodium thiosulphate (blank runs unknown)											
0.0	0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45		
Mg of galactose per 100 ml of blood											
0.0	0	10	17	21	24	27	29	33	35	37	
0.5	40	43	46	48	51	54	57	59	62	65	
1.0	67	70	72	75	78	80	83	85	88	90	
1.5	94	97	99	101	104	107	110	112	115	118	
2.0	121	124	127	130	132	135	138	140	143	146	
2.5	149	151	154	156	159	162	165	167	170	173	
3.0	176	178	181	183	185	187	190	192	194	196	
3.5	199	201	203	205	208	210	212	215	217	219	

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## ARTIFICIAL RESPIRATION

## THE NEED FOR A GREATLY INCREASED RATE IN ASPHYXIA

BY

P. R. TINGLEY, M.B., Ch.B.

The rate in all methods and teachings of artificial respiration varies between 12 and 18 times a minute. This rate has persisted to the present time, unaltered and unchallenged for all conditions and requirements. The purpose of this article is simply to demonstrate the obvious error or oversight in the application of *all methods* of artificial respiration to *cases of asphyxia* without at the same time considering the greatly increased respiratory requirements existing in asphyxia and making some attempt to meet these requirements. (The word "asphyxia" is used throughout as being synonymous with "suffocation" and "cyanosis.")

All cases for which artificial respiration is required may be considered to fall into two main groups:—Group 1: cases *without asphyxia*—e.g., under anaesthesia, from electric shock, etc.; Group 2: cases *with asphyxia*—e.g., suffocation from drowning, from lack of air (buried in bomb debris), from smoke, gases, etc. Any Group 1 case, if untreated, quickly becomes a Group 2 case.

Artificial respiration done at the usual rate of 15 times a minute is adequate and excellent for Group 1 cases, as the respiratory requirements are approximately the same as in natural respiration at rest; *but the same rate is quite inadequate to deal satisfactorily with Group 2 cases of asphyxia*, in which the respiratory requirements are very much greater. The body not only provides a natural respiration at rest—namely, a tidal breath every four seconds—but also provides it for all normal degrees of exercise and asphyxia whenever they arise in daily life. This natural respiration in asphyxia makes use not only of tidal but also of full complementary breathing at whatever increased rate may be required to deal with existing needs.

The truth of these statements can very easily be demonstrated by simply holding the breath *as long as possible* and then, on the resumption of breathing, noting the volume and rate of the very necessary respirations. It will be found that slow tidal breathing is most inadequate, *if not frankly impossible*—and this from a very mild degree of asphyxia. Now consider the deeply asphyxiated person. He must certainly have *far greater respiratory requirements*, for he has passed more milestones along the road to death; he has lost consciousness, his respiratory centre has ceased to function—only his heart clings stubbornly, though precariously, to life. He is metaphorically *calling aloud for air*—and is in actual fact dying for want of it. Obviously his respiratory requirements cannot be adequately

the volume or the rate. It may be assumed that each method of artificial respiration at present in use provides the greatest exchange of air possible by that method, so that only by increasing the rate can any greatly increased respiration be obtained. Fortunately, the rate can be raised in all methods with little effort, with no loss in efficiency, and with *great increase* of the total respiratory exchanges.

It is convenient and correct to consider the increasing depths of asphyxia as being of three degrees: Degree 1, up to loss of consciousness; Degree 2, up to cessation of respiration; Degree 3, up to final heart failure. It should be realized that it is only in Degree 1 that actual experiments on the state of asphyxia can be carried out, for the deeper degrees of asphyxia occur only accidentally and not under circumstances suitable for experimenting; while it is not practicable that any such asphyxia should be produced "artificially by force" for experimental purposes. It is, however, quite practicable to produce varying depths of Degree 1 asphyxia at will, and without danger, by simply holding the breath for varying lengths of time. It is from experiments in such self-administered asphyxia that we are obliged to gain our knowledge of the manner in which asphyxia may be relieved by varying amounts and rates of respiration.

## Experiments in Asphyxia

Each experiment is done in the sitting position, and is started by taking a full, free complementary breath (without forcing inspiration to the utmost) and holding the breath for various stated periods. At least five minutes of natural respiration at rest is enforced before each experiment.

In these recorded experiments a subject has been chosen with sufficient determination to hold his breath for long periods, and of sufficient integrity to report the times at which "the pulse commences to be heard" on holding the breath, and, on resuming respiration, the times at which "the pulse ceases to be heard" and the "acute discomfort ceases." This latter somewhat arbitrary time is that at which one no longer has to "fight for more air," though deep rapid breathing may continue for some minutes.

The tidal respiration used in Series 2 has been judged by the subject to the best of his ability. It is quite feasible for the subject (by conscious control) to breathe an approximately similar amount to the tidal at any time or rate required. That this amount should be exactly the tidal is, of course, unlikely, but any respiratory experiment on the conscious subject is open to error of the "human element," and in these, even though the results were affected thereby very considerably, the same fundamental conclusions could and would be drawn.

Series 1 experiments (see Table) shows results of varying degrees of asphyxia on the natural *uncontrolled respiration*. As the asphyxia becomes deeper, though the respiratory exchanges are greater the recovery is slower. Asphyxia from only two minutes' stoppage of respiration (Experiment 3) causes the volume of each respiration to be increased at least twice, and the rate to be increased four times. Thus the total volume of air exchanged naturally after only

## Experiments in Asphyxia

Experiment No.	Time Breath held (Seconds)	Ear Pulse heard (Seconds)	Type of Respiration used	Rate of Respiration	Ear Pulse ceased (Seconds)	Time taken to be Free of Discomfort (Seconds)	Remarks
Series 1 1	60		Natural	6 in 10 secs.		8	Tidal plus complementary breathing used naturally without control. Volume of each respiration increased to full in Exp. 1, with marked increase in rate also. Rate further increased to as fast as possible in Exp. 4
2	90		"	9 " 10 "		10	
3	120	20	"	12 " 12 "	8	14	
4	150	50	"	30 " 20 "	15	20	
Series 2 5	120	20	Controlled tidal	1 in 4 secs.	Constant	Discomfort increased	Very difficult; asphyxia growing worse all the time. By great effort experiment continued for 40 secs., when will-power dulled and natural respiration reasserted itself
6	120	20	"	1 " 2 "	45	c. 60	Relief definite but very slow
7	120	20	"	1 " 1 sec.	15	c. 30	Relief much improved over Exp. 6
8	120	20	Forced rapid tidal	2 " 1 "	10	15	Practically as good relief as in Exp. 3
9	60		Controlled tidal	1 in 4 secs.		c. 60	Relief definite but very slow

met by a tidal breath once in four seconds. Yet that is the manner in which it is being administered to-day to the deeply asphyxiated.

On the truth of these simple and obvious facts, which have never before been applied practically to this vital need, I base my claim for the necessity for providing increased respiration in asphyxia. This increase can be obtained only by raising

a moderate Degree 1 asphyxia is *at least eight times* the total volume exchanged naturally at rest for the same unit of time. (The total volume exchanged by any artificial method at present is seldom much greater than the total volume exchanged naturally at rest.)

Series 2 experiments show the effect on a constant degree of asphyxia obtained by altering only the rate—the volume remaining tidal throughout. Exp. 5 shows that the rate of 1 in 4 seconds provides insufficient respiratory exchange to relieve this particular



degree of asphyxia, and the experiment had to be broken off because of increasing asphyxia. Exp. 6 shows that by increasing the rate to 1 in 2 seconds the relief is definite but very slow. Exp. 7 shows that by increasing the rate to 1 in 1 second the relief is much improved. Exp. 8 shows that by further increasing the rate to 1 in 1 second (in the same manner as a dog pants) the relief is almost as good as by natural breathing in Exp. 3. (This rate of 1 in 1 second is not practicable artificially, but it shows that there is no effective limit to the practical increase in rate.) Exp. 9 shows that tidal breathing 1 in 4 seconds may relieve a very mild asphyxia, but fails to relieve a deeper asphyxia (compare Exp. 5).

#### Conclusions from Experiments in Degree 1 Asphyxia

1. The deeper the asphyxia the greater the respiratory requirement.
2. In any asphyxia that needs artificial respiration the respiratory requirement must be greatly in excess of eight times the normal resting requirement.
3. In the deeper degrees of asphyxia a greater respiratory exchange than in the lesser degrees is required to give an appreciable relief.
4. The total volume of air exchanged in a given time largely determines the extent of relief from asphyxia.
5. The faster the rate of tidal respiration the greater the relief from asphyxia.

#### Discussion

The above conclusions are undoubtedly true in Degree 1 asphyxia. The respiratory requirements of Degree 3 are essentially the same in quality as in Degree 1, and vary only in quantity. Degree 3 asphyxia should therefore respond to increased respiratory exchange in much the same manner as does Degree 1—provided the circulation is adequate to take up and distribute the extra oxygen made available.

The circulation, which remains fairly constant in Degree 1, becomes gradually more and more enfeebled and inadequate throughout Degree 3. It must therefore be fully realized that in Degree 3 asphyxia the state of the circulation may play as great a part in determining the extent of relief from asphyxia as the respiratory exchanges do. They are very closely interrelated. The circulation is now directly dependent on the respiration. The only possible way to improve the circulation is to ensure that a fully adequate supply of oxygen is available in the lungs, to be transported to the needy cardiac muscle. In brief, in a hypothetical case, if the circulation is still fairly adequate (the radial pulse being discernible) the recovery obviously must be much quickened by using a greatly increased rate. If, however, owing to long asphyxia, the heart is failing fast and the circulation is hopelessly inadequate, so that a tidal breath once in four seconds already provides more oxygen than can be taken up by the greatly depleted pulmonary circulation, there is nothing to be gained by increasing the respirations, as the patient would seem to be doomed, whatever may be done. It is, however, in the border-line case, in which the circulation is able to take up all the oxygen available at the usual rate and still be wanting more, that the greatest benefit will result from an increased rate. For in this case of deep asphyxia with failing circulation the tidal breath once in four seconds is inadequate to clear up the deep existing cyanosis and to maintain in addition the heart and body requirements (as shown by Exp. 5). Such cases have no doubt provided most of the recorded failures. By increasing the rate, and providing about four times as much air, not only do we give the patient a "much better chance," but it is not unreasonable to assume that some such cases, previously "on the down grade" at the usual rate, would revive with the increased rate. It must further be borne in mind that the blood in such a case is almost completely devoid of oxygen, and therefore can take up far more of it, volume for volume, than the blood in Degree 1, which can take up eight times the normal amount very readily. Thus, even though the flow of blood through the lungs may be very poor indeed, it is quite possible that all the oxygen available from tidal breaths every four seconds may be fully taken up by this deeply cyanotic blood, which then is left "hungry" for more oxygen. Therefore, it is essential to provide all the respiratory exchanges possible if every case is to have its best chance of recovery. It may, at least, confidently be stated that an increased rate can do no harm in any case, and must in many instances do much good.

It has been shown (Exp. 8) that the effectiveness of increasing the rate of tidal breathing continues beyond any practicable limit—provided the circulation is adequate; and as any hopelessly inadequate circulation cannot be recognized on examination, the only safe rule to adopt in all cases is to employ as fast a rate as may be efficiently possible.

It is not essential to discuss the relative parts played in asphyxia by the diminishing oxygen supply and the increasing carbon dioxide, or the varying effects of asphyxia on the different nerve cells or its effect on the cardiac muscle. All such considerations are of little importance from the practical point of view, because all manifestations of asphyxia, of whatever nature or degree, are the direct result of respiratory failure, and can only be improved by providing adequate respiratory exchanges.

#### The Rate Suggested

In every method the present rate is slow. Four seconds is a long time when applied to one respiratory cycle. Indeed, in most methods it has been necessary to include a pause of one to two seconds in each cycle in order to keep the rate down to the so-called normal. In Schäfer's the interval is at the end of inspiration; in Eve's it is at the end of expiration. There has been considerable discussion as to the proper place in the cycle for this interval and the proper timing. My only comment is to draw attention to the undoubted fact that in natural respiration for even mild degrees of asphyxia there is no time for a pause at all at any period. Inspiration and expiration being as quick as possible, and following each other as rapidly as possible. In all artificial methods the same manner of respiration should be provided.

In Schäfer's method it is difficult to occupy fully even three seconds with the actual movements necessary for one cycle. It is, in fact, much easier, and just as effective, to do all the movements in two seconds instead of three. The second so saved could be utilized, along with the second previously set aside for an interval, by providing the two seconds necessary for another cycle. Thus the rate may be doubled, without any undue effort at all, by merely substituting an easier rate of 30 times a minute. Now, in the interest of the dying patient some real physical effort should be made, and under most conditions this rate of 30 times a minute can be doubled. It is not difficult to do Schäfer's method at a rate of 60 times a minute without any loss of volume per respiration. Under few circumstances, with an adult operator, should it be necessary to let the rate drop very much below 60.

Silvester's method, because of the nature of the movements necessary, takes more time to perform than Schäfer's, and a rate of about 45 times a minute would seem to be the efficient maximum. My limited experience of Eve's method does not permit me to suggest the most suitable rate, but the same rule holds true—"as fast as possible consistent with no sacrifice in volume"—and I have little doubt that the efficient rate of rocking could be at least doubled, and probably much further increased.

Considering the number of cases of asphyxia occurring on land and sea under war conditions, the early adoption of this principle, and its teaching to all appropriate personnel, cannot be too strongly urged.

#### Conclusion

The respiratory requirements are so great in all cases of asphyxia which require artificial respiration that, in such cases, the adoption in all methods of as fast a rate as possible, consistent with efficiency, must result in the quicker resuscitation of the patient, thereby enhancing the chances of life.

Holler (*Die Chemie*, 1944, 57, 14; *Dtsch. Gesell. inn. Med.*, Oct., 1943) classifies the causes of liver damage on a clinical basis as follows: (1) Endocrine disturbances: hyperthyroidism, diabetes mellitus, pregnancy. (2) Chemical poisons: phosphorus, arsenic, hypnotics, etc. (3) Food toxins as in "meat poisoning." (4) Spirochaetal diseases: Weil's disease, marsh fever, secondary syphilis. (5) Drugs: atophan, salvarsan, evipan, *Felix mas*. (6) Infections: jaundice in pneumonia, sepsis, rheumatism, diphtheria, scarlet fever, epidemic meningitis, etc. (7) Infections with monocyte or monolymphocytic reaction (Pfeiffer's glandular fever, epidemic hepatitis). Holler regards as specially characteristic of epidemic hepatitis the appearance of numerous monocytes in the blood; this he interprets as "a mobilization" of the reticular endothelial system.



## PSYCHIATRY IN DETENTION

BY

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The report of the Oliver Committee, recently published, has drawn the attention of the public to the detention system used in the armed Forces, with special emphasis on the medical arrangements. In civil life the association of mental abnormality with delinquency is notoriously close, and it is not surprising that a similar association is discovered among Service offenders. It was thought to be of interest, therefore, to discuss the scope of psychiatry in detention establishments and briefly to describe the various types of abnormality which may be encountered there. Owing to the necessity for economy in medical manpower, it is impossible for us to copy the American practice of appointing a whole-time psychiatrist to each of the larger detention establishments; accordingly, it is incumbent upon the medical officer himself to utilize to the full such opportunities for psychiatric investigation as come his way.

## Diagnosis

A small proportion of the offenders received in Naval detention quarters have already been reported on by the psychiatrist at their depot before sentence, and yet others have earlier psychiatric reports included among their medical documents; but the majority, coming as they do from isolated ships and bases, have not previously been assessed from the psychiatric angle. The field, then, is large and the time all too short for undertaking a thorough investigation of every case. A compromise must be reached, and it is our custom here to interview each offender alone as soon as possible after admission (often on the same day) and to discover as rapidly as possible the salient facts relating to his health, previous Service record, early environment, school and work histories, and hereditary influences. These facts are recorded on a special form and filed for reference. It is possible in this way to gain a general impression of the mentality of each offender in less than a quarter of an hour; and though it is of course impossible to form a correct opinion in every case, there is still the whole sentence in which to review hasty and ill-judged conclusions. Nowhere in the Service is the medical officer in a better position to observe his charges, and though the atmosphere is an artificial one, it is certainly less artificial than that of a hospital ward. He can watch the men through the whole of each day's routine, at drill and physical training, at school instruction, at industrial work, and even engaged in such necessary tasks as washing clothes or peeling potatoes. In the absence of difficulty or doubt he can confer with the instructors and officers, and more especially with the chaplain, who has his own records and is in touch with the home environment of the offender in many cases. Where it appears that we are dealing with an abnormal case, however, a more extended examination is necessary, and further interviews or even a period under observation in the sick-bay may be called for. The results obtained by these various methods are utilized in two ways. Directly, to advise regarding the immediate treatment of any particular individual and modification of the detention routine if deemed necessary; and indirectly, in bringing him to the notice of his depot psychiatrist shortly before the expiration of his sentence. In grossly abnormal cases, however, direct and immediate discharge to hospital for invaliding or specialized treatment is our invariable rule.

## Treatment

The uncomplicated and regular life, hard exercise in the open air, generous hours for sleep, and the deprivation of alcohol and tobacco, all combine to improve the general physical condition of the average offender during his sentence, and, incidentally, to soothe and resolve the conflicts in his mind. Ocular demonstration is forthcoming in all but a small group of psychopaths, and the medical officer can observe how, in a few weeks, the sullen and resentful new arrival changes into a more placid and more co-operative individual. In the abnormal cases this process is generally obvious, and all that is required of the M.O. is a little moral support for the weak,

reassurance and sedatives for the anxious in their earlier stages, and a certain allowance, tempered with firmness, for the idiosyncrasies of the psychopathic personality. The scope of psychotherapy in detention is strictly limited; for the medical officer is essentially an official in the eyes of the offender, just another link in the chain of Naval discipline. A similar disadvantage in the case of the prison medical officer was remarked upon by the Departmental Committee on Persistent Offenders in 1932. Moreover, the ordinary medical officer has other duties to perform, and even the time of the offender is limited; for so finely is his day adjusted for him that a long treatment session might deprive him of a bath or school instruction or necessary exercise. We have on occasion used narco-analysis to clear up periods of amnesia and other gross hysterical phenomena, but as a rule no advanced treatment is attempted. East and Hubert (1939) draw attention to the abuses which may creep in when the offender realizes that psychotherapy has possibilities for extorting concessions from the authorities in civil prisons; and the average Naval offender would not be slow to realize also that attendance for regular treatment is "a good wicket," and infinitely better than drilling or doing manual tasks. It is preferable to carty over those who can wait for the treatment of psychiatrists in depot; and those cases that cannot wait are transferred, as already stated, to hospital.

## Results of 1,000 Investigations

The following is a brief outline of the findings in 1,000 cases admitted to this establishment for the first time. Of these 773 appeared to be well adjusted to life in general and a Service environment in particular; their offences were occasionally due to pressure of external circumstances, but the great majority were due to causes well within the control of the individual. As a rule these men had gone into delinquency with their eyes open, took their punishment as a matter of course, and went back to duty afterwards duly deterred for the future. On the other hand, 227 were found to be suffering from conditions as set out in the following table:

Organic cerebral causes	3	Mental defectives	6
Epilepsy	5	Mentally retarded	59
Schizophrenia	2	Anxiety-hysteria	31
Schizoid personality	15	Alcoholism	13
Depression	1	Homosexuality	3
Cycloid personality	2	Psychopathic personality	87

44 cases in the abnormal group gave a family history of epilepsy—a percentage for the group of 19.4; similarly, 46 (5.9%) of the normal group gave a similar history.

44 (19.4%) of the abnormal cases gave a family history of psychosis, severe neurosis, or certifiable mental deficiency; 54 (6.9%) of the normal cases gave similar histories.

83 (36.6%) of the abnormal cases admitted to at least one conviction before a civil court on a serious charge and 131 (16.9%) of the normal group made similar admissions.

It is significant that nearly all the thousand cases in this series came from large towns, especially Glasgow, London, Liverpool, and Tyneside; that the majority were of low general intelligence and education, and had had no hobby, study, sport, or intellectual interest before they joined the Service. They included a large proportion of unskilled workers, and were almost all from the non-technical branches of the Navy. It is thus evident that education and mechanical ability are strong factors in preventing delinquency in Service personnel.

## The Abnormal Groups

**Organic Cerebral Causes.**—No final decision was reached about the 3 cases in this category. Two had strong presumptive evidence of severe head injuries in civil life, and the third was an ex-sparring partner who had been knocked out a number of times in boxing booths. All three were liable to become excited and confused on small doses of alcohol, but otherwise there was little connexion between their disabilities and their offences.

**Epilepsy.**—These 5 cases, of idiopathic type, were sent to hospital for invaliding. All five had suppressed their history when before a National Service Board. It is unlikely that their epilepsy bore any relation to their offences, which were all for absence without leave. Only one was seen to have a fit while under sentence.

**Schizophrenia.**—Only 2 incipient cases of this disorder were seen. One expressed the hope, in an apologetic manner; that he would not be mistaken for a German, and complained that brothers had been rapping messages about him on the walls; this was on the day of admission, and no further abnormalities were discovered during the rest of his sentence. On discharge he was referred to his depot psychiatrist for observation, and subsequently developed further delusions and was removed to hospital. The other patient drew attention to himself by acting strangely in detention, hiding under his bed, laughing at punishment, and appearing faintly amused at everything; he was sent to hospital, and was subsequently invalided as a schizophrenic.

**Schizoid Personality.**—These offenders were all above the average in intelligence, said they had never made friends, preferred their own company, and could not get on in the Service because of their inability to live at close quarters with large numbers of other men. They all admitted to over-indulgence in fantasy, and rather enjoyed the solitude of their cells, where they were free from interruption.

**Depression.**—Only one case of pure depression was seen—of a reactive type. It appears that this man's offence was directly related to his mental state, and he was discharged to hospital. He left hospital much improved, and continued under the care of his depot psychiatrist.

**Cycloid Personality.**—The swing of mood was abnormally evident in both these cases and justified their position under this category. These people are apt either to cause trouble through disregard of all orders when elated or to wander off and remain absent when depressed. Neither case approached a certifiable degree of abnormality.

**Mental Deficiency.**—This has become very rare in the Services since the introduction of routine intelligence tests, but occasionally a case appears in detention, having joined before the tests came into operation. Curran and Guttman (1943) draw attention to the low standard of intelligence required for the performance of useful manual work in the Navy, and it is remarkable that men with mental ages of 8 or 9 frequently get along very well doing simple tasks and lead quite happy lives. On the other hand, others have been called up and have reacted to a strange and perhaps unfriendly environment by persistently deserting. Such cases are invalided as soon as they are spotted, but in a vast organization it is not surprising that an occasional defective goes unnoticed for some time. The following case is an example.

**Case 1.**—Stoker aged 25. Came from a good home, but was always afraid of animals and loud noises; he never got beyond Standard IV at school, and only owed this advancement to his age: while his fellows were at lessons he used to be told off to dig the garden. He then got a job in a small factory near his home, and performed a very simple task for nine years to the satisfaction of his employers. Called up early in the war, he went to sea in a destroyer, where he was terrified because of the noise of the engines; he was unable to learn the intricacies of his new duties. He then began to absent himself on every possible occasion, and served three short sentences in a civil prison. On admission here he stated that his sister was in an epileptic colony and that an aunt had committed suicide. He complained of pain in the back of the head of a "thumping" character, was afraid of being in a cell, and longed to get home; it appears that his wife looked after him like a child. He had never had a fit, but had had one short loss of memory. His M.A. was 7. He was immediately discharged to hospital for invaliding.

**Mental Retardation.**—This is often accompanied by other abnormalities, such as anxiety-hysteria and psychopathic personality, but all cases of backwardness encountered in this series are shown as such. Their mental ages varied from 8 to 11, though the higher figures predominated. These men came from families in which certifiable deficiency was not uncommon, never got beyond the lowest standards at school, and then drifted from job to job until they were able to find employment which did not require intelligent thought. In the Service they find instruction hard to follow, soon lose interest, waste their pay, and as often as not drink and smoke more than is good for them; many are habitual leave-breakers—more often from lack of imagination than wilful disobedience. Placed under strict supervision on discharge, they generally produce good work of a simple nature, and invaliding is only very rarely recommended.

**Anxiety-hysteria.**—In common with other recent writers I make no attempt to discriminate the two conditions; nearly all in this series showed both anxiety and hysterical symptoms. The Naval aspects of anxiety states and hysteria have been most thoroughly dealt with by others, and it is not proposed to discuss them further here. Acute cases of anxiety are very rare in detention, though chronic cases are not uncommon. A certain type of offender is ashamed of his fears, and fights shy of the medical officer both before and after his offence; unless he shows objective signs of anxiety, he is liable to escape detection until he appears in detention. Of hysterical manifestations, the fugue has the greatest possibilities from the point of view of delinquency, but such cases have generally received psychiatric investigation before sentence. I have dealt with hysterical reactions to punishment elsewhere. Typical mixed states are apt to be deceptive, but the following is an example:

**Case 2.**—A.B. aged 24. Complained on admission of "weakness, faintness, pains in the neck and chest, and a lump in the throat." He stated that a brother and a cousin were "nervous," and that he himself had had nocturnal enuresis until the age of 10. He never got beyond Standard V at school, but then worked fairly steadily for five years in a linen-mill and on a farm. After some months of unemployment he joined the Navy, about a year before the war. He got along well enough at first, but after the start of hostilities began to have strange feelings in his chest, and, when the medical officer could find nothing wrong, presumed that he had some unknown disease. He felt so unwell and inadequate that he twice absented himself from duty. On examination he showed objective evidence of anxiety, had a classical hysterical cough, but revealed no other sign of disease. He was put to bed on sedatives, and an attempt was made to investigate his condition, but he rapidly became more distressed in this environment and was discharged to hospital for invaliding.

**Chronic Alcoholism.**—The 13 men placed in this group had minor disorders which might have justified their inclusion in other categories, but their offences were directly due to their heavy drinking, and their behaviour when free from its influence was normal enough. Under punishment they proved amenable to discipline, and it was clear that if kept at sea, where there is no alcohol except the daily tot of rum, they would give excellent service. On shore leave, however, they were liable to degenerate into insubordinate, quarrelsome, and violent ruffians, more than one was prepared to steal to satisfy his craving. Two appeared to be typical though mild cases of dipsomania. A large proportion of the 1,000 patients claimed that their offences were brought about by alcohol, which they seemed to consider absolved them from all blame, but only the 13 quoted here satisfied one that drink was the primary factor. To add point to the necessity for placing these men beyond the immediate reach of temptation on discharge, one man seen in detention (not included in this series) had been under certificate in a mental hospital before entry, and reference to his records showed that this was directly due to chronic alcoholism.

**Homosexuality.**—Surprisingly few cases of this were seen, though the possibility was always remembered. All 3 had been investigated elsewhere, had most unsatisfactory personalities on other counts, and one at least had had a breakdown for a long period before the war. They were all discharged from the Service at the conclusion of their sentences, so that medical disposal was not required.

**Psychopathy.**—This term is unpopular with many authorities, but, restricted to the use defined below, I think that it is justifiable. It is necessary to have some generic term for that large mass of offenders who are markedly abnormal and yet cannot be included under other categories; the term "mentally inefficient" does not appear adequate, as their mentalities are efficient enough when necessary, and some verge on the brilliant within narrow limits. They all show one marked feature in common—emotional instability; it pervades their whole lives. They quarrel with their parents, wives, school-mates, fellow workers, and employers; they shift about from job to job, always hoping for something more congenial, less arduous, and more remunerative. "I can never settle to anything for long" and "I could not get interested in my work" are common remarks from these people. They often throw themselves out of work, remain unemployed for long periods, or wander about the country in an aimless fashion. They certainly do not lack

courage. In the Navy, they resent all discipline, shirk all responsibility, and squander their pay in a reckless fashion. A typical reaction was that of a rating who deserted to pay out his wife for some petty quarrel: "I knew she would lose her money while I was adrift," he said. They are drawn from all classes of society, and some of them have ruined excellent opportunities in early life by refusing to stick to anything. Many have been in approved schools, Borstal, or prison—some in all three; a few of them are habitual criminals, having taken to crime as a livelihood; but the majority have not enough stability even for that. It is not surprising that these men, more especially those of the aggressive type, appear in detention again and again, for violence, insubordination, and absence without leave. Under the transient stress of active service they tend to show up surprisingly well. It is not contended that crime is due to some strange disease, of which the psychopathic personality is one aspect: that conception has been abandoned by modern criminologists. On the other hand, it is significant that a very large proportion of civil and Service delinquency appears in those who have pronounced emotional instability. Such cases do not require hospital treatment or invaliding, and I have little faith in psychotherapy in these conditions. No satisfactory solution has been evolved in this country to deal with grossly psychopathic offenders, though special institutions for treating them were included among the measures in the Criminal Justice Bill of 1938. So far as Service delinquents are concerned, an attitude of understanding firmness, combined with careful placing on discharge from detention, is all that can be attempted at the present moment. The American system of heating the punitive furnace seven times for the psychopath does not appear attractive; but, in any case, the American Forces have the advantage over us of accepting no ex-criminals for enlistment. Many and interesting cases might be quoted from our experiences with psychopaths, but the following is an example of the problem which confronts us:

**Case 3.**—Stoker aged 45. Came from a poor home, but had no family history of crime or mental disorder. He came under the notice of the police at an early age and spent six years in an approved school. Later, he alternated for many years between the Army (which he entered three times, being three times discharged as incorrigible), the building trade (where he rose to be a foreman), and prison. He claimed to have spent ten years all told in prison, sometimes for burglary and once for robbery with violence. His face still showed the marks of razor-wounds received in racecourse gang-fights. At the outbreak of war he volunteered for the Navy without considering what that might entail; he soon found the life too arduous, and, without ever setting foot on a ship, disappeared. Five times he repeated this conduct, giving trivial and absurd excuses on each occasion. On examination he was the typical "old cheerful, plausible, and apparently friendly. His attitude towards sentence varied from a fawning subservience to truculence and open hostility. His general educational level was fair and his intelligence average. His disposal might have caused a serious problem, but he was found to have a high blood pressure, a trace of albumin in his urine, and his retinal vessels showed arteriosclerotic changes. At the conclusion of his sentence he was invalided on account of hyperpiesis.

#### Comparison with Civil Delinquents

It is hard to find an exact parallel between Service and civil delinquents, as so much Service "crime" is of a purely technical nature. A man may have no wish to be considered abnormal, and yet fail to see the necessity for returning when his leave is up or for staying awake on watch. Civil crimes are usually those of commission, Service offences of omission.

	Civil Prisoners	Service Offenders
Family history of epilepsy .. ..	4.8%	10.0%
Family history of insanity, neurosis, or mental deficiency .. ..	10.9%	9.6%
Psychosis .. ..	7.5%	0.2%
Defective .. ..	3.3%	0.6%
Backward .. ..	14.1%	5.9%
Epileptics .. ..	5.5%	0.5%

The only comparable set of figures with which I am acquainted is that of East (1942) in his investigation of 4,000 young delinquents at Wormwood Scrubs; his cases varied in age between 16 and 20. The present series deals with a rather

higher age group, varying between the extremes of 17 and 46 though the average age was 23½.

With regard to the above comparison, it must be remembered that civil prisons must take all comers, whereas the armed Forces impose a considerable degree of selection on their intake. It will be seen, however, that the same kind of psychiatric investigation is required, whether in a civil or Service environment, when dealing with gross or repeated forms of delinquency.

#### Summary

The possibilities of psychiatric investigation and treatment of delinquents in Service detention establishments are discussed. It is suggested that the role of the ordinary medical officer is that of diagnosis, leaving treatment to be carried out elsewhere after discharge from detention.

It is shown that of a series of 1,000 Naval offenders who were briefly investigated 22.7% proved to be mentally abnormal.

The various types of abnormality seen in detention are briefly described, with a suggestion as to the bearing that those abnormalities have in promoting offences. A comparison between civil and Service delinquency is added.

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## PROTEOLYSED BEEF IN THE TREATMENT OF COELIAC DISEASE

BY

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The importance of a diet rich in protein is well recognized in the treatment of coeliac disease and related conditions characterized by chronic jejuno-ileal insufficiency. The period of maximum incidence of coeliac disease is between the first and third years. The protein requirements per unit of body weight at this time of life are approximately twice that of an adult, while the ability to digest protein foods in infancy has an upper limit proportionately lower than in the adult. In coeliac disease gross impairment of the powers of absorption of the products of digestion, relating particularly to those of fat and protein, is superadded to the requirements and limitations already mentioned. These considerations, together with the apparent failure of any previous form of treatment to effect improvement in one of the cases reported, suggested to one of us (A. C. A.) the possibility of ensuring a high protein intake by the oral administration of proteolysed beef. The suggestion was therefore adopted, with encouraging results.

Our purpose is to present this method of treating coeliac disease. It should be made clear from the beginning that the line of therapy is based on the desideratum of a high protein diet in coeliac disease, and is on no account to be regarded as a substitute for or a replacement of the other accepted general principles of the treatment at present adopted for this condition; nor is it claimed that the striking progress observed in one of the two cases reported was brought about by this particular form of treatment. It is recognized that the natural history of coeliac disease could itself account for the improvement that took place, and that the part played by skillful nursing, a low-fat diet, and a high vitamin intake was no doubt important in determining this improvement. The method is therefore put forward on the grounds of having a rational and scientific basis and possessing distinct advantages over other methods of ensuring a high protein intake in the treatment of this disease. Finally, it is hoped these advantages, together with the freedom from technical difficulties in the preparation of proteolysed beef, will be considered of sufficient merit to promote further and more extensive clinical trials.

### Method of Preparation of Proteolysed Beef

The method used for the preparation of the material is a modification of that described for the proteolysis of liver by Davis *et al.* (1943). Six pounds of minced lean beef are placed in a steam-pan together with 15 g. of papain and 30 oz. of water. The mixture is heated to 60°C. and maintained at this temperature for three hours. The material is then raised to 100°C. and vigorously hoiled for 10 minutes. The hot digested mixture is strained through cloth, cooled in refrigerator, strained to remove residual fat, and the volume adjusted to 6 pints with water. The resulting clear solution is stored in a refrigerator, and one pint for each patient issued to the ward daily.

### Advantages of Proteolysed Beef

(1) Proteolysed beef yields in concentrated solution first-class protein in the form of easily digested and assimilable peptones, oligopeptides, and amino-acids. (2) The digest is free from indigestible and particulate matter such as fibrous tissue. (3) Being reduced to a small volume (20 oz.), the equivalent of 1 lb. of beef a day can be taken by a young child over an indefinite period, whereas the use of a similar quantity of redigested beef would not be feasible. (4) Proteolysed beef is not unpleasant to the taste, and resembles broth; but what is more important is that it is taken readily and sometimes eagerly by young children. (5) The absence of serious technical difficulties renders the routine preparation of the digest a practical proposition in any hospital possessing a well-equipped dispensary.

### Method of Administration of Proteolysed Beef

The digest keeps satisfactorily for 5 days if stored in a refrigerator. This allows of not too frequent preparation as well as of keeping a ready supply in the ward. Being in liquid form and of the consistency of broth, proteolysed beef is most conveniently given to young children as a 5-oz. drink, or be taken with the main meals and in the mid-morning or afternoon tea. It may be given hot or cold; on the whole the former is preferred by the patients. Although to give four cups of soup of doubtful brew sounds a wearisome gastronomic outline—as it would be to most adults—this does not appear to be the case with young children. Both the patients whose cases are reported took the digest readily from the beginning, and rarely refused feeds, even after nearly 12 months' continuous administration. During exacerbations, when abdominal distension and vomiting were pronounced, the feeds were sometimes refused. It has usually been found, however, that when for any reason the digest was refused other forms of nourishment were likewise rejected. During all except the most severe intercurrent illnesses the feeds were continued. A number of other children in comparable age groups and suffering from different complaints were given the digest for short periods without difficulty.

Feeding with proteolysed beef contrasted most favourably with a 9-week period during which bananas were given to the older patient. The "banana course" was concluded a week before the proteolysed-beef therapy was begun, and was, by comparison, a dismal failure. The patient showed a dislike for bananas from the beginning, however cunningly they were prepared or camouflaged; she had to be watched while she ate them, and even with this precaution managed on occasion to secrete them under the pillow or among the bedclothes. In short, no detectable benefit accrued from the feeding with bananas in this case, while much inconvenience was caused to both patient and nursing staff. In regard to difficulties or disadvantages in the administration of proteolysed beef there is nothing to be said, for none were encountered, even after nearly 12 months.

### Report of Two Cases

**Case 1.**—A girl aged 3½ years was admitted to Southend General Hospital on June 10, 1942. She had been healthy and robust until her second year, when the passage of frequent and offensive frothy motions associated with abdominal distension and progressive loss of weight set in. Deterioration in her condition had been steadily progressive, so that on admission she weighed only 13 lb. 13 oz., whereas at the age of 18 months her weight was 24 lb.

Examination revealed a typical picture of advanced coeliac disease; marasmus extreme; eyes sunken and dehydration marked. The

abdomen was only moderately distended, but, together with a relatively normal face, contrasted sharply with a wasted, shrunken, and under-developed body. The stools, not more than three in 24 hours, were fluid, yellow, and offensive. Dehydration was overcome by rectal glucose-saline, while the standard treatment\* was gradually introduced towards the end of the second week. During this period her weight increased by 3 lb., chiefly owing to fluid retention; for a nutritional type of oedema developed in the lower extremities. **Blood count:** Hb 82%; C.I. 0.83; W.B.C. 16,000, with a normal differential count. Progress remained slow and uncertain, a gain in weight one week being offset by a loss the next. Large offensive stools averaged three in 24 hours, while bouts of vomiting, with gross abdominal distension and much flatulence, occurred every few days.

**Nov. 11, 1942:** Ascites developed for no apparent reason. Weight 23 lb. 8 oz. **Nov. 19:** Developed lobar pneumonia, successfully treated by chemotherapy. Ascites subsided spontaneously during this illness. **Nov. 23:** Weight 17 lb. 4 oz. **Dec. 3:** Otitis media, with purulent discharge from left ear. Hb 67%; C.I. 0.8; W.B.C. 7,850, with normal differential count. **Jan. 1, 1943:** Critically ill for two weeks with dysentery. Weight 23 lb. 8 oz. **B. sonnei** cultured repeatedly from stools until March 1. Weight 20 lb. **March 19:** Developed tetany, with carpo-pedal spasm and much pain; relieved by calcium gluconate intravenously, but persisted in latent form for one week. Blood calcium 6.3 mg. per 100 c.c.m. Radiographs showed gross generalized rarefaction of bone. Weight 22 lb. 8 oz. **April 1:** Bananas added to diet (three daily) for 9 weeks; taken only with difficulty and perspiration. Bowel actions two per 24 hours, but vomiting became more frequent during this period. **May 5:** Neohepatex 4 c.c.m. intramuscularly weekly for 10 doses. **June 22:** Bananas discontinued. Weight 21 lb. 12 oz.

**June 29 (Proteolysed-beef therapy begun):** Weight 21 lb. **July 25:** Weight 20 lb. 4 oz. **Sept. 26:** Weight 21 lb. 3 oz. **Oct. 11:** Vitamin K 5 mg., D.O.C.A. 5 mg., riboflavin 1 mg., and nicotinic acid 50 mg., given intramuscularly daily for one month. Weight 20 lb. 5 oz. **Nov. 11:** Parenteral vitamins discontinued. Weight 21 lb. **Jan. 30, 1944:** Weight 21 lb. **Feb. 8:** Massage and bed exercises begun. Weight 23 lb. **March 1:** Able to sit in chair. **March 11:** Fell from chair, sustaining a subperiosteal fracture of right humerus. **March 14:** Developed alveolar abscess, treated by tooth extraction. Bowel actions 1 to 2 per 24 hours. Motions semi-solid and less offensive; vomited once in four weeks. Weight 27 lb. **April 17:** Able to walk with assistance. Weight 31 lb. 4 oz. **May 11:** Fell, sustaining subperiosteal fracture of right tibia. Bowel actions 1 to 2 per 24 hours. No vomiting for 7 weeks. **June 1:** The child, fresh-complexioned, looks healthy, and, apart from a distended abdomen, is normally proportioned, although considerably undersized for her years (5 years 5 months). She is precocious and cheerful, and in spite of deficient education is remarkably intelligent. Weight 35 lb. **Examination of faeces:** Total fat content, 29.7% of dried faeces, 6.6% being in neutral form and 23.1% split fat. **Blood count:** Hb 70%; R.B.C. 4,140,000; C.I. 0.8; W.B.C. 6,850, with normal differential count.

**Case 2.**—This patient, a boy aged 17 months, was admitted to Southend General Hospital on July 6, 1943. He had been a healthy infant until 6 weeks previously, when anorexia, with loss of weight, frequent bowel actions, and recurrent abdominal distension, made an appearance. Vomiting was not a feature.

On examination he was considerably wasted, especially about the buttocks and lower limbs; face pale and bloated; pot-bellied, with umbilicus everted. Weight 16 lb. 8 oz. **Blood count:** Hb 76%; C.I. 0.8; W.B.C. 7,500, with normal differential count. Blood calcium 9.8 mg. per 100 c.c.m. Examination of dried faeces showed total fat content of 46.7%, 3.2% being in neutral form and 43.5% split fat. The standard treatment\* was at once started, and 1 pint of beef digest included in the diet daily.

**July 20:** Bowel actions 3 per 24 hours; motions yellow, fluid, and offensive. Bouts of abdominal distension and vomiting occasional. **Aug. 8:** Bowel actions 2 per 24 hours. Weight 17 lb. 8 oz. **Sept. 20:** Weight 16 lb. 8 oz. **Oct. 20:** D.O.C.A. 5 mg., riboflavin 1 mg., and nicotinic acid 50 mg. given daily for one month intramuscularly. **Nov. 11:** Developed acute mastoiditis; treated by operation. Parenteral vitamins discontinued. **Dec. 20:** Weight 17 lb. 4 oz. **Jan. 1, 1944:** Weight 18 lb. **Feb. 8:** Massage and exercises begun; able to stand in cot. Weight 18 lb. 4 oz. **June 1:** Child shows marked improvement. He is lively, happy, and has a good colour. Although thin and undersized, he is by no means wasted. The abdomen is still prominent, but bowel actions have averaged 1 a day for over a month, while the motions are formed. Vomiting has ceased completely. Weight 22 lb. 4 oz. **Examination of dried faeces:** Total fat 31.3%, 5.8% being in neutral form and 25.5% split fat. **Blood count:** Hb 71%; R.B.C. 3,730,000; C.I. 0.9; W.B.C. 12,550, with normal differential count.

\* This consisted of a graded fat-free diet with the addition of the following, which were given daily: vitamin D, 6,000 units; nicotinic acid amide, 100 mg.; ascorbic acid, 100 mg.; vitamin B, 6 mg.; iron sulphate, gr. 6; calcium lactate, gr. 30.

### Summary

A method for ensuring a high protein nitrogen intake in the treatment of coeliac disease and allied conditions by the oral administration of proteolysed beef is described.

Details of the method of preparation of the digest, which can be satisfactorily carried out in any well-equipped hospital dispensary, are given.

Two cases of coeliac disease treated daily with proteolysed beef for 11 months and 10 months, respectively, are reported.

It is hoped that the new method, which is based on the principle of the need for a high protein diet in coeliac disease, will stimulate further clinical trials.

We wish to thank Dr. R. Sleigh Johnson, under whose care the patients were admitted to hospital, for permission to publish the case notes, and for his helpful criticism of this paper.

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## A FRACTURE-DISLOCATION OF THE ANKLE OCCURRING IN FLYING ACCIDENTS

BY

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Fracture-dislocations of the talus, which before this war were comparatively rare injuries, have become more common as a result of accidents to Service aircraft. It is the intention to describe a typical fracture-dislocation of the ankle, occurring in such accidents, in which the talus bears the brunt of the injury, the manner in which it is produced, and the different kinds of treatment employed.

**Description.**—The fracture line is irregular and extends obliquely through the neck of the talus; the fragments are widely separated; the head of the talus remains *in situ*, but the body is expelled from the ankle-joint and is rotated around its longitudinal axis through 90° (Fig. 1). The injury is not com-

of the talus, is driven through it; the ankle-joint is deranged, and the body of the talus is dislocated posteriorly and rotated about its longitudinal axis.

**Diagnosis.**—This can be made with certainty only by radiographic examination; but with a knowledge of the history of the injury the provisional diagnosis of a fracture-dislocation of the talus is reasonable.

### Treatment

Treatment is to be looked upon as urgent. The talus derives its nutrient vessels by way of the anterior ligament of the ankle-joint for the head and neck and by way of the posterior and lateral ligaments for the body. In this fracture-dislocation the blood supply to the body is cut off and avascular necrosis follows. This has a most important bearing upon treatment.

**Reduction.**—Closed reduction of the dislocated body, if at all feasible, is extremely difficult. Reduction, therefore, if attempted, should advisedly be open. The foot is then put up in plaster-of-Paris in extreme equinus for at least four weeks, when the sutures are removed, after which the plaster is continued for a further 16 weeks or more with the foot at a little less than a right angle. Care must be taken to ensure that separation of the fragments does not take place while this is being done. Although regeneration of the body after avascular necrosis might follow accurate reduction and prolonged immobilization, degeneration of its articular cartilage in the ankle-joint and in the subtaloid joint will occur, to produce a painful and crippling arthritis.

**Partial Talcotomy.**—This is removal of the displaced body only (Fig. 2). To remove only the body of the talus is not advised. The head remains *in situ*; but the foot as a whole moves proximally, and the head of the talus comes to lie anteriorly to the lower end of the tibia. Backward displacement of the foot is prevented; there is no heel to speak of, and any dorsiflexion that the false joint permits is extremely limited. There is unnecessary painful friction between the anterior margin of the lower articular surface of the tibia and the fractured surface of the head of the talus. Nevertheless, the patient is able to walk several miles, and for a while even to dance after a fashion, with only a modicum of pain and disability. Arthritic



FIG. 1.—Showing the typical fracture-dislocation.

Whereas in posterior dislocations of the talus fracture of a malleolus is held to be an inevitable accompaniment, in this fracture-dislocation the same contention is not valid.

**Manner of Production.**—It is necessary here to mention a principle of airmanship: when a pilot in a single-engine aircraft is forced to make a crash-landing, before the moment of impact with the ground he puts on either the right or the left rudder. The purpose of this act is to minimize the danger from the engine, which will be dislodged backwards relatively when it strikes the ground. The turn so induced by the rudder increases the chances of the dislodged engine passing to one or other side of the pilot; but it also happens that the engine comes against the rudder-bar, which is pushed forward. The blow is severe enough to dorsiflex the foot beyond its limit and also to force it proximally so violently that the anterior margin of the lower articular surface of the tibia, which impinges against the neck



FIG. 2.—Showing the talus removed.

pains develop and worsen with time. Shortening of the limb by about three-quarters of an inch, and stiffness, produce a marked limp. When the operation wound has healed, a surgical boot with a leg-iron must be worn to allow the deep tissues to consolidate. After 16 weeks the leg-iron is dispensed with, and surgical footwear which allows for the dropped malleoli and almost absent heel is fitted.

**Talcotomy.**—If talcotomy is the treatment of choice, a comparatively satisfactory result may be obtained if it is performed with the care and attention to detail which are exercised by Laming Evans. The depreciation of this operation is in large measure due to inadequate surgical technique, which can render the results of a badly performed talcotomy irreparable. Again, surgical footwear is necessary to allow for the prominent heel; but much of the limp can be overcome by making the sole and heel about 1½ in. thick, and in conformity with the design of

Mr. C. Denley Clark's "rocker," as he described it in the *British Medical Journal* (1943, 2, 364).

**Fusion of Tibia and Os Calcaneus.**—Wing Cmdr. W. D. Coltart, in a short paper which he read at the 1943 annual meeting of the British Orthopaedic Association, mentioned a second-stage operation—fusion of the tibia and the os calcaneus. This is still on trial.

**Arthrodesis.**—Where expert operative technique is available this should be the treatment of choice. It is needless to prolong treatment by employing reduction first. Arthrodesis should be the only operation. It is the surest way to stabilize the foot and to prevent an ever-worsening disability. It also obviates noticeable shortening of the limb, and to a great degree the limp, which can become almost imperceptible if the patient shortens his walking pace.

## A SURVEY OF THE HAEMOGLOBIN LEVELS OF THE POOR CLASSES IN ABERDEEN

BY

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It was shown by Davidson, Fullerton, and Campbell (1935) that iron-deficiency anaemia was common among the poor classes in Aberdeen and that the anaemia was to a large extent caused by the ingestion of diets low in iron. Several somewhat similar surveys have been made recently with the object of determining what effect war conditions have had on the haemoglobin levels of different sections of the population (Davidson *et al.*, 1942, 1943; Mackay *et al.*, 1942). It was felt that it would be particularly useful to carry out such a survey in Aberdeen, since the results obtained in this city could be compared more fairly with the 1935 survey than figures obtained in other areas. Accordingly, the work here briefly reported was started early in 1943 and was completed early in 1944. Throughout the investigation Haldane haemoglobinometers which had been tested by the National Physical Laboratory were used, and the appropriate correction factors have been applied to all the results. The Haldane haemoglobinometers used in the 1935 survey were carefully standardized with the oxygen capacity method.

It soon became apparent that the investigation could not have exactly the same scope as that reported in 1935. Apparently the results of the pre-war survey have been admirably appreciated by the medical officers in charge of mother and child welfare and other clinics, so that it is now impossible at many centres to find a representative cross-section of the population which has not at some time had iron therapy. For this reason we have excluded infants from the present survey. A similar difficulty was encountered at antenatal clinics, where iron is freely dispensed to all women who are judged clinically to be anaemic. Therefore haemoglobin estimations have been restricted to women attending such clinics for the first time. Within the limitations imposed by these circumstances the results of the 1943 survey can be fairly compared with those of 1935, as the subjects belonged to the same social groups, with one exception which will be dealt with separately.

### Results

To facilitate comparison most of the results are presented graphically in the accompanying Chart, and only a short description of the results in each age group is necessary.

**Children of Nursery-school and School Age (2 to 11 years).**—The average haemoglobin levels both in 1935 and in 1943 show in general a gradual rise with increasing age. The results in 1943 are distinctly higher than those of 1935 until the age of 7 years onwards, when the curves converge. Table I shows the percentage of subjects in each decimal range of haemoglobin level. The incidence of anaemia in pre-school children was much less in 1943 than in 1935, but it is rather surprising to

find, among the school-children of the 1943 survey, several instances of mild anaemia, in contrast with its absence in 1935. It may be pointed out that the figures for 1935 are more significant than the small numbers of subjects indicate, since haemoglobin estimations were made at that time in an additional

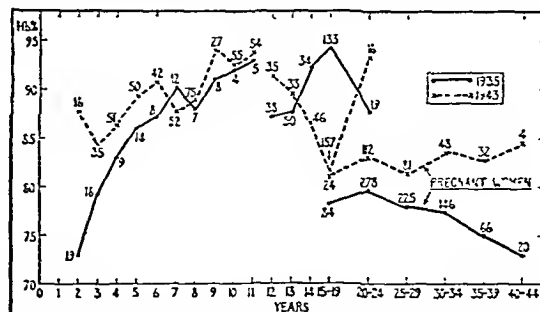


Chart showing average Hb levels at different ages. The figures represent the numbers of subjects examined.

group of 100 school-children. In only 2 of them was the haemoglobin level less than 80%, and in both it was greater than 70%. This group is not included in the graph or table, as the ages were not noted.

TABLE I.—Incidence of Anaemia in Children

Age (Years)	No.	Haemoglobin Range (%)										Av. Hb
		40-49	50-59	60-69	70-79	80-89	90-99	100-109	110-119	120-129	130-139	
2	16	—	—	—	—	—	—	—	—	—	—	73.0
3	16	—	—	—	—	—	—	—	—	—	—	73.0
4	16	—	—	—	—	—	—	—	—	—	—	73.0
5	16	—	—	—	—	—	—	—	—	—	—	73.0
6	16	—	—	—	—	—	—	—	—	—	—	73.0
7	16	—	—	—	—	—	—	—	—	—	—	73.0
8	16	—	—	—	—	—	—	—	—	—	—	73.0
9	16	—	—	—	—	—	—	—	—	—	—	73.0
10	16	—	—	—	—	—	—	—	—	—	—	73.0
11	16	—	—	—	—	—	—	—	—	—	—	73.0

**Adolescent Girls (engaged in Industrial Work and attending a Social Club).**—The Chart shows a curious discrepancy between the results of the two surveys. In 1935 the average haemoglobin level for the group aged 15 to 19 years was 94.4%, while in 1943 it was 81.3%. The numbers of subjects in these two groups are 133 and 157 respectively, so that the difference is a significant one. The incidence of mild anaemia (haemoglobin less than 80%) was considerably higher in 1943 than in 1935.

**Adolescent and Adult Males (engaged in Industrial Work and attending a Social Club).**—132 subjects in this group were examined in the 1943 survey; to avoid confusion they are omitted from the Chart. The results are similar to those found in 1935. The average haemoglobin level of the 15-19 years group was 94.1%, while in 1935 it was 98.8%. Significant degrees of anaemia were not found.

**Pregnant Women (attending Antenatal Clinics).**—The Chart shows that the average haemoglobin level for each age group was distinctly higher in 1943 than in 1935. Moreover, the decrease in the average levels with increase in age which was found in 1935 was absent in the present survey. The percentages of subjects in each decimal range of haemoglobin level are

TABLE II.—Incidence of Anaemia in Pregnant Women

	No.	Haemoglobin Range (%)										Average Hb
		50-59	60-69	70-79	80-89	90-99	100-109	110-119	120-129	130-139	140-149	
1935	819	0.5	1.0	4.0	12.0	32.0	38.0	12.0	0.5	—	—	78.1
1943	301	0.0	0.0	0.3	3.6	31.5	50.5	13.3	0.6	—	—	82.6

shown in Table II. In 1935 17.5% of the women examined had moderate anaemia (haemoglobin less than 70%) as compared with only 3.9% in 1943. This discrepancy cannot be attributed to any difference in the duration of pregnancy



between the two groups, since the percentages of subjects examined in each month of pregnancy were approximately the same in 1943 as in 1935. The degree of parity of the subjects in the 1943 survey was slightly less than in 1935, but it has been clearly shown by one of us that this cannot be correlated with the incidence of anaemia in women of the same age groups (Fullerton, 1936).

**Nurses.**—205 members of the nursing staff of Aberdeen Royal Infirmary were examined. Since a similar group was not included in the 1935 survey the results are presented separately in Table III.

TABLE III.—Haemoglobin Levels of Nurses

Age	No.	Average Hb
18-19 .. .. .	48	86.0
20-24 .. .. .	122	88.8
25-29 .. .. .	15	88.8
30+ .. .. .	20	91.7

No haemoglobin level less than 70% was found, and only 2 were less than 80%.

### Discussion

It is not proposed to discuss in detail the possible implications of the results. The striking finding is the improvement which has occurred in the haemoglobin levels of young children and of pregnant women, and it may be deduced that a similar improvement would be found in non-pregnant women. No attempt has been made in the present survey to estimate the iron content of the diets taken by the different groups, but it seems possible that the greater iron content of the national bread may explain, at least in part, the higher haemoglobin levels found in 1943. We are unable to offer satisfactory explanation of the increased incidence of anaemia in girls between the ages of 15 and 19. It is possible that a detailed knowledge of the conditions of their work and its effect on appetite and menstrual loss might throw some light on the problem.

### Summary

Haemoglobin estimations in 1,177 subjects belonging to the poor classes in Aberdeen have been compared with the results of a similar survey carried out in 1935. The incidence of anaemia in young children and in pregnant women was less in 1943 than in 1935, but it was greater in girls between the ages of 15 and 19. No significant difference was found in adolescent and adult males.

We are indebted to the Public Health Department of the City of Aberdeen and to St. Katharine's (Y.W.C.A.) Club for facilities that have made this survey possible, and to the Public Health Committee of the Aberdeen Town Council for financial assistance. We wish to thank Prof. R. S. Aitken for his interest and help.

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## Medical Memoranda

### "Silent" Mastoiditis or Mastoiditis due to *Str. mucosus capsulatus* of Schottmüller

The following case stresses the importance of bearing in mind the incidence of this type of mastoiditis (called also atypical, asymptomatic, or primary, etc.), and of operating on the patient before he has developed intracranial complications, with a consequent poor prognosis.

#### CASE HISTORY

On Dec. 5, 1943, a woman aged 38, rather stout, but well nourished and in good health, felt that her left ear was "blocked." At the same time she had mild intermittent pain in the left ear, especially at night. There were no other constitutional symptoms. After a week she went to see her doctor, mainly for the deafness and sense of "blockage" of the ear, which he syringed. After three hours she became sick and giddy, and this lasted for half an hour. The pain got worse and spread towards the back of the head. She had had no cold or sore throat preceding this, and no past history of ear trouble. There were still no constitutional symptoms.

On Jan. 28, 1944, she was seen at the out-patient department, where the only abnormal clinical finding was that the left tympanic membrane was pink. Radiographs of mastoids showed them to be

of a very cellular type with definite blurring of the left cells, but no cavity or sequestrum could be observed. On Jan. 31 she was seen again, and was ordered inhalations and guttae acid. boric. & spirit. On Feb. 7 there was hardly any pain, and she thought she was relieved. On examination there was sagging of the external meatal wall and the drumhead could not be seen. The patient was admitted for observation against her wish, as she thought she was well enough to go home. She was under observation for a week, during which time there was no rise of temperature, pain, discharge, or constitutional disturbance.

On the night of Feb. 13 she developed severe pain again, and had some oedema and tenderness over the mastoid antrum. On the 14th the swelling was more pronounced. The temperature was never above 99° F. Blood count: total W.B.C., 8,400—polys 70%, lymphs 28%, hyalines 2%. The mastoid was opened on Feb. 15, and was found to be of a cellular type, full of pus and granulation tissue, with necrotic bone, and at the same time there was an extradural abscess. Culture of the pus revealed the organism to be pneumococcus Type III. She made an uneventful recovery and was discharged on March 23. Since then she has been in perfect health and has had no recurrent ear trouble.

I wish to express my thanks to Mr. T. P. Gill, honorary surgeon to the hospital, for encouragement to report this case.

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### Accidental Haemorrhage in Two Successive Pregnancies within 16 Months

The case of a patient suffering from accidental haemorrhage in two successive pregnancies seems rare enough to merit publication.

#### CASE HISTORY

Mrs. X, aged 33, was admitted as an emergency case on Jan. 17, 1943. She had had two previous pregnancies and two miscarriages. The first pregnancy, in 1928, was normal, but labour was premature at 8 months, the child weighing 3 lb. This child is alive and well. The second pregnancy, in 1931, went to full term, but the child died of fits at 3 months. Then followed two early miscarriages. The patient did not become pregnant again for 12 years, and was then admitted here.

She was collapsed and pulseless on admission, with jaundiced pallor, blanched mucous membranes, and air hunger. There was gross oedema of hands, face, and legs; the urine was solid with albumin; and the blood pressure was 92/50. The uterus was the size of a 26-weeks pregnancy but should have been 34 weeks by dates (date of expected delivery, early March). It was typically tender and woody, and with no F.H. and no foetal parts. There was a very slight vaginal loss. A blood transfusion was started, the membranes ruptured, and a pad and binder applied. An injection of morphine gr. 1/4 had been given on admission. Spontaneous breech delivery occurred 6 hours later. The placenta was completely infarcted and ploughed up by a large retroplacental clot. There was no post-partum haemorrhage. The child was stillborn and weighed 2 lb. 14 oz. The puerperium was very satisfactory; the anaemia improved with large doses of iron, the blood pressure remained steady at 128/88, and the urine was albumin-free. Birth control advice was given.

In Jan., 1944, the patient, having failed to carry out the birth control advice given, was 3½ months pregnant. Her general condition was good; blood pressure and urine normal. She was advised to attend the clinic regularly. The date of expected delivery was June 4. She was admitted to hospital on May 9 with anaemia and mild toxæmia. The blood pressure was 140/90; there was slight oedema of feet, but no albuminuria. The treatment was absolute rest and large doses of iron.

On May 12 she suddenly collapsed in the antenatal ward with severe abdominal pain. She was cold, clammy, and restless, and the pulse was very poor. There was no vaginal loss. The blood pressure fell to 86/64. The uterus was tender and obviously enlarging with concealed haemorrhage. A continuous drip transfusion was started, morphine was given, and a vaginal examination made. The membranes were not bulging and there was absolutely no vaginal loss. However, it was deemed wiser to try to stimulate the uterus, so the membranes were ruptured and a pad and binder applied. The case seemed hopeless during the next few hours, as there were no pains and the uterus was enlarging rapidly; but, fortunately, contractions did start, and 9 hours after the membranes were ruptured a spontaneous breech delivery occurred. The placenta followed immediately, grossly infarcted with a large retroplacental clot, roughly 6 by 6 by 4 in., and about half a pint of old fluid blood. There was also a clot the size of a hen's egg between the foetal surface of the placenta and the cotyledons. The child was stillborn and weighed 3 lb.

Progress was slow but steady in the puerperium. The anaemia rapidly improved, the blood pressure remained at 118/76, the oedema subsided, and the urine remained clear. The patient was discharged, feeling better than she had done for some time. She was advised very strongly to avoid further pregnancies.

Two accidental haemorrhages within 16 months must be a rare occurrence. The toxæmia was never pre-eclamptic in severity, the onset was sudden in each pregnancy, and residual symptoms, except for slight secondary anaemia, were non-existent.

NORA L. KEEVIL, M.D., M.R.C.O.G.

## Reviews

### VITAL STATISTICS IN THE TROPICS

*Vital Statistics and Public Health Work in the Tropics* By P. Granville Eds. Foreword by Prof. Major Greenwood D.S. FRCP FR S (Pp 158 12s 6d) London Baillière Tindall and Cox 1944

Only by losing some of our tropical colonies for the time being have we been really awakened to their value to ourselves and to the world at large, and to our own shortcomings in past dealings with them. In his foreword to this book Prof. Greenwood reminds us that "there are colonial territories administered by us the vital bookkeeping of which is far cruder than that of the home country three hundred years ago." Major Edge is convinced from his own experiences that the urgently needed improvements in this sphere, essential as he shows them to be for efficient administration, will not be achieved by slavish application of European procedures and practices to tropical areas where social organization and conditions of life are so vastly different. He approaches the special problems which these colonies present to vital statisticians, public health workers, and administrators, whose hearts are in the work, in a realistic and sympathetic way, and in successive chapters deals with census enumerations, birth and death registration, morbidity records, and nomenclatures of disease. In devising systems for building up a framework of even the elementary facts he stresses the need to take careful account of the peculiarities of each people as regards their attitudes, superstitions, taboos, and social customs, and provides many illustrations of the misleading conclusions which may otherwise result. An unfortunate error occurs on page 96, where it is stated that "the English registration system makes no provision for the registration of the age of mothers at the time of the birth of successive children nor for recording the order of such births." The Population (Statistics) Act of 1938 remedied this defect, and such information has now been obtained at birth registration for more than six years. The book, which is well furnished with references to English publications, is likely to give both help and encouragement to those engaged in public health activities in tropical countries.

### A SUMMARY OF MODERN PSYCHIATRY

*Fundamentals of Psychiatry* By Edward A. Strecker M.D. Sc.D. F.A.C.P. (Pp 192 12s 6d) London Medical Publications Ltd

As the author rightly says, the general physician must nowadays know about psychology, and if that is true of America it is equally true here. This little volume gives a concise, clear, and (in spite of what we call Americanisms) readable summary of modern psychiatry which the consultant and specialist in all branches may read with great advantage to himself and his patients. It is very suitable also for the general practitioner, though his need is less urgent. The author has a balanced view about his subject and on the whole steers clear of jargon, but lapses once when he talks about oral and anal types. The only criticism which might be advanced is that there is not enough about the psychoneuroses—only 12 pages compared with 21 on schizophrenia alone. The latter is a very interesting and important disease, but after all it is nothing like so common as the psychoneuroses, which throng the general wards and outpatient departments of all hospitals. In his approach to the psychoneuroses Dr. Strecker is obviously the institution psychiatrist and lays too much stress on the grosser physical manifestations of conversion hysteria and the acute angor attacks. He still talks about neurasthenia while admitting that the fatigue is due to emotional conflict, and he perhaps stresses the reactive type of anxiety too much as compared with the true psychoneurotic anxiety arising from unconscious conflict.

The chapter on war psychiatry is based on the hearsay evidence of visitors from Britain on the effect of bombing on civilians, but there is nothing about the effect of evacuation on children. So far as Service psychiatry is concerned the author's remarks are based on his own experience at Chateau Thierry in the last war. We are, however, probably too near the process to be able to estimate the effect of the present war on the psychic make up of this generation, and we cannot yet be

sure that the observations of the last war are applicable to present day problems.

If all doctors who are not psychiatrists were to read and digest this book—and it would not take them long—their practice of medicine would be vastly improved.

### WHOOPIING-COUGH

*Whooping Cough* By Joseph H. Lapin M.D. (Pp 238 illustrated 25s) Springfield and Baltimore Charles C. Thomas, Baillière Tindall and Cox 1943

As this disease is now the most dangerous of all the specific fevers a monograph on whooping cough is very timely, and Dr. Joseph H. Lapin has skilfully analysed the literature to aid his own extensive experience in this disorder. He describes the epidemiological and bacteriological aspects before proceeding to the problems of immunity and the serological reactions. Chapters on clinical manifestations and on diagnosis give a clear picture of everyday problems, and next come sections on prevention and treatment in which, naturally, prominence is given to the use of vaccines. Non-specific treatment—on which there is so much literature that suspicions of its complete ineffectiveness are raised—is carefully considered. The treatment of complications and a section with suggestions for the administrative control of the disease complete the volume, which has a good index.

Prof. P. M. Stimson in a foreword describes this book as "a valuable contribution to the literature of the disease," and this can be heartily endorsed. At a time when modern chemotherapy and biological products have done so much to rob other specific fevers of their perils it is important that the unsolved problem of whooping-cough should receive serious attention. Dr. Lapin has performed an important service with his monograph, which can be warmly commended.

### ASEPSIS IN EXCELSIS

*Micurgical and Germ-free Techniques. Their Application to Experimental Biology and Medicine. A Symposium* Edited by James A. Reyniers (Pp 274 illustrated 50s or 27s 6d) Springfield and Baltimore Charles C. Thomas London Baillière Tindall and Cox 1943

This volume edited by J. A. Reyniers embodies papers read at a colloquium at the University of Notre Dame, Indiana, in 1939. The title *Micurgical and Germ-free Methods* on the cover is varied on the title-page by substituting the word "techniques" for "methods." Neither version will convey to most readers what the book is about, and it should be explained that "micurgy" is apparently more or less synonymous with micro-manipulation, while "germ-free methods" refers to the maintenance of animals and plants under bacterially sterile conditions. There are three chapters on the first of these subjects and five on the second, while three final chapters deal with another subject altogether, though admittedly related to the second—the control of cross infection by air-conditioning, mechanical barriers, and ultra violet light.

In this oddly heterogeneous collection of papers there is much of interest to the microbiologist, and something for those concerned with several other branches of science besides. Micro-manipulation makes it possible to inject materials into individual cells and watch the effects; some indications are given of the uses to which this remarkable method can be put. The most sensational achievement described in the book is the rearing of a germ-free monkey, whose portrait appears in two places, and the projected extension of such studies to goats and calves will call for elaborate machinery on an even larger scale. Animals so reared are of course delivered by Caesarean section, and are kept in "cages" having rather the appearance of horizontal autoclaves with windows, and apertures to which long sleeved rubber gloves are fitted for interior manipulation. Sterile air is supplied to them, and food is steam sterilized in a "food clave," the space between double doors communicating with the interior. The monkey which had been kept germ-free for four months at the time of writing had a more adventurous sister who contaminated herself with staphylococci and other organisms by puncturing a rubber glove and eventually "fell into" a glove and was suffocated. Other chapters in this section deal with the germ-free cultivation of protozoa, nematodes, and insects, with the use of the mammalian foetus as an experimental animal, and with the germ-free cultivation of plants.

The whole book very properly deals with methods rather than results, but much is said about what they may be expected to achieve. While we must admire the enterprise of those who have perfected these exceedingly difficult techniques, it remains to be seen whether they will add to knowledge to an extent commensurate with the trouble and expense involved.

### Notes on Books

*Medical Photography: Radiographic and Clinical*, by T. A. LONGMORE, is published by the Focal Press at 25s. This book has a twofold purpose. The first half is devoted to the photographic aspects of radiography, and the second to clinical photography in all its aspects. There is a wealth of information in both parts. In the radiographic section, clinical radiographic technique is by design omitted, and the radiographic student must turn elsewhere for instruction in the art of positioning the patient, but the photographic aspects are dealt with in a manner that merits commendation. The descriptions are simple and concise and the illustrations

well chosen and informative. The section begins with an account of the production of the photographic image, and goes on to describe x-ray apparatus, accessories, and dark-room technique. It finishes with an excellent summary of faults in radiographs. The second section, on clinical photography, covers the field from the physics of optics to the completed print, and a final section deals with special techniques such as mass miniature radiography, tomography, colour reproduction, microphotography, and cinephotography. The book ends with an appendix of formulae and a glossary of terms. It is warmly to be recommended to all engaged in radiographic or clinical photographic work.

The fifth edition of a *Handbook of Ophthalmology*, by Mr. HUMPHREY NEAME and Mr. F. A. WILLIAMSON-NOBLE (J. and A. Churchill; 18s.), follows closely on the previous edition published in 1942, but it is not a mere reprint. The authors have taken the opportunity to incorporate the modifications in treatment produced by the sulphonamides, and have considerably revised the sections dealing with operative procedures. The newer work on vitamin therapy is also noted. The revision greatly enhances the value of this excellent handbook.

## Preparations and Appliances

### AN AURAL SYRINGE

Mr. LIONEL COLLEDGE, F.R.C.S., writes:

Dr. Lester Mead Hubby described in Nelson's *Loose Leaf Surgery of the Ear* an apparatus devised by Dr. E. P. Fowler to take the place of syringing by hand.

Mr. Percy Phelps (of the firm of Messrs. Mayer and Phelps) has designed a simpler apparatus in which the force of gravity is used to produce a stream of warm water at a pressure of approximately 11 lb. to the square inch, which corresponds to

top of the tank a pipe (D), controlled by a valve (E), leads to three points (F), each point being controlled by a separate valve. To each point a length of flexible rubber tubing (G) is attached ending with a nozzle (H) suitable for syringing the ear and easily controlled by one hand. Near each irrigating point a small receptacle (J) is fitted, connected to the waste pipe (K) to carry away waste water. A valve (L) is fitted to the tank in order to draw off water rapidly in case of need.

This apparatus has now been in use at the hospital in Golde Square for more than five years, and has proved safe, rapid

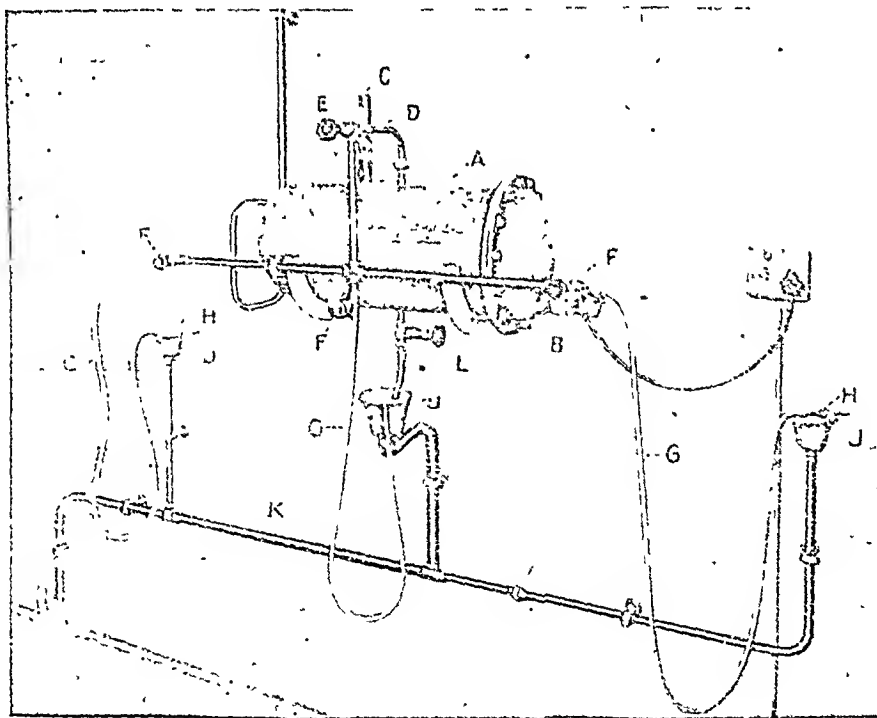


FIG. 1

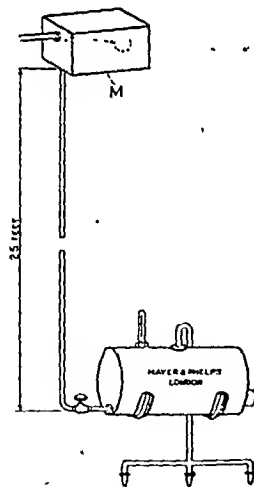


FIG. 2

the power of a Wood's aural syringe when used efficiently by hand.

The apparatus of Mr. Phelps consists of a tank (A) of 10 gallons capacity fitted at a convenient height on the wall, and connected to this tank is the feed water tank (M). This feed tank is placed at the height of 25 ft. above the main tank (A), at which height the pressure of water is maintained at approximately 11 lb. per square inch. Fitted to the main tank is an electric immersion heater (B), controlled by a thermostat which maintains the water in the tank at a constant temperature of 100° F., indicated by a thermometer (C). From the

clean, and efficient. It reduces greatly the labour of syringing a long series of ears and thereby eliminates the fatigue which introduces an element of danger when such syringing is done by hand. One nurse can easily syringe fifty ears during an afternoon clinic; and, since the introduction of the apparatus, bleeding from minor injuries to the meatus and granulations has no longer occurred, nor has there been any case of perforation of the tympanic membrane, an accident which before then occasionally, though rarely, occurred. The total cost of making and installing the apparatus was less than £100, which has been more than repaid in these days of shortage of staff.

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In addition to its general use in early nephritis, nephroses, hepatic ascites and cardiac oedema, Mersalyl B.D.H. may be used also in the treatment of polyserositis, eclampsia (in the absence of acute pyelonephritis), Ménière's disease, obesity, thrombophlebitis and the oedema of toxic goitre.

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*References : 1. Carrel and Dehelly Military Medical Manuals. "The Treatment of Infected Wounds," 2nd Edition (1918), p. 24.*

*2. Hospital Treatment of Burns, E.M.S. Memorandum, No. 8 (Revised) H.M.S.O., Edinburgh, 1943, p. 31.*

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## BRITISH MEDICAL JOURNAL

LONDON

SATURDAY SEPTEMBER 16 1944

## YELLOW FEVER EPIDEMIOLOGY AND CONTROL

For many years the mosquito *Aedes aegypti* was considered to be the only vector of yellow fever, and all attention was focused on it in attempts to eradicate the disease. Such indeed was the case in Panama and Cuba, and with the elimination of the mosquito the disease disappeared. Anti-*aegypti* measures have also kept the disease under control in urban communities in Africa and South America. The methods of *A. aegypti* control used in South America, which have recently been described by Soper *et al.*<sup>1</sup> have, however, failed to prevent the spread of yellow fever in areas in which it is endemic in Africa, and in the regions in which jungle yellow fever is prevalent in South America, where no *A. aegypti* have been found. In Brazil, in 1938, Shannon and his co-workers<sup>2</sup> reported finding the virus in the mosquitoes *Aedes leucocelaneus*, *Haemagogus capricornis*, and a species of sabethine caught in those forest regions where the disease was endemic. The disease chiefly affected the men working in the forest, the wives and children at home being relatively unaffected. The problem that was most difficult to understand was how and where the virus managed to exist during the dry season. It has been suggested that the infection was maintained in certain vertebrate hosts such as the monkey, many of which were said to have died in certain regions just before the occurrence of human cases, but, though 20% of the sera of monkeys in the endemic areas in both South America and Africa have been shown to contain yellow fever immune bodies, the exact part monkeys play in the maintenance of the disease has not been understood. Bugher and his colleagues,<sup>3,4,5</sup> who have been carrying out extensive immunity studies of the fauna in Colombia for a number of years, have recently been able to throw some light on the epidemiology of the jungle yellow fever in that country. They have found that *Haemagogus capricornis* caught in the tree tops in the dry season are infected, and as the mosquito remains infected for life the virus can be carried over into the next breeding season at the beginning of the rains. Though virus was never isolated from them, common opossums, *Didelphis marsupialis*, trapped in the same region where infected *Haemagogus* were found developed immune bodies in their sera during the first 30 days of their captivity. Immune bodies were also found in some of the cebus monkeys caught in these regions. If small doses of virus are inoculated subcutaneously in the animals, there is an incubation period of 3 to 8 days. The virus then appears

in the circulating blood for 3 to 7 days. During this time the animals appear quite well, and are, of course, permanently immune after infection. Bugher *et al.* conclude from these findings that jungle yellow fever in Eastern Colombia is primarily a disease of jungle animals, being transmitted from animal to animal by certain mosquitoes which are strictly forest inhabitants. Mahaffy and his colleagues<sup>4</sup> have also been able to clarify the position somewhat in Uganda by catching infected *Aedes simpsoni* in the areas where they have recently isolated the virus from man for the first time.

The only means known at present of combating the jungle disease is by mass prophylactic vaccination, which is also combined with *aegypti* control in urban communities in epidemic and endemic areas. The vaccine used has gradually improved since the discovery of the virus in 1927. Though the French have continued to use neurotropic mouse-brain virus, all other interested countries have adopted the attenuated 17D strain of virus developed in the Rockefeller laboratories and grown in the chick embryo. The vaccine consists of infected embryo dried from the frozen state *in vacuo* in ampoules. Because of its instability unless kept at low temperatures it is distributed to special centres only. Since human serum was eliminated from the vaccine several years ago no cases of jaundice have been produced by serum-free vaccine. This vaccine has for the most part produced little or no reaction after inoculation, and a satisfactory vaccine produces demonstrable neutralizing antibodies in about 95% of inoculees from 2 weeks to a month after inoculation. Though antibodies usually cannot be demonstrated for at least 10 to 14 days after inoculation, a small amount of experimental evidence and field observations indicate that anyone bitten by an infected mosquito 7 days or more after a satisfactory vaccination will be protected or have a modified attack. Certain batches of vaccine which have been shown to have apparently adequate amounts of virus as measured by titration in mice have failed to produce satisfactory immunity in man. Alterations in antigenicity appeared to have taken place in some instances during a comparatively small number of passages in chick embryo. To obviate this danger most centres now make their vaccine by inoculating embryos with "seed lots" of virus from a large batch of vaccine known to produce satisfactory immunity. Even so, it is desirable that each batch be tested for its ability to produce immune bodies in a small group before being issued. It has been found that if each individual receives 500 mld for mice, about 98% of those immune one month after inoculation still have immune bodies 4 years later. In fact Bugher has found that among over 600,000 persons vaccinated in Colombia there had been only one recognized case of yellow fever—this in a boy inoculated only 5 days before he became ill and when he was presumably already infected, 198 proved and 45 probable cases had been recognized among the non-vaccinated since vaccination began. Many of these cases occurred in known epidemic areas where over 90% of the population were vaccinated. Similar results have been achieved in many areas in Brazil, and the scarcity of cases in the vast numbers of

<sup>1</sup> Soper, F. L., Wilson, B., Lima, S., and Sa Antunes, W. *The Organization of Permanent Nationwide Anti-Aedes aegypti Measures in Brazil*, Rockefeller Foundation, New York, 1943.

<sup>2</sup> *Science*, 1943, 85, 110.

<sup>3</sup> *Amer. J. trop. Med.*, 1940, 23, 209.

<sup>4</sup> *Amer. J. Hyg.*, 1944, 39, 16.

<sup>5</sup> *Ibid.*, 1944, 39, 58.



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For many years the mosquito *Aedes aegypti* was considered to be the only vector of yellow fever, and all attention was focused on it in attempts to eradicate the disease. Such indeed was the case in Panama and Cuba, and with the elimination of the mosquito the disease disappeared. Anti-*aegypti* measures have also kept the disease under control in urban communities in Africa and South America. The methods of *A. aegypti* control used in South America, which have recently been described by Soper *et al.*,<sup>1</sup> have, however, failed to prevent the spread of yellow fever in areas in which it is endemic in Africa, and in the regions in which jungle yellow fever is prevalent in South America, where no *A. aegypti* have been found. In Brazil, in 1938, Shannon and his co-workers<sup>2</sup> reported finding the virus in the mosquitoes *Aedes leucocelaneus*, *Haemagogus capricorni*, and a species of sabethine caught in those forest regions where the disease was endemic. The disease chiefly affected the men working in the forest, the wives and children at home being relatively unaffected. The problem that was most difficult to understand was how and where the virus managed to exist during the dry season. It has been suggested that the infection was maintained in certain vertebrate hosts such as the monkey, many of which were said to have died in certain regions just before the occurrence of human cases; but, though 20% of the sera of monkeys in the endemic areas in both South America and Africa have been shown to contain yellow fever immune bodies, the exact part monkeys play in the maintenance of the disease has not been understood. Bugher and his colleagues,<sup>3,4</sup> who have been carrying out extensive immunity studies of the fauna in Colombia for a number of years, have recently been able to throw some light on the epidemiology of the jungle yellow fever in that country. They have found that *Haemagogus capricorni* caught in the tree-tops in the dry season are infected, and as the mosquito remains infected for life the virus can be carried over into the next breeding season at the beginning of the rains. Though virus was never isolated from them, common opossums, *Didelphis marsupialis*, trapped in the same region where infected *Haemagogus* were found developed immune bodies in their sera during the first 30 days of their captivity. Immune bodies were also found in some of the cebus monkeys caught in these regions. If small doses of virus are inoculated subcutaneously in the animals, there is an incubation period of 3 to 8 days. The virus then appears

in the circulating blood for 3 to 7 days. During this time the animals appear quite well, and are, of course, permanently immune after infection. Bugher *et al.* conclude from these findings that jungle yellow fever in Eastern Colombia is primarily a disease of jungle animals, being transmitted from animal to animal by certain mosquitoes which are strictly forest inhabitants. Mahaffy and his colleagues<sup>5</sup> have also been able to clarify the position somewhat in Uganda by catching infected *Aedes simpsoni* in the areas where they have recently isolated the virus from man for the first time.

The only means known at present of combating the jungle disease is by mass prophylactic vaccination, which is also combined with *aegypti* control in urban communities in epidemic and endemic areas. The vaccine used has gradually improved since the discovery of the virus in 1927. Though the French have continued to use neurotropic mouse-brain virus, all other interested countries have adopted the attenuated 17D strain of virus developed in the Rockefeller laboratories and grown in the chick embryo. The vaccine consists of infected embryo dried from the frozen state *in vacuo* in ampoules. Because of its instability unless kept at low temperatures it is distributed to special centres only. Since human serum was eliminated from the vaccine several years ago no cases of jaundice have been produced by serum-free vaccine. This vaccine has for the most part produced little or no reaction after inoculation, and a satisfactory vaccine produces demonstrable neutralizing antibodies in about 95% of inoculees from 2 weeks to a month after inoculation. Though antibodies usually cannot be demonstrated for at least 10 to 14 days after inoculation, a small amount of experimental evidence and field observations indicate that anyone bitten by an infected mosquito 7 days or more after a satisfactory vaccination will be protected or have a modified attack. Certain batches of vaccine which have been shown to have apparently adequate amounts of virus as measured by titration in mice have failed to produce satisfactory immunity in man. Alterations in antigenicity appeared to have taken place in some instances during a comparatively small number of passages in chick embryo. To obviate this danger most centres now make their vaccine by inoculating embryos with "seed-lots" of virus from a large batch of vaccine known to produce satisfactory immunity. Even so, it is desirable that each batch be tested for its ability to produce immune bodies in a small group before being issued. It has been found that if each individual receives 500 m.i.d. for mice, about 98% of those immune one month after inoculation still have immune bodies 4 years later. In fact Bugher has found that among over 600,000 persons vaccinated in Colombia there had been only one recognized case of yellow fever—this in a boy inoculated only 5 days before he became ill and when he was presumably already infected; 198 proved and 45 probable cases had been recognized among the non-vaccinated since vaccination began. Many of these cases occurred in known epidemic areas where over 90% of the population were vaccinated. Similar results have been achieved in many areas in Brazil, and the scarcity of cases in the vast numbers of

<sup>1</sup> Soper, F. L., Wilson, B., Lima, S., and Sa Antunes, W., *The Organization of Permanent Nationwide Anti-Aedes Mosquito Measures in Brazil*, Rockefeller Foundation, New York, 1943.

<sup>2</sup> *S. J. Trop. Med.*, 1938, 33, 110.

<sup>3</sup> *Amer. J. Trop. Med.*, 1940, 23, 503.

<sup>4</sup> *Amer. J. Hyg.*, 1944, 39, 16.

<sup>5</sup> *Ibid.*, 1944, 39, 55.

<sup>6</sup> *Trans. roy. Soc. Trop. Med. Hyg.*, 1942, 36, 9.

vaccinated personnel exposed since 1939 in endemic and epidemic regions of Africa is ample proof of the efficacy of the vaccine when it is properly handled. There are still numerous areas where *A. aegypti* may be found in countries linked to yellow fever endemic areas by air service. Though anti-*aegypti* control is exercised in the region of the aerodromes in most instances, it is necessary that individuals passing through an endemic yellow fever area and entering Egypt or India shall have been inoculated against yellow fever at least 10 days before entering that country.

## SUBDURAL HAEMATOMA IN INFANCY

Chronic subdural haematomas have become commonplace in the past five years, and in the adult the picture of increasing headache, drowsiness, blurred vision, and confusion is well recognized. Not nearly so much is heard about the same condition in infants, although according to Ingraham and Matson<sup>1</sup> it is common during the first two years of life and the source of a high morbidity if it is neglected. These authors have presented a detailed analysis of their experience of nearly a hundred cases treated in one hospital, and comment upon "the existence of a much larger number of these damaged children than is generally realized, many of whom might be spared with proper treatment." Their paper makes it clear that this must indeed be so, although attention has already been drawn to the subject by several articles which have appeared in the last decade, and although Ingraham and Heyl<sup>2</sup> in an earlier paper noted that the frequency with which subdural haematomas are found in infancy is largely proportional to the intensity with which they are sought. An injury is usually the first cause, but it need not be severe. In about a third of the cases reported the injury had certainly occurred at birth, and in many more it probably had. Although this is so, a fracture of the skull is not often found, for the infant's skull will distort so greatly without bony injury. The injury that will cause subdural haematoma is of course associated with distortion of the cranium and its structures—distortion which results in tearing of the tributary veins that run into the superior longitudinal sinus and so causes the bleeding which starts the abnormal process. It is for this reason that the haematoma is more often bilateral than not. The kind of injury inflicted to the head at birth is conducive to such tearing of veins. Nearly a half of the children in Ingraham and Matson's series had evidence of infection elsewhere in the body, usually in the respiratory tract, but this was simply the result of their poor general condition, for the prime cause of the illness had not been recognized early enough.

It is most important to appreciate that there is no clinical picture which is absolutely characteristic of subdural haematomas in infancy. It is even more unfortunate that the symptom pattern may be identical with that of many other slowly progressive conditions, for intracranial disease in childhood so often gives rise to such general symptoms as a raised temperature, vomiting, irritability, and failure to develop or gain weight. The commonest

symptoms of a subdural haematoma in childhood are fits, vomiting, irritability, and those of an associated febrile illness. Fits and vomiting occur in over a half, and the fits are quite indistinguishable from those seen in other childish illnesses. The symptoms were present for less than a week before admission to hospital in a third of Ingraham and Matson's series of cases, but in another third they had persisted for over a month. The signs of the haematoma are an increase in muscular tone with increased reflexes, an irregular or raised temperature, and in a quarter of the cases a rather large head the shape of which is not that of hydrocephalus. There may be a cracked-pot note on percussing the skull, and bulging of the fontanelles. Optic atrophy or, very rarely, papilloedema may be seen. The authors say that the condition should always be suspected when an infant who has been through a difficult delivery fails to do well in the first month of life, is irritable, has an irregular temperature, and seems to have rather too large a head. Neither the laboratory nor the x rays help in diagnosis, which never becomes accidentally apparent to the casual examiner, but which can be established only by puncture of the subdural space. Fortunately this procedure is simple and certain, and can be carried out under a wheal of procaine. Ingraham has the infant well wrapped up and gives it a teat with a little glucose to suck. He inserts a fine, short lumbar puncture needle with a stylet into the middle of the frontal suture on each side, under rigid aseptic conditions. The technique is described in detail. When blood is found simple aspiration will not suffice, for the inelastic membrane which remains impedes the normal rapid growth of the infant's brain. It is, however, undesirable to remove the clot by immediate craniotomy, for the child is usually too ill. It is best to aspirate repeatedly until the symptoms have subsided, and when the child's condition has improved sufficiently a large osteoplastic flap can be turned and the clot be removed, capsule and all. The results seem to be excellent, for more than three-quarters of Ingraham and Matson's operated patients not only have remained free from symptoms but have shown normal behaviour and development for their age. It is distressing to consider how very easily a subdural haematoma can be missed in infants, for its effects are serious. Now that its existence has been verified in so many cases it should be recognized with increasing frequency.

## TESTS OF LIVER FUNCTION

There is a fascination about the measurement of human functions. Evidence of this is seen in the vast amount of work done on tests of human intelligence, cardiac efficiency, and renal and hepatic function. All this work is inspired by the belief that once we can measure a thing and express the result in figures we are at the beginning of science. This is true, however, only if we know just what we are measuring. We have perhaps arrived at that stage in intelligence testing, and have relatively simple tests that can be applied to individuals or groups by a well-trained technician. So far as concerns the kidney, the measurement of the clearances of inulin and diodrast allows us to make legitimate deductions about the rate of filtration through the glomeruli, the renal blood flow, and the work

<sup>1</sup> *J. Pediatr.*, 1944, 24, 1.

<sup>2</sup> *J. Amer. med. Ass.*, 1939, 112, 193.

of the tubules; at the same time, however, the tests have become too elaborate and time-consuming for routine use on patients. Neither of these stages has been reached in the measurement of hepatic function, but progress is being made on the road.

Different functions of the liver have in turn attracted attention. Twenty years ago interest was concentrated on the serum bilirubin, and this interest has now been revived by the technical developments associated with the names of Evelyn and Malloy and by the use of bilirubin excretion tests. Nevertheless, the hope that modifications of the van den Bergh reaction would be of value in the differentiation of different forms of liver disease has been generally abandoned.<sup>1</sup> Nowadays we pick our test of liver function according to the object we have in view. If we wish to control a particular hazard in industry or in therapy, as, for example, the risk of liver damage from arsenical treatment, the serial repetition of a single test such as the serum bilirubin or the hippuric acid synthesis may be adequate. In the differential diagnosis of a case of jaundice, and more particularly the decision whether it is due to obstruction in the outflow of bile or damage to the parenchyma, it is desirable to apply a battery of tests. In an article elsewhere in this *Journal* MacLagan recommends the colloidal gold and the phosphatase tests, followed if necessary by the galactose tolerance. Although experience with grouped tests in this country has shown the help they can give in diagnosis, their limitations must be realized. American workers have had an opportunity to use them on a large scale during the recent outbreak of hepatitis after yellow fever vaccine.<sup>2</sup> In many of the more protracted cases there was no evidence of disturbance of any function of the liver except the excretion of bile. Presumably the damaged cells had regenerated, but adequate connexions had not yet been re-established between the lobule and the portal tract. It would be misleading to call this condition obstructive jaundice in the ordinary sense. Finally, the clinician may wish to exclude hepatic disease in the investigation of ill-health, and Higgins and co-workers<sup>3</sup> have shown that chronic disease of the liver is unlikely to be present if the serum bilirubin and the plasma proteins are normal.

All this is empirical, and the clinical scientist will ask how the tests help him in understanding the morbid physiology of hepatic disease. To what extent are the different tests correlated together? Is a high phosphatase value due to the disturbance in the absorption of calcium because the bile is not flowing into the intestine, or is it due to a disturbance in the synthesis of glycogen, which occurs by a process of phosphorylation? Correlations of this kind have not yet been worked out, but we do appreciate the relation between the liver and the serum proteins. The serum proteins undergo quantitative and qualitative alteration when the liver is diseased, and the results are every bit as important as in nephritis. In chronic liver disease, notably cirrhosis of the liver, the serum albumin is generally reduced, whereas the serum globulin is normal or increased.<sup>4</sup> The degree of reduction in the level of serum albumin seems to be correlated with the prognosis as to the duration of life, with the clinical course of the disease, and with the appearance and disappearance of ascites. There is apparently a defect in the synthesis of serum albumin, and though these patients are able to absorb and retain protein they are unable to convert it into serum albumin. In acute hepatitis the change in the serum proteins is more of a qualitative than a quantitative nature, and it may be better demonstrated by one of the flocculation tests than by the simple chemical analysis of

the serum proteins. There is a shift to the right in the protein pattern with an increase in the gamma globulin.<sup>5</sup> At present we do not understand why changes in the serum globulin occur in disease of the liver, though it seems as if the increase in the largest molecular weight protein, the gamma globulin, is an effort to compensate for the decrease in the smallest molecular-weight protein, the albumin.

## BIRTH UNDER HYPNOSIS

Hypnosis as a means of producing a state of relaxation in which minor operations can be performed has been described but has never become popular. It has been most used in dentistry, but only to a very limited extent. A recent paper from America on the use of hypnosis in childbirth may give added interest to a matter which is of both practical and theoretical importance. Kroger and deLee<sup>6</sup> report on twelve cases in which practically the whole of labour was carried out whilst the patient was rendered analgesic and trance-like. It seems that the dissociated condition lasted while forceps were applied. Episiotomy and perineal repair were undertaken, and though the report is not clear it seems that hypnosis was used in other cases in which labour was normal. When it was decided to use this method the gravida was placed in a hypnotic condition by the usual suggestive measures at fortnightly intervals from the sixth month onwards. In the course of these sessions deep hypnotic states were produced, and suggestions that the labour would be painless and convalescence normal were made. During labour itself the hypnotic state was produced shortly after onset, and was continued for as many hours as necessary, during which time the patients were able to micturate, defaecate, and bear down as in labour without any hypnosis. The hypnotist could arrange that the suggestions were equally effective if made by the house officer or nurse in charge. It is claimed that to dispense with medical hypnotics and anaesthetics is of much importance where complications such as heart disease or hypertension are encountered, and that in perfectly healthy women the absence of medicine is of benefit in the puerperium.

Why, it must be asked, is the practice not more widespread? Would not suggestions made under hypnosis during the latter months of pregnancy benefit many women frightened of childbirth? The efficiency of modern anaesthetics and hypnotics, and their rapid effects, obviously appeal more to obstetricians, who are still unable to state the exact moment when labour will begin. There is a vigorous conception that the healthy normal mother does not expect to be relieved of labour pains which she knows her friends and her ancestors have experienced and largely forgotten, and there is a sort of superstitious belief that the woman who really fears childbirth is a poor specimen, and that to experience such ordeals is a stimulus to character formation. But the obstetrician rightly fears labours more in the neurotically affected and in those with systemic disorders. If hypnosis does what Kroger and deLee claim, should it not be available for these patients?

The real difficulty is probably a practical one: hypnosis suddenly attempted in the maternity bed will be unlikely to succeed. It must be prepared for by preliminary sessions, and that means a regular time-table for the hypnotist and his availability when labour starts. Hence further trials will come from special gynaecological units to which psychiatrists with interest in the problems of hypnosis are attached. But the evidence that such collaboration between

<sup>1</sup> Stein, H. B., *S. Afr. J. med. Sci.*, 1941, 6, 104.

<sup>2</sup> Turner, R. H., et al., *Ann. Intern. Med.*, 1944, 20, 193.

<sup>3</sup> Higgins, G., et al., *British Medical Journal*, 1944, 1, 211.

<sup>4</sup> Post, J., and Patck, A. J., *Bull. N.Y. Acad. Med.*, 1943, 19, 815.

<sup>5</sup> Gray, S. J., and Barron, E. S. G., *J. clin. Invest.*, 1943, 22, 191.

<sup>6</sup> *Amer. J. Obstet. Gynec.*, 1943, 46, 655.

the gynaecologist and the psychiatrist is overdue is daily apparent to both parties. The former is wanting to use the latter for many more purposes than to tell him when termination is justified on psychiatric grounds. Both are interested in the amenorrhoea which accompanies anorexia nervosa. Both are interested in the problems of functional dysmenorrhoea. Neither has solved the psychological problems of the menopause or its endocrine substratum: why is the menopause so physically and psychologically disturbing in some, so comparatively minor an event in others? Both psychiatrist and gynaecologist (as well as the sociologist and anthropologist) are interested in a fuller explanation of the food fads of pregnancy, the recurrent fears about mutilated, malformed, and defective children that the pregnant mother has, and about the reasons given for family limitations. When psychiatrists are more numerous and more trained in field work some of these problems may be tackled and suitable prophylaxis undertaken, as well as more use made of hypnosis as a substitute for anaesthetics and medication.

### PENICILLIN IN BACTERIAL ENDOCARDITIS

With every new advance since prontosil in the chemotherapy of bacterial infections the question has soon been asked, Will this drug control subacute bacterial endocarditis? Of all streptococcal infections this is the most heart-rending and the most conducive to even desperate therapeutic adventures, for the patient is almost certain to die, and yet there remain weeks or even months for the fullest trial of any form of treatment which has even the faintest hope of success. The advent of penicillin has raised such hopes anew, and requests for supplies for the treatment of subacute bacterial endocarditis have been numerous. It should therefore be generally known that in fact the penicillin treatment of this disease has, on the whole, been disappointing; for this reason bacterial endocarditis was explicitly excluded from the list of conditions for which the present limited civilian supplies may be used. These will probably prove inadequate, until they are greatly augmented, for the treatment of all cases of life-endangering infections which are known to respond well to the drug. If the treatment of a case of bacterial endocarditis means that another patient with taphylococcal septicaemia has to go without it, it is clearly unjustifiable.

The published evidence is as follows. In the second series of miscellaneous cases treated at Oxford, described by Florey and Florey,<sup>1</sup> one patient with subacute bacterial endocarditis was assiduously treated for a whole month on several systems of dosage, including injections at intervals of only one hour, the total dosage being no less than 4,670,000 units. The blood was temporarily sterilized, but relapse with renewed bacteraemia followed cessation of treatment, and the streptococcus responsible became penicillin-resistant. In the first large series of miscellaneous cases reported from the U.S.A.,<sup>2</sup> penicillin was given to 21 with subacute bacterial endocarditis: 4 patients died, no effect was obtained in 10, 3 improved temporarily, but 2 soon relapsed. Some of these patients probably received inadequate doses. In several later reports from the U.S.A. the findings are somewhat conflicting. W. E. Herrell<sup>3</sup> treated 4 cases, achieving only temporary improvement in all. M. H. Dawson and Gladys L. Hobby<sup>4</sup> treated 5, of which 2 were failures:

1 patient was improved, and 2 were alive and well thirteen and nine months later. The only really encouraging results are those of L. Loewe and his colleagues,<sup>5</sup> who treated 7 patients in all: 2 of these were atypical in that the organisms concerned were a pneumococcus and a haemolytic streptococcus, but the remaining 5 were examples of *Str. viridans* infection in valves damaged by previous rheumatic disease. After intensive sulphonamide treatment, which apparently failed, they were given penicillin in large doses—usually 200,000 units a day, with a total dosage of over 7 millions in 2 cases and 6 millions and 3 millions in 2 others, combined with 200 mg. of heparin daily. All these patients apparently recovered, but the interval which had elapsed at the time of writing was only two or three months in the majority. A brief statement of the present condition of these patients, now that a further eight months has elapsed, would be a useful contribution to our knowledge of this subject.

Even granting that penicillin may cure a substantial proportion of patients if used in this way, the treatment is a serious undertaking with a considerable risk of its own, and may use up enough of the drug to cure half a dozen other patients with almost equally dangerous, but more susceptible, infections. The subject clearly calls for more extended study on a research basis before a decision on its merits can be reached. Meanwhile only an improved supply position—such as we hope to see shortly—can justify the general release of penicillin for this purpose.

### AID FOR RETURNING G.P.s

In the *Supplement* to our issue of Aug. 19 there appeared a letter from a general practitioner who proposed that a fund of at least £100,000 should be raised to assist colleagues returning from the Services to re-establish themselves in practice. On reflection, it appeared to be unwise to start a new fund, designed to make, for general practitioners only, very much the same provision as is already made by the Medical War Relief Fund for the profession as a whole. The author of the letter, on being informed of the activities of this Fund, readily agreed that his suggestion was unnecessary, and asked that his donation of £100 might be paid into the Medical War Relief Fund. A similar request has been made by a woman practitioner, who, prompted by her colleague's letter, had sent a contribution of £50. There may be other doctors who are not well acquainted with the work of the Medical War Relief Fund. The honorary secretary of the Fund will gladly answer inquiries addressed to him at B.M.A. House, Tavistock Square, London, W.C.1. The Committee of the Fund would greatly appreciate the co-operation of members of the profession in making the Fund known to colleagues or dependants of colleagues who, though eligible for aid, may be unaware of the Fund's existence.

As announced in last week's *Supplement* (p. 56) the postponed Annual Representative Meeting, 1944, is to be held in London early in December, subject to the exigencies of the war situation. It will open at B.M.A. House on Tuesday, Dec. 5, at 2 p.m., and is expected to end on Friday, Dec. 8, though it will continue until the business is concluded. The Annual Conference of Local Medical and Panel Committees will open at B.M.A. House on Thursday, Nov. 2, at 10 a.m., and will continue if necessary on the following day.

<sup>1</sup> *Lancet*, 1943, 1, 387.

<sup>2</sup> *J. Amer. med. Ass.*, 1943, 122, 1217.

<sup>3</sup> *Ibid.*, 1944, 124, 622.

<sup>4</sup> *Ibid.*, 1944, 124, 611.

<sup>5</sup> *J. Amer. med. Ass.*, 1944, 124, 144.

## FRACTURES OF THE CARPAL BONES

BY

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The interesting analysis of "Fracture of the Carpal Scaphoid" by Robertson and Wilkins (1944) permits the mere anatomist to call attention to the need for still further sorting. In the series of 158 wrist-joint injuries in young adults, 100 cases of fractured scaphoid occurred. There is one enigma in their analysis, for, of 100 cases of fractured scaphoid, they state that 70 united but 72 resumed full duty. What was the nature of the full duty in the two who resumed with ununited fractures? This is important, for in most cases of ununited fracture of any bone of the carpus in man and domestic animals the end-result is a generalized osteo-arthritis of the wrist. Yet another omission in the analysis is the failure to ascertain with certainty how many of the remaining 38 cases of "sprain" of the wrist really had a fracture of some bone other than the scaphoid.

Fracture of the styloid process of the ulna often complicates Colles' fracture, and sometimes accompanies fracture of the scaphoid. It is, however, the flake fracture of the dorsum of the cuneiform (triquetrum) and os magnum (capitatum) which is so often missed radiographically. The fracture usually occurs during a fall, or recovery from a fall, with the wrist in full pronation and extreme flexion. The detached flake is torn off during extreme tension on the dorsal radio-carpal ligament, which runs downwards and medially from the radius to the dorsal surfaces of the scaphoid lunate, and cuneiform bones. The deeper fibres of the ligament, on the ulnar side, run to the cuneiform bone and blend with the articular disk of the ulno-carpal joint. The flake fracture probably occurs more frequently in the cuneiform than in the os magnum. This flake fracture is easily missed on both antero-posterior and lateral radiographs. It is rendered visible only on that lateral view which places the area of maximal pain as near the periphery as possible (see Fig.)



Lateral radiograph showing flake fracture of the cuneiform (triquetrum) bone

Another rare type of fracture is that of the pisiform bone. The fracture involves a flake on the distal tubercle, at the attachment of the pisohamate and pisometacarpal ligaments, which are often wrongly regarded as continuations of the tendon of the flexor carpi ulnaris.

Multiple injuries at the wrist are a common feature in falls by women laden with shopping baskets and in stokers and coal-miners who "catch a crab," such as a bolt head or nut when using a shovel on a steel floor. One case showed this series of complications in a manner not to be forgotten. The patient had fallen while carrying a parcel in each hand. The first doctor recognized the obvious Colles' fracture, the surgeon at the hospital also saw the fractured styloid process of the ulna, his radiographer spotted the fractured scaphoid, and a certain anatomist discovered the flake fracture of the cuneiform. All were eventually very pleased with themselves, and the patient was put up in a magnificent plaster cast. Two days later he returned stating that the maximal pain was not in the wrist but in the chest. Two fractured ribs were recognized—but essentially by the patient. Thus, in any fall involving an injury to the wrist, not only must multiple fractures in the neighbourhood of the wrist be considered, but it is also worth while giving the patient's chest a gentle squeeze from front to back and from side to side—a manoeuvre which uncovers a fractured rib much more rapidly than a radiograph.

A comparison of the wrist of man with that of a reptile, such as a crocodile, shows that in the lower forms the ulna is much stouter than the radius, whereas in the primates generally, and man in particular, the radius is much stouter at its distal extremity than is the ulna. The strength of construction of the hand in man is concentrated in the radius, thumb, and index and middle fingers. In the reptile the strength of construction is centred on the ulna and the third and fourth metacarpals. Conversely, however, the carpus in man has signally failed to respond to this change, and the narrow-waisted scaphoid is too delicately formed for the load which is thrown upon it, especially in radial abduction. Moreover, one radial carpal element, the os centrale, is missing in man, gorilla, and chimpanzee, thus further reducing the bony architecture of the radial side of the carpus. On the other hand, the reptilian carpus has a strong solid, rod-like scaphoid. If one could transpose the reptilian scaphoid to the human hand the wrist might be rendered much more stable, but at the cost of those movements of adduction and abduction, as well as supination, so essential in cutting up food on the plate and transferring it to the mouth.

The scaphoid is the most irregular and variable of bones in the carpus both from the point of view of comparative anatomy and from that of individual variation in man and the primates. The scaphoid may be absent as reported by Botreau Roussel (1922) or only partially developed, as in the case recently reported by Hodgson (1944). It is the most variable in the child as regards the time of appearance of the centre of ossification, and it may occasionally precede or more usually follow the appearance of ossification in the trapezium and trapezoid. Again, in the individual it varies considerably as regards dimensions in association with a heavy or a slender wrist, and it varies in particular in its proximo-distal thickness. It varies also as regards the development of the anterior tubercle and the posterior transverse ridge, and this in turn decides whether the waist of the bone is more or less marked. The anterior tubercle develops in proportion to the thickness of the anterior annular ligament (flexor retinaculum) of the wrist and the bulk of the short abductor pollicis muscle. The posterior transverse ridge varies essentially with the development of the radio scaphoid and dorsal carpal ligaments, as these ligaments sometimes form a transverse gutter rather than a rough ridge on the bone, between the proximal articular surface for the radius and the distal surface for articulation with the trapezium and the trapezoid. One might almost say that there is a particular anthropological type in which fracture of the scaphoid is more apt to occur.

Fractures of all the other bones in the carpus are occasionally seen, but the frequency of flake fractures in the cuneiform and os magnum, and their omission in most modern textbooks, is such as to justify the application of a good comfortable plaster cast to any sprain of the wrist accompanied with pain on movement.

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## Correspondence

### Observation and Common Sense in the Student's Training

SIR,—Twenty-five years as a teacher—however inefficient—of medicine, and fifteen years as an examiner—however inadequate—should entitle one to presume, through this dual experience, a qualification to venture some observations upon the subject of Dr. Ff. Roberts's entertaining article (*B.M.J.*, Aug. 26).

I am whole-heartedly in agreement with Dr. Roberts's suspicion that there is something about the system of medical education which suppresses such powers of observation as the student naturally possesses. I am confident that the average medical student easily surpasses in native ability and mental equipment the average of the population of his age and social position. The defects in his methods of application when he appears for his final examination will be explained by all conscientious examiners as dependent upon the imperfections of his education, more especially as all examiners are themselves teachers.

From the moment that he enters the wards until the moment that he safely navigates the shoals and quicksands of Queen Square (or its equivalent) he is confronted with obscure pathological material and rarely the trivial or commonplace, because the subjects selected for admission to hospital are as a rule either seriously ill or afflicted with conditions of complexity or difficulty which demand elaborate investigation. It is not surprising, therefore, that he tends to acquire a distorted impression of the practice of his profession which is going to occupy the whole of his working life, and this frame of mind is fostered by the character of his final examination.

His teachers are obsessed, or at least unduly influenced, by the necessity to produce not efficient practitioners but qualified medical men, and their approach is adjusted to the demands imposed by examinations. Dr. Roberts repeats the well-known instance of failure to recognize an artificial eye. But the circumstances of his education justify the student in expecting that the failure of a pupil to react must necessarily be viewed in the light of a pathological lesion. He is in the position of the jailer who cannot imagine that anybody in the dock can be innocent unless he is guilty of some crime or other, what is he doing there? I have often been tempted to produce for the clinical examination a number of perfectly healthy subjects in order to see how many candidates would have the courage and confidence to assert that they were unable to detect any lesion.

It is the atmosphere we create in our clinical instruction which inhibits the common-sense approach and leads to the logically expressed criticism that the powers of observation of the average medical graduate are "relatively undeveloped." Over and over again in a question to a class on an issue of common sense my appeal has been met with silence until I have issued the invitation to forget that they are medical students but to answer as ordinary men in the street. And invariably the correct response is forthcoming. There is learned talk of future education in psychology, in social medicine, in psychosomatic medicine, as if these are to be additional bucketfuls in the ocean of instruction to which the student has already to submit, instead of a general principle which should underlie every circumstance and detail of his training. No doubt I shall be reminded that the out-patient department should provide this method of instruction in *excellis*. So it should, and so it can, but how rarely is this achieved! The circumstances under which such practice is necessarily conducted afford great difficulties to even the most enthusiastic and energetic out-patient physician intending to combine attention to the sick with undergraduate instruction. It is clear, moreover, in what light such trivial or relatively uninteresting conditions which possess the minimum of examination value are generally held, when this work is entrusted to the most junior members of the staff, who have to accept this apprenticeship as a preliminary to promotion to the wards. True, there has to some extent been a move to demand both in-patient and out-patient attendance from all members of the staff, but

the most logical application from the point of view of efficient instruction would be promotion in the reverse direction, entrusting the out-patients to the most senior and experienced.

I have mentioned the nature of the final examination in influencing the character of clinical instruction. May I be permitted to enumerate a few examples of the type of question which I have thought appropriate to test the ability of a candidate and assess his suitability to begin the practice of his profession and employ the knowledge he possesses?

What is the significance of pallor?

What can be learned by a visual examination of the nails (or the tongue, or the sputum, or the stools)?

How would you investigate a complaint of tiredness in a man of 45?

What are the commonest causes of headache in a child of 10 years of age?

I know that this is not the type of question that is popular with examinees. The answers are not to be found conveniently arranged in any textbook of medicine. They cannot be dealt with by selecting and putting on the appropriate gramophone record. Nor, it must be admitted, are they particularly popular with fellow-examiners, who naturally prefer to run the eye rapidly down a column to see if the essentials for a pass are present rather than plod wearily through material, generally illegible and more or less unreadable. No wonder one sees the preponderance of the stereotyped request for the causes of haemoptysis, the treatment of gastric ulcer, the signs and symptoms of this, that, or the other condition.

Was it Talleyrand who said that a good doctor should know a little about everything, even medicine? This, I suppose, is really what is nowadays interpreted as social medicine. I have the impression that those of us who started 35 or 40 years ago mixed more freely with our patients. Perhaps we had more leisure to observe; perhaps we were less overwhelmed by the complexities with which the modern student is obliged to contend. I used to wonder why some of my contemporaries, utterly undistinguished academically, were so successful in practice. But now I cease to wonder. They had spent their time to advantage in learning a little about everything, even a little medicine.

Dr. Roberts pleads for a revolution in medicine. I am sure he is right, but I wonder who have the knowledge and the authority to reconstruct the curriculum and to choose the right type of teacher, one who combines adequate knowledge with a correct clinical approach. I have heard of a physician to a teaching hospital who refuses to see any patient under his care unless and until his house-physician has obtained every possible pathological and radiological examination. He is then prepared to shuffle a pile of reports and deliver an opinion. It seems unnecessary that he should see the patient at all. Imagine the devastating damage that such a procedure does to his clinical clerks. This is an exceptional example, but the principle is reproduced to some degree only too often in teaching schools.

It is difficult to define what it is easy to recognize. Many of us can see the imperfections of a system while unable to reconstruct. We are inclined to babble about the importance of first principles in training, after which the further instruction of the general practitioner or the production of the specialist would be a comparatively simple matter.—I am, etc.,

London, W.1.

ADOLPHE ABRAHAMIS.

### Limitations of Current Medical Training

SIR,—The article by Dr. Ff. Roberts—and the previous one in the same strain by Sir Walter Langdon-Brown, to which Dr. Roberts refers—have emphasized a state of affairs which has exercised my mind a good deal during these war years—namely, the training of the new entry in our profession. Having retired from practice before war started, and been out of touch with students and junior practitioners for some time before that, I have been startled and much disturbed by the limitations of current medical education as exhibited by the young doctors whom I have met in E.M.S. and other public hospitals since war began (when I returned to harness). The modern trend to specialization is, no doubt, inevitable, owing to the complexity of scientific medicine and surgery nowadays; and it should be beneficial if properly controlled. As things are, however, the

new generation, in my view, specializes at far too early a stage, and undertakes to become an expert in some branch of our art long before any real knowledge of medicine or of human nature has been gained. The result is a great number of pseudo-specialists, many of whom openly boast of knowing nothing outside their specialty, in fact, they are in many cases grossly ill equipped to practise even that. Unfortunately those who remain in general practice are only too prone to refer all except the most trivial cases of illness to one or more specialists, whose verdicts are accepted as if they were oracles from heaven, without critical examination of any kind. Since many of these self-styled 'specialists' are ill educated, the most grotesque errors of diagnosis and treatment are liable to be perpetrated.

But this is an earlier stage than this at which clinical teaching seems to me to have taken a wrong turning. The student is brought up to believe that diagnosis can only be made in the pathological laboratory and the x-ray room. Every new case in a teaching clinic is at once subjected to eight, ten, or a dozen pathological tests, nearly all of which are superfluous. Instead of using laboratory findings as aids to, or checks upon, diagnosis, after a thorough and full investigation of the physical signs, the modern student never learns anything about the latter, but relies entirely on a series of reports from these special departments. Observation of the patient is so cursory as to be non-existent: the elicitation of physical signs is fast becoming a lost art.

I once saw two consecutive cases of lobar pneumonia in the same ward in which the consolidation was diagnosed on the wrong side. What had happened, I suspect, was that the diagnosis was made on laboratory findings. Being incapable of learning anything from percussion because he had never been taught the proper way of doing it, and not observing that one side of the chest was immobile whereas the other was working over time, the RMO mistook the suppressed breath sounds of a solid lung for the normal, and the exaggerated vesicular murmur of the unaffected side for bronchial breathing. To complete the story, the patients were dosed so immoderately with sulphapyridine that both developed lung abscess and died.

Nor is this a highly exceptional case. In many hospitals practically every case of pyrexia, even when clearly due to an abscess, is at once subjected to sulphonamide treatment, quite regardless of whether this is indicated or not, and this drug treatment, even when it is likely to be beneficial, is often pressed to absurd overdosage. When penicillin is made widely available I expect to see just the same sort of indiscriminate misuse of it.

As for the diagnosis of cardiac disease, for all the effect James Mackenzie has had on the young generation (and therefore, presumably, on their teachers) he might never have existed. Very few of the junior members of the profession think of ascertaining the position and character of the apex beat, the size of the heart, the regularity of its action, or its functional efficiency. Murmurs are their sole criteria of cardiac disease, usually misinterpreted at that. Quite recently I saw a woman in her sixties perfectly able-bodied and free from all symptoms of (physical) disease. Eight years ago she was examined by a young doctor who is well thought of by some of his seniors: he then diagnosed mitral regurgitation, mitral stenosis, and aortic stenosis (she was equally free from symptoms then). She has, in fact, an apical systolic murmur due almost certainly to atheroma, and no other abnormal sign of any description whatsoever. Mitral stenosis, more than any other valve lesion, is diagnosed about four times as often as it exists.

I am sure that the fault lies mainly with the clinical teachers, who demand of their residents all kinds of irrelevant pathological reports on every case, the latter accordingly get into the habit of having even more laboratory reports ready for their chiefs when they come, so as to be able to anticipate every requirement. The students in attendance naturally think no diagnosis is possible without all this expensive and time-wasting redundancy. I know of a case where a resident, confronted with a simple dislocation of the jaw, sent the patient a considerable distance in a car to an x-ray clinic (thus wasting time, petrol, and a film) for confirmation of the diagnosis, on the return journey the dislocation reduced itself in the car.

No so long ago I put these views to two pretty senior teachers at two different medical schools. One said, "Well, if you

saw, as I do, the mistakes made in general practice for want of an elementary laboratory report, you wouldn't wonder at my impressing on my students the need for this assistance." The other said, "I find the laboratory reports are more often right than my diagnoses based on physical signs." Both these answers beg the issue: they are virtually an abdication of the function of the physician, which is to use every method of investigation to establish the diagnosis and direct the treatment. Laboratory reports should be only part of the investigation of a case, not the whole of it, as the new entry are being taught to believe. It is perhaps not necessary to stress the wasteful extravagance of repeated and unnecessary laboratory investigations—and my experience in hospitals leads me to believe that quite seven out of eight are unnecessary. I will just end by saying that I can show anyone who likes to see her a patient who has had no fewer than 263 blood counts done—I have seen that number of reports, and the pathologist tells me that there were in fact many more, about 400 altogether, he thinks, she is no better now than she was before the series began—nothing has been learnt that has been of any help to diagnosis or treatment. She is, I fear, a typical example of the most up to date methods of medical science—I am, etc.

HENRY ROBINSON, M.D.

### The Road to Positive Health

SIR—I am one who has lived during fifty eventful years of history, and more than half of them as a general practitioner. During that time advances in knowledge, particularly in the fields of science, have been remarkable, and ever the pace quickens.

Looking around and back I am fain to ask myself, How is it that the difficulties of life still multiply, that the mists of confusion appear ever thicker and thicker? How is it that a true philosophy of life grows more remote? The ignorance, class hatred, bitterness, vice, the misery, the squalor and wretchedness of so many homes, all these things that I have witnessed, how is it that these still abound, even in this supposedly enlightened country? How is it that after two thousand years of so-called Christianity the unspeakable horrors of the present and the last wars, with cruelty unsurpassed in the world's history, should still be possible among civilized men? How is it that in the world of to-day there exist as many inherent evils, monsters, imbeciles, and perverts of every sort and kind as there were before the birth of Christ?

How is it that such musings can make all the poetry of literature, of music, of colour to appear as but the mocking diversions of unreality? The answer that I find is that man is master or would-be master of all things but himself, that he has devoted all attention to his surroundings and but little or none to himself or the fundamentals of his origin. In every walk of life, the medical not excepted, modern trends and training have produced a plethora of able technicians, but they are responsible, too for a veritable dearth of stylists. If the question were asked, What is the profession of the doctor? ninety nine out of a hundred answers would be, The treatment of the sick. The pages of your *Journal* Sir are filled with the endless pursuit of, the latest contrivances for dealing with, the disease enemies of mankind. With the passing years of the physician's practice the conviction grows that, however great the absorption of the mechanic in the repair of broken down machinery, or the joy of the restorer in his own ingenuity, yet, inasmuch as treatment or even cure is not prevention, and the machine is but a machine in part, the theme is not based on ultimate causative factors, and practice therein is bound to eternal frustration, and may even defeat its own ends. When this is accompanied by such reflections as outlined above, then indeed a sense of utter futility may impose itself. Doctors will agree that the definition of their work is altogether too narrow, and that experience leads to a knowledge of people and a philosophy of life which is both wide and deep. Yet that knowledge is seldom publicly voiced and even less often with more than the weight of isolated individuality.

The introduction of a national medical service, always provided that the doctors escape political subversion, may enable the profession to make its voice heard, as it has not been heard hitherto, in the councils of the nation, and to join in

shaping the eugenics of the race, using the term in its widest sense. Will the opportunity be taken? In the years immediately to come this country and the world will have need of all the collective wisdom of its wise men if it is to build anew and better upon the years of suffering and of human degradation. Among these counsellors the doctors, speaking as an influential and united body, should surely be found.

All the implications of positive health—and I appeal to my colleagues to reflect thereon—if probed to their ultimate foundations, will be found to extend far beyond even those premisses in the British Medical Association report. In my belief acceptance of those implications would herald in a fullness of breadth and splendour a reorientation of the ethics of medicine.—I am, etc.,

E. D. BROSTER.

### Specialties and Diplomas

SIR,—There is so much in Dr. Walshe's stimulating article on higher or postgraduate studies in your issue of Sept. 2 which commands assent that I hesitate to appear in any way critical of his views. However, I do not think that he is right in his advocacy of the segregation of certain specialties, nor do I think he presents the case for and against postgraduate diplomas quite fairly. In regard to the first point, he advocates that "neurology, dermatology, paediatrics, etc., should be pursued methodically in adequately staffed and equipped special hospitals and schools." I cannot help feeling that Dr. Walshe's favourable view of such a system in general is based on a particular example. The success of the National Hospital for Nervous Diseases in relation to the ideals at which we aim will be generally accepted. The reason for this success may perhaps be attributed to the fact that neurology is a well-defined branch of medicine, and in that the precision of its methods and the conclusions of which it is capable have attracted many of the best intellects in the profession. Whether this hospital could have benefited medicine as a whole even more than it has if they who there studied structural change in the nervous system had been more closely associated with those concerned with disorders of its functions is a matter of opinion.

To put dermatology on the same footing as a specialty is open to question. The dermatologist is more often than not considering a surface manifestation of a deeper disease, and to segregate the treatment and study of such conditions can no more be expected to further progress than if we were to establish, say, a special hospital for all those suffering from a limping gait.

Paediatrics, it seems to me, should certainly be studied in a general teaching hospital, unless these are to be entirely masculated and yet remain responsible by virtue of their organization for a large proportion of early postgraduate training.

What Dr. Walshe's "etc." contains is a matter for speculation. If he refers to thoracic and rectal surgery, and orthopaedics are to be included under this heading, I would submit that these subjects are but subdivisions of general surgery and that progress and education in medicine will be best served if they form sections of a general teaching organization. Dr. Walshe's statement, "The one or two men staffing the small special department must perforce work in comparative intellectual isolation," may be true of some existing organizations in our smaller teaching hospitals. The remedy is not to isolate them further in special hospitals, but to extend their sphere of activity and ensure contacts of their staff with workers in all branches of medicine. If a teaching unit as recommended by the Goodenough Committee controls at least 1,000 beds (chap. 3, para. 27), it will be possible to provide staff and adequate in- and out-patient accommodation for most of the recognized special subjects. The success of the Mayo Clinic in many fields of postgraduate teaching and research may be put forward as an example of the value of the mutual contacts and discussions which it has made available to members of all branches of the foundation.

In his assessment of the disadvantages of postgraduate diplomas Dr. Walshe does not consider the oldest and best-established of these based on the earliest form of specialization in medicine—namely, the F.R.C.S. and M.R.C.P. Both these dip-

lomas are generally accepted as evidence of a man's sound early training in the basic sciences and his subject; few would regard them as more than that. In their present form and conducted by examiners imbued with the right spirit they do ensure a period of study which is a salutary experience and discipline for the majority. Classification by examination has its obvious defects, but preparation for higher examinations takes but a small fraction of the time necessary to the training of an individual in the highest standards of medicine. Admitting the advance and need for specialization—and Dr. Walshe does—it is reasonable to suppose that the examinations for diplomas in certain subjects can be so planned that a comparable knowledge of the basic science in relation to the specialty has been required. The further progress of the specialist will always depend on his innate ability and his later opportunities for study.—I am, etc.,

Ox. & d.

C. MAX PAGE.

### Refresher Courses for the G.P.

SIR,—Dr. Walshe, in his admirable survey of ideals for postgraduate medical instruction (*B.M.J.*, Sept. 2, p. 297), condemns refresher courses for general practitioners. These, he says, are of little or no cultural value, and their influence is but transient.

This has not been our experience at the Royal Northern Hospital. Practitioners were loud in their praise of these courses; indeed, some of those who attended continue to write to my colleagues and myself of the benefits they received from our refresher courses, the last of which was held five years ago! Many of the doctors went so far as to state that the clinical facilities they were afforded and the teaching they received at the Royal Northern Hospital proved to be of lasting benefit to them in their professional work.

In this connexion I should like to point out the great possibilities of extending postgraduate instruction at the non-teaching hospitals. As opposed to 11,600 beds controlled by the teaching hospitals, the non-teaching hospitals of the British Isles possess 51,000 beds. Furthermore, the out-patient departments of some of these institutions are favoured with clinical material second to none. Again, those interested in this subject can easily verify that teachers are not lacking at these hospitals; indeed, they will find that, owing to an unexplained anomaly almost peculiar to this country, some of Britain's best-known teachers and consultants are relegated entirely to non-teaching hospitals. These facts call for an explanation as to why the non-teaching hospitals had little or no direct representation in the recent conference with the Minister of Health on the subject of medical education and consulting practice.—I am, etc.,

London, W.1.

HAMILTON BAILEY.

SIR,—Dr. Walshe in his article (*Journal*, Sept. 2) doubts the value of short refresher courses for general practitioners. As a general practitioner I agree with him in so far as the short courses run before the war for panel practitioners are concerned. I attended one in 1938 which lasted a fortnight. Looking back on it my criticism would be that a fortnight was much too short a time for us to get back into the academic atmosphere; that it was held in a hospital which was not a medical school; and that the staff of the hospital, who were as keen as we were that the course should meet our needs, were very uncertain of the kind of teaching that would serve this end.

The postgraduate training of a general practitioner who intends to remain in general practice, and who is not seeking a diploma with a view to specializing, should, I think, be on the following lines. The period should be a full academic year. The student should be given appointments with definite if limited responsibilities in the practice of the hospital—as a clerk or dresser in the various departments—and at the same time he should have the opportunity of attending tutorial classes covering the field of medicine in its widest sense. A general practitioner does not need to know the details of surgical, pathological, or other special techniques; but he does want to know what can be done by methods introduced since his student days, and he needs to check and revise the methods he has been accustomed to use. I believe, however, that the most valuable part of a course of this kind would be the rubbing of one's wits against one's fellow students', and the

living again in an atmosphere of active thought. The school to give such training should be specially organized for the purpose—not ticked on to an undergraduate school or to a research institute, nor should it be a school for potential consultants and specialists who are seeking a higher diploma. If it should become possible for all general practitioners to spend one year in ten in such a school the level of medical work would be not only raised but kept high—I am, etc.,

KINGSWOOD BISTOL

N S B VINTER M B

### Food and the Nation's Health

SIR—The White Paper has been from time to time criticized for its meagre references to the preventive side of medicine in general, and to that of nutrition in particular. Is it not time that the Ministry of Health should be pressed to give assurances that this fundamentally important problem will be tackled energetically the moment the exigencies of the war allow and that it will be looked upon as an integral part of any health service that may be forthcoming?

During the last twenty years or so a vast amount of information has been acquired showing the close relation between food and health—both physical and mental. It is a humiliating thought that animal breeders have a much keener appreciation of the importance of feeding their stocks properly than the authorities who are responsible for providing the nation's food. The medical profession has been stressing for years the virtues of a wholemeal loaf, an uncontaminated milk supply, a fresh fruit and vegetable supply, and other food reforms. The response of the authorities concerned has been far from satisfactory.

To show what can be done in a small way, and in a comparatively short time, I need only refer to the efforts made by the Cheshire Medical and Panel Committee and the Peckham Health Centre to raise the standard of the people's health. To the best of my belief the work of these two bodies has been carried on without any support—financial or otherwise—from the Government or any public authority.

The Minister of Health, with all the resources that he requires at his disposal, has a supreme opportunity now to initiate a long term plan for the reduction of sickness founded on a more rational and natural basis, and at much less cost, than by the methods set forth in the White Paper—I am, etc.,

Walton-on-the-Hill Surrey

C N BINNEY

### Tapeworm in Trout

SIR—I have read with much interest the article by Dr Hickey and Mr Harris on the infestation of reservoir trout in Dublin with *Dipyllobothrium* larvae.

In 1944 Duguid and Sheppard recorded a similar outbreak among trout in a South Wales reservoir, but in this case the natural definitive host was not found. Later, an experimentally infected rat was kindly sent to us by Prof Duguid, and material obtained from this animal enabled us to complete the life-cycle of the parasite in another mammalian species, the dog *Coracodia*, which emerged from eggs passed in the faeces of the rat, were fed to *Cyclops* which in turn were fed to the stickleback (*Gasterosteus aculeatus*). The plerocercoids which developed in the body cavity of these fish were shown, both directly and after passage in the pike, to infect the dog. In view of this fact, Dr Hickey's implication that the two outbreaks are similar and that in Ireland at any rate, the gull and cormorant are the definitive hosts, is of considerable interest.

If we are to accept this suggestion, then this particular species of *Dipyllobothrium* which appears to develop equally well in the mammalian as in the avian host, exhibits a degree of specificity which is surprisingly low, even among the Pseudophyllidae. While Dr Hickey's suggestion may be perfectly correct the evidence he produces is insufficient on which to base a statement that the adult tapeworms found in the gull and cormorant have resulted from the ingestion of plerocercoids from the trout for so far as we can ascertain he has as yet made no attempt to support this statement by actual feeding experiments. The fact that Dr Hickey has considered the causative agent of the Welsh and Irish outbreaks to be the

same has apparently been made on the similarity of the plerocercoids from each of the outbreaks. A proportion of the plerocercoids recovered by Duguid and Sheppard were atypical, as compared with those of *Dipyllobothrium laevis* showing incipient genitalia and evidence of segmentation. A possible explanation is that the trout in South Wales were infested with plerocercoids belonging to two distinct species of *Dipyllobothrium* one of which develops in the avian and one in the mammalian host.

A full account of the life cycle of the parasite which caused the outbreak among trout in South Wales will be published in the near future—I am, etc.,

K UNSWORTH B V Sc

Department of Parasitology  
Liverpool School of Tropical Medicine

### Episiotomy

SIR—In his letter on episiotomy (Aug 26, p 291) Dr H S Gaskell quotes a London postgraduate teacher as saying "Do an episiotomy in all prumps." To me this seems most unfortunate teaching. By all means do an episiotomy where the only alternative is a serious perineal tear, but to suggest that the perineum can never be saved by any other means is to rate our skill pretty low—lower than that of many a midwife.

However the object of this letter is not to criticize but to draw attention to a simple tip which seems to be less widely known than it deserves. Like many good things it is very simple. When the greatest diameter of the head is beginning to stretch the perineum the mother's legs should be fully extended at the hips. I first saw this point mentioned in a short note by Dr W E Fothergill (*Medical Annual* 1921, p 284), and I earnestly commend it to anyone—midwife, practitioner, or even postgraduate teacher—who has not given it a trial. As Dr Fothergill remarked your trousers don't tear when you are standing but when you are bending down—I am etc.

Farnouth

W E H BANKS

### Military Psychiatry

SIR—A very interesting point about the military psychiatry in the Middle East is that if there had been enough transport a large number of men who were sent back to duty and recovered would have been sent back to this country to be discharged from the Service. It would be a great help to older practitioners if the figures given by Col Craige might be transposed into the unofficial classification of the last war. I am particularly interested, because I have had the very unusual experience of acting as M.O. to a mixed unit of Army and Air Force in two wars. In both wars I found a big difference between the two Services. We used to divide the psychological cases into (1) a very small group of genuine diseases such as dementia praecox, (2) a very small group of malingerers—real wrong uns who would deliberately fake a disease, (3) a very much bigger group of "skrimbankers"—men who were making the most of a disability. They saw no reason why they should hurry back to the line, and, anyhow, why should not somebody else take a turn? They were not going back until they were sent and anyhow they were not going on "any bloody route marches", (4) a big group of neurotics the most interesting group was that of the pilots who were firmly convinced that any man who crashed was unfit to fly for the rest of the war. But most of them were the ordinary people who are enormously interested in their health.

If Col Craige would put the modern label to the e groups with the corresponding figures, it would make comparison possible—I am etc.,

Wetherby Yorkshire

R L KITCHING

### Laryngeal Spasm under Pentothal

SIR—I would like to congratulate Dr Philip Ayre on his lucid exposition (Aug 19 p 254) on the role of the anaesthetic agent in relation to the surgeon. Like dermatology, it is not only what is put on that matters but the way it is put on.

Believing as I do that laryngeal spasm is an avoidable complication of pentothal anaesthesia, I sincerely think that Dr Ayre

must be so skilled that he has never, perhaps, needed to attempt intubation on a patient with severe spasm. I have tried once. It was a simple short orthopaedic case who vomited and developed spasm following pentothal administration 4½ hours after his breakfast. In this case the false cords were so tightly apposed that intubation was impossible. I dare say a metal tube could have been forced through, but at what risk? Anyway, the patient recovered later with oxygen inflation.

My impression is that once severe spasm has been allowed to develop, nothing can be done until the false and true cords have relaxed. This relaxation unfortunately does not occur until the patient is so anoxaemic that he is pulseless, black, and virtually on the point of death. However, if at this stage the mask is on the patient's face and the anaesthetist is prepared to inflate the lungs a dramatic recovery should occur. In these circumstances intubation is surely unnecessary and a waste of priceless time.

How is laryngeal spasm avoidable? May I, Sir, have further space to attempt an answer to this inevitable question?

1. Atropine helps by diminishing the chance of secretions being drawn on to the larynx.

2. Respiratory obstruction must be avoided during the injection. Even one obstructed respiratory effort may produce a cough and spasm. One so often sees pentothal being injected while no attempt is made to lift the relaxed jaw. Consequently every effort at respiration produces merely a tug on the larynx, and when at last the airway is freed, mucus is drawn on to the larynx, and spasm results.

3. Avoid using pentothal, certainly in large doses, on a patient whose stomach is not empty.

4. Take away at once any irritant, be it cyclopropane, ether, or nitrous oxide, till the spasm has passed, as it will if the irritant is quickly removed. This may cause delay, but it is safe.

5. Give oxygen as soon as the patient becomes dusky. Do not wait till he is blue.

6. Avoid inserting an airway too soon. This may produce gagging and a cough—the precursors of spasm.

7. Avoid attempting intubation on the uncocainized larynx following pentothal alone unless a "knock-out" dose has been given.

Many tragedies have been attributed to pentothal, but I have not heard of one unavoidable death due solely to pentothal when given competently.—I am, etc.,

P. S. A. HEYWORTH,  
Fl. Lieut., R.A.F.V.R.

### Trilene Anaesthesia

SIR,—I read with great interest Dr. Enderby's excellent paper on trilene in the *Journal* of Sept. 2. Coming, as it does, from one with so wide an experience of this agent it will, I am sure, prove very valuable to all anaesthetists who are in search of authoritative guidance in this somewhat controversial subject. There are, however, one or two minor points in relation to trilene anaesthesia which I should like to mention by way of slight amplification.

It is possible to eliminate the risk of overdosage, so properly emphasized in this article, if the nitrous oxide and oxygen are blown over the surface of the trilene intermittently for 5 out of every 10, 15, or 20 minutes according to the requirements of the patient. This procedure prevents undue elevation of the respiratory rate, which in fact can be used as a guide to depth of anaesthesia, and at the same time does not mar the smoothness of the anaesthetic. I should also like to draw attention to the electrocardiographic studies of the heart's action during the administration of trichlorethylene recently published in America (Waters, R. M., Orth, O. S., and Gillespie, N. A., *Anesthesiol.*, 1943, 4, 1; and Geiger, A. J., *J. Amer. med. Ass.*, 1943, 123, 141). These workers noted the rather ominous occurrence of multiple-focus ventricular extrasystoles.

Trilene is non-explosive and practically non-irritant, and is the best available volatile agent for use in the presence of diathermy. The fact that it cannot produce more than at best light second-plane anaesthesia will, however, sharply limit its usefulness unless the avertin-trilene sequence proves generally satisfactory. Since its action on the cardiac rhythm is still suspect, and the signs of anaesthesia are sometimes misleading, it is doubtful if anything is to be gained by using trilene as a routine adjuvant to nitrous oxide and oxygen instead of ether, except, perhaps, in patients with an extremely irritable pharynx

who will not tolerate ether vapour without violent coughing. Finally, let us teach our students an even healthier respect for trilene than they have for cyclopropane, because of the two the former is probably the more dangerous drug.—I am, etc.,

Manchester Royal Infirmary.

A. R. HUNTER.

### Congenital Atresia of the Oesophagus

SIR,—In an annotation in your issue of Aug. 26 you were good enough to refer to my interest in this matter as set out in the Haliburton Hume Memorial Lectures delivered in May of last year (*Newcastle med. J.*, 1944, 22, 1). Some of your readers may like to know that ample justification for my confidence in the surgical management of this condition has been provided by the work of William E. Ladd of Boston, U.S.A., who is so well known for his successful surgical attack on congenital defects in infants. That surgeon has made a notable contribution to this subject, and has recorded 5 successful cases among 34 subjected to operation. An account of his work will be found in a fully illustrated paper published in the *New England Medical Journal* for May 25, 1944 (230, No. 21), entitled "The Surgical Treatment of Esophageal Atresia and Tracheo-esophageal Fistulas."—I am, etc.,

British Postgraduate Medical School,  
London, W.12.

G. GREY TURNER.

### Service Medicine

SIR,—In my humble opinion it is regrettable that you published in your issue of Aug. 19, under the heading "Service Medicine," a letter from the pen of a correspondent who is anonymous.

So long as the war continues every effort of all the members of our profession, particularly those of us who are privileged to serve the armed Forces of the Crown, should be directed solely to perfecting our methods, both clinical and administrative, of alleviating the sufferings of the wounded and of the sick. Such controversy as your anonymous correspondent would raise cannot contribute to the wartime efficiency of the profession; on the contrary, if your anonymous correspondent really has the following he claims it could seriously impair the profession's paramount and only function during the continuation of hostilities. Anonymity is a safe and fine fortress from which to level ill-timed, ill-judged, and unbalanced attacks against professional colleagues.

It is well for all of us to remember that, as doctors, we must both *minister* and *administer*. The time to discuss the relative importance of these two professional functions, as well as to what extent they can be, have been, and are being combined, is not now, when all our energy is required to serve, in our professional capacity, our air-crews and the ground-staff by whose efforts our aircraft are maintained.—I am, etc.,

FREDERICK W. ROQUES, Group Capt., R.A.F.  
Another Temporary Medical Officer.

SIR,—Of course "Temporary Serving Officer" is right when he affirms that Air Cdres. Cade and Conybeare are making a serious mistake when they paint an idealistic picture of Service medicine. Probably if he and I were in the same consultative position we should be in a different position clinically to make similar assertions.

I speak as a resident medical officer of a teaching hospital before the war, and over seven years as a reserve officer in one of the Forces. I fully endorse your correspondent's views, and agree with him when he says that the vast majority of Service doctors, while recognizing the need for compulsory regimentation in time of war, deplore the system and accept with resignation the methods of the bureaucratic machine. If I were a sole example of a medical officer bereft of clinical work for five years I should not grumble but accept the position as inevitable. But the "anomalies and abuses" do exist; administrative posts do carry promotion, which more often than not is not indicative of merit but dependent on the recommendation of the commanding officer, who may know little or nothing of the individual professional capabilities, and regards him as a "good chap." I could quote scores of cases where competent men are not getting clinical work because the

key posts are for the most part held by regular officers. The medical officer is not assessed on clinical merit: I know of an expert in tropical diseases who functions as a medical transport officer abroad. A large part of medical organization could be fulfilled by non-professional officers performing the house governor's duties of a civilian hospital.

How many patients in Service hospitals seek the advice of their own family doctor privately while on sick leave or when the opportunity presents itself? There are many illnesses of mind and body which the patient prefers not to include in a Service record compulsorily reported by the Service medical officer.

Do let us think more of the art of medicine—of clinical work first and foremost—the best possible treatment for all and sundry by every available means; but doctors and not administrators must work out the best means how.—I am, etc.,

"PERMANENT RESERVE."

### Psychological Medicine and the Family Doctor

SIR.—I think it only fair that a senior family doctor, be allowed some observations on Dr. Gillespie's article (Aug. 26, p. 263).

The whole article suggests that the family doctor does not realize the psychological basis of his patients' complaints. This is not true. Dr. Gillespie states: (1) Dr. Halliday found 35% of his chronics to be entirely psychological. (2) Clouston found 50% of his immediate neighbours aberrated. (3) Two people in congenial jobs developed the one vertigo and the other headaches. (4) A man in the Army developed a skin disease because to please his father he volunteered for dangerous jobs he had no intention of pursuing further.

In answer I would say: (1) Halliday's material consisted of a fraction of the family doctor's work. How many did he cure? (2) Clouston was the only constant factor among those demented variants. Could it not be that Clouston was abnormal? (3) The only cure for those two people would be to change their jobs to suit them and to promote the stick-in-the-mud. As society is constituted one cannot do this. The only effect would be to have all the rest of their mates becoming vertiginous and "headachy" as the shortest road to a change of job and promotion. (4) Similarly the cure for this man is to give him suitable environment and please his father at the same time. How can you run an Army on such a footing?

Assuming that the psychologists are correct, is it right treatment to mass the ordinary sick in hospitals and the mentally sick in mental hospitals? The psychological pattern of the average hospital ward would puzzle a psychiatric Solomon. How terrible that little children when sick should be massed together in order that their complexes may be fixed for life!

The family doctor gets tired of the specialists talking down to him. It would be laughable were it not that the general public more and more are reading those medical articles and the sensational press delights to exploit them. How it loves to cull from the oratory of the specialist the shortcomings of the family doctor!—I am, etc.,

Glasgow.

JAMES COOK.

### Prevention of Industrial Dermatitis

SIR.—In his further letter on this subject (Aug. 26, p. 290) Dr. L. B. Bourne misquotes the incidence figures for industrial dermatitis in 1943, as set out in my report (May 13, p. 660), by adding the machine-shop totals to those of the factory as a whole, in which of course they were included. He claims only "two cases in many thousands of workers this year," but I note that in his former letter (July 8, p. 57) he gave "two notified cases during the past year," and he then admitted also "a number of rashes of various types due to sensitization from industrial products." He does not give the total incidence of all industrial dermatoses in his factory and those losing any time, as I have done, and without which no comparisons can be made. Two notified cases—that is, cases absent from work over 3 days—may mean a large case incidence, and even skin diseases that are cured at the factory surgery without absenteeism cause a great deal of lost working time in attendance for treatment. Dr. Bourne infers that I rely solely on skin cleansing by means of the neutral sulphonated

castor oil (N.S.C.O. cleanser), and ignores the stress I laid upon the Factory Department's recommendations as to machine guarding, protective clothing, and adequate supervision. I would remind him also that my success with the N.S.C.O. cleanser followed my previous failure to prevent the occurrence of oil and paraffin dermatitis with barrier creams before, and lotions after, work. My statistics for all industrial dermatoses to date are as follows:

	1942	1943	1944 (7 months)
Case incidence	414	188	7
Ratio to personnel	12.5%	5.7%	0.03%
Notifiable cases	6	2	2

The N.S.C.O. cleanser was first used in Nov., 1942, and its use was gradually extended to workers on all "dirty jobs" throughout our factories. My own experience with it is being confirmed by the experiences of 54 other large industrial concerns and Royal Ordnance factories to which it has been supplied. Even if barrier creams, in machine shops, would do all Dr. Bourne claims, I greatly prefer the simplicity of the N.S.C.O. cleanser to the application and removal of the barrier substance. The N.S.C.O. is obtainable from Reynolds and Branson Ltd., 13, Briggate, Leeds, 1.—I am, etc.,

N. HOWARD MUMFERY,  
Medical Officer, Aircraft Factory.

### Thumb-sucking

SIR.—Dr. Mary Sheridau, writing of certain speech defects and malocclusion of the jaws (Aug. 26, p. 272), says: "The frequency with which I either observed thumb-sucking myself or obtained a history of the habit from the mothers leaves no doubt in my mind of the permanently harmful effects of this practice." Is her mind not shedding its doubt on this subject much too easily? Did she contrast the percentage of thumb-suckers among her maloccluded cases against the percentage found in normal controls, or is she merely mistaking her clinical impression for scientific observation?

My own clinical impression, although gained from a much smaller number of children, is precisely the reverse of hers—namely, that thumb-sucking is not important so far as dental occlusion is concerned. I have noticed, too, that it is the flesh-motifiers who inveigh most heavily against the habit. If any scientific observations on thumb-sucking have ever been made the references would be of interest. If there are none we ought not to make any further oracular statements about it.—I am, etc.,

COLIN EDWARDS.

### Débridement

SIR.—In your leading article on the control of gas gangrene in your issue dated May 20, 1944, I was surprised to find the word "débridement" misused by the writer when he meant to say "excision." Reference to a dictionary or a work by a French surgeon will show that "débridement" means the opening up of a wound and all its recesses to facilitate the removal of foreign bodies and the establishment of drainage. A leader-writer's use of words should be above reproach.—I am, etc.,

India.

R. F. W. K. ALLEN.

### Dental Caries

SIR.—Dental caries is not a rare disease; most of us, although we are not dentists, have had an intimate acquaintance with it. We are familiar with the whitened sepulchre which shows only a slight stain although caries has penetrated to the pulp tissue. It is highly probable that cases of this type were missed by Mellanby and Coumoulos in their survey of London school-children (*B.M.J.*, 1943, 1, 837). But to explain the increase of the "non-carious" group that they found it would be necessary to assume that the percentage of children who had caries of this type and no obvious caries had increased by 17.7 between 1929 and 1943. Would not this be much more improbable than an actual reduction in the incidence of caries? It should be possible to get statistics that would answer this question. Without some statistics to support it the objection raised by Miss Smith (*B.M.J.*, 1944, 2, 94) does not seem valid.—I am, etc.,

London, E.1.

J. R. MARRACK.



## Obituary

SIR JOHN LUMSDEN, K.B.E., M.D.

Sir John Lumsden, whose death is announced from Dublin, had done extremely valuable work for the Red Cross in Ireland before, during, and after the last war. In 1915 he was made a Knight of Justice of the Order of St. John of Jerusalem, and in 1918 he was created K.B.E. In more recent years he held office as chairman of the Joint Committee in Eire of the British Red Cross Society and the Order of St. John of Jerusalem.

He was born on Nov. 14, 1869, at Drogheda, son of John Lumsden, a bank manager, and received his early education at the Dublin High School and at Taunton School. At Dublin University he graduated B.A. in 1891, M.B., Ch.B., B.A.O. in 1894, and proceeded M.D. in the following year. Soon afterwards he was appointed medical officer to Guinness's brewery in Dublin, and began to organize the medical service for the workmen of that great business and their families. In 1903 he formed the first Division of the St. John Ambulance Brigade in the South of Ireland, and in 1914 was in command of a large company of trained ambulance workers, of whom 70 had reported for duty with the Royal Naval Sick Berth Reserve by Aug. 6 of that year. From the outbreak of the last war he was the driving force behind the organization of war hospitals and nursing services in Southern Ireland, using his own house in Fitzwilliam Place as a depot and distributing centre. Lumsden and the ambulance teams under his leadership tended the wounded in the streets under fire during the Easter week rebellion in Dublin in 1916, regardless of their personal safety. His outstanding courage was recognized by the award of the silver life-saving medal of the Order of St. John and of the British Red Cross Society's medal for special services. During the last two years of the war he served in France with the rank of temporary major, R.A.M.C., on the staff of No. 83 General Hospital, B.E.F.

In addition to his work as chief medical officer to the firm of Arthur Guinness and Co. Sir John Lumsden was for some years senior visiting physician and lecturer on clinical medicine at Mercer's Hospital, Dublin; consulting physician to the Royal National Hospital for Consumption, Newcastle; and external examiner in medicine for the National University of Ireland. He had also been consulting medical adviser to the Commissioners of Irish Lights, and, for a year, physician to the Household of the Lord Lieutenant of Ireland. He was a Deputy Lieutenant of the City of Dublin and a Governor of the Rotunda Hospital, whose licence in midwifery he had obtained in 1893. He was the author of two small books, *Hints on Infant Feeding* (1900) and *Dietary Studies in Dublin* (1904), and contributed a number of papers on professional subjects to this and other medical journals. He joined the B.M.A. fifty years ago.

We regret to announce the death at Sevenoaks on Aug. 25 of Dr. JOSEPH LANGTON HEWER at the age of 84. He had been surgeon to the Mildmay Cottage Hospital, temporary assistant physician to Queen's Hospital for Children, Hackney, and honorary medical officer to the Invalid Children's Convalescent Home, Winifred House, Tollington Park, and the Home for Confirmed Invalids at Highbury. He came of a medical family, being the son of J. H. Hower, M.R.C.S., who practised for many years at Highbury, in North London, and had several brothers who were members of our profession. J. L. Hower was educated at University College School and St. Bartholomew's Hospital, and graduated M.B., B.S.Lond. (with honours) in 1883, took the F.R.C.S. in 1884, and the M.D. in 1886. He was in partnership with his father until the latter's death in 1893, when he moved into the old house and continued to practise until 1913, when he retired and moved to St. Albans. On the outbreak of the last war he helped some of the overworked local practitioners, and at its conclusion returned to London, where he had a consulting room with the late Dr. John Adams in Aldersgate Street. Retiring for the second time he made his home at Sevenoaks. Dr. Hower will be remembered not only for his professional skill but as a humble and earnest Christian. He leaves a son, Dr. C. Langton Hower, the well-known anaesthetist, and two daughters.

Dr. NATHAN GRAHAM WIGRAM, F.R.C.S., of Sloane Street, S.W., died on Aug. 30. Dr. A. Piney writes: The sorrow caused by the deaths of friends is often increased by the impersonal manner of the writers of obituary notices. One might suppose that the advice of Mephistopheles to the student had been taken seriously: "Wer will was lebendig's erkennen und beschreiben, Sucht erst den Geist heraus zu treiben." This thought comes to me at the loss of "Nat" Wigram, who was not only a first-class doctor but also a man of amazingly vivid personality. His far-sighted and comprehensive knowledge of his patients made him their trusted friend as well as their medical adviser—an adviser with whom they rarely argued, so certain were they of his integrity and professional skill. And those consultants to whom he referred his patients knew Nat as a man capable of reasoned criticisms of their opinions; and not only was he capable of doing so, he did so when he thought necessary in a way that nobody could ignore. He expressed himself forcefully and clearly, but nobody took it ill, because it was always obvious that the patient came first and the consultant's feelings a long way after. Wigram was a man to whom life was well worth living; and, although he had known for some years that his illness must prove fatal, he never let his own troubles make any difference to the care he gave his patients or to his intense interest in the progress of medicine. When he was confined to bed by the relapse that proved fatal, as he knew it would, he often said, "At least I have always given my patients good service." Death had no terrors for him, for, as he said more than once, "I have done most of the things I wanted to do, and, on the whole, have not done them badly." Those who knew Wigram will agree that he spoke no more than the truth. Well could he have said, "I warmed both hands at the fire of Life; it sinks and I am ready to depart." Wigram's death would have been a great loss at any time, but, in these days of standardized thinking, the passing of one who respected the opinion of the expert, while still using the perspicacity of the really good general practitioner, leaves a gap in the medical and social life of London.

We regret to announce the sudden death on Sept. 2, at Saltburn-by-the-Sea, Yorkshire, of Dr. ERNEST JOSEPH BURNETT in his 80th year. He studied medicine at Edinburgh University, graduating M.B., C.M. in 1887, and he obtained the M.R.C.P.Ed. in 1898. He was for many years consultant to the Brine Baths at Saltburn and medical officer to the Northern Convalescent Home there; he had also been surgeon to the North-Eastern Railway, medical officer to the Soldiers' Convalescent Home at Skelton, and medical examiner for the Women Emigrants Society and for the Canadian and Australian authorities responsible for immigration. Dr. Burnett joined the B.M.A. in 1899 and was a past-president of the North of England Branch. He was for a considerable time a Justice of the Peace, and received the M.B.E. in 1920.

Dr. GEORGE BARTLEY MCKEAN died suddenly at his home in Ledbury, Herefordshire, on Sept. 2. He was born in Belfast in 1876 the son of William McKean, and after schooldays at the Royal Academic Institution, Belfast, came to London to study medicine at University College Hospital. He qualified M.R.C.S., L.R.C.P. in 1902, and took the M.B., B.S.Lond. degrees and the F.R.C.S.Ed. diploma in 1906. From 1908 until his retirement from active work in 1941 he was honorary surgeon to the Ledbury Cottage Hospital and held a number of other local appointments. Before settling in Herefordshire he had been senior obstetric assistant at U.C.H. and senior assistant medical superintendent of St. Pancras Infirmary, Highgate. Dr. McKean joined the B.M.A. in 1911 and was chairman of the Herefordshire Division in 1924-5.

Dr. EDWARD PHILLIPS, late of Coventry, died peacefully at Oxford on Sept. 4 at the age of 86. After studying medicine at Queen's College, Birmingham, he took the L.R.C.P.Ed. diploma in 1881, the M.R.C.S.Eng. in 1885, and graduated M.B. of Durham University in 1886. After holding the post of senior resident medical officer at the Children's Hospital, Birmingham, Dr. Phillips practised in Coventry for half a century, and served for many years as honorary surgeon to the Coventry and Warwick Hospital and consulting surgeon to the Coventry Union Infirmary. He first joined the B.M.A. in 1882, and represented his Division at the Belfast Meeting of 1909. Apart from his medical record Dr. Phillips was a pioneer motorist, and several of his letters on the motoring requirements of medical practitioners were published in the earliest years of this century. He designed a motor cycle for use by medical men in 1899 and used it in his own practice; he also took part in the first 1,000-mile motor-car reliability trial held in this country. He leaves a widow and two sons, one a brigadier in the Army and the other serving in the R.N. emergency vessels.

## INFECTION DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended Aug 26.

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year, for: (a) England and Wales (London included) (b) London (administrative county) (c) Scotland (d) Eire (e) Northern Ireland

London (administrative county) (c) Scotland (d) Eire. (e) Northern Ireland

*Figures of Births and Deaths, and of Deaths recorded in the six principal towns, disease, etc for* (a) The 126 great towns in England and Wales (including London) (b) London (administrative county) (c) The 16 principal towns in Scotland (d) The 13 principal towns in Eire. (e) The 10 principal towns in Northern Ireland.

A dash — denotes no cases; a blank space denotes disease not notifiable or no return available

Disease	1944					1943 (Corresponding Week)				
	(a)	(b)	(c)	(d)	(e)	(a)	(b)	(c)	(d)	(e)
Cerebral malaria Deaths	30	1	17	—	—	48	3	20	1	—
Diphtheria Deaths	410	9	134	95	15	614	35	194	69	23
Dysentery Deaths	299	11	15	—	1	129	19	95	—	—
Epidemic typhus lethargica Deaths	1	—	—	—	—	—	—	2	—	—
Erysipeloid Deaths	—	—	42	7	1	—	—	45	7	—
Infant mortality rate (per 1,000 live births)	62	1	47	161	27	64	2	7	253	9
Measles Deaths	1,114	21	89	58	25	986	61	19	15	2
Orchialmia neonatorum Deaths	66	4	14	—	—	130	7	14	—	—
Paratyphoid fever Deaths	14	1	—	1(B)	3(B)	7	1	1	—	—
Pneumonia, influenzal† Deaths (from influenza)	321	13	6	1	1	337	23	8	—	2
Pneumonia, primary Deaths	6	—	1	—	—	7	1	—	—	1
Pneumonia, primary Deaths	—	10	105	3	5	—	13	137	12	6
Poliomyelitis, acute Deaths	—	—	—	—	—	2	—	—	—	—
Poliomyelitis, acute Deaths	25	—	4	2	—	14	2	—	—	—
Puerperal fever Deaths	—	—	5	—	4	—	3	18	—	—
Puerperal pyrexia‡ Deaths	151	4	16	—	—	126	9	14	1	2
Relapsing fever Deaths	—	—	—	—	1	1	—	—	—	—
Scarlet fever Deaths	1,071	29	179	19	29	1,890	215	289	49	58
Smallpox Deaths	—	—	—	—	—	—	—	—	—	—
Typhoid fever Deaths	8	—	4	—	1	16	—	—	2	8
Typhus fever Deaths	—	—	—	—	—	—	—	—	—	—
Whooping-cough* Deaths	1,316	52	46	33	16	1,915	139	115	44	31
Deaths (0-1 year) Infant mortality rate (per 1,000 live births)	314	6	92	34	21	335	31	46	36	31
Deaths (excluding still- births) Annual death rate (per 1,000 persons living)	3,780	531	561	156	113	3,537	487	498	174	116
Live births Annual rate per 1,000 persons living	5,981	402	868	353	233	5,909	661	892	360	258
Stillbirths Rate per 1,000 total births (including stillborn)	185	13	20	—	—	184	12	26	—	—

\* Measles and whooping-cough are not notifiable in Scotland, and the returns are therefore an approximation only.

† Includes primary form for England and Wales, London (administrative county), and Northern Ireland.

\* Includes quarrel fever for England and Wales and Eire.

§ Owing to evacuation schemes and other movements of population, birth and death rates for Northern Ireland are no longer available.

## EPIDEMIOLOGICAL NOTES

### Discussion of Table

In *England and Wales* the notifications of measles were fewer by 492, and of whooping-cough by 287; dysentery notifications were up by 51.

The incidence of measles has now been falling for seven weeks. During this period the weekly notifications have dropped by 57%. This week Lancashire reported 95 fewer cases than last. The largest decline for whooping-cough was in Staffordshire, where there were 49 fewer cases.

Disentery notifications again rose sharply, and the total, 299, has been exceeded only twice during the war. During the week the largest of the new outbreaks were in Buckinghamshire, Eton R.D. 15 and in Huntingdonshire, St. Neot's R.D. 20. The other large centres of infection were Leicestershire 26, Lancashire 28, Essex 28, Glamorganshire 21, Surrey 15, Nottinghamshire 14, Yorks West Riding 13, Cheshire 11, London 11.

**Poliomyelitis**—25 cases were recorded during the week, the largest total for two years. The cases occurred in twenty-three administrative areas.

In Scotland the notifications of dysentery were 20 higher than last week. The largest returns were Glasgow 42, Edinburgh 31, Ross and Cromarty County 12.

In *Eire* another increase of 37 in diarrhoea and enteritis was reported. 115 of the 161 cases were recorded in Dublin C.B.

## Quarterly Return of the Registrar-General for Scotland

During the second quarter of this year the birth rate in Scotland was 20.5 per 1,000 and was 1.3 above the average for the five preceding June quarters. Infant mortality was 57 per 1,000 live births and was 10 below the five-years average. Maternal mortality was 3.6 per 1,000 live births, this rate being 0.5 below the average of the five preceding second quarters. The general rate was 12.2, being 1.1 below the five-years average and the lowest rate ever recorded for any second quarter. The death rate from tuberculosis was 79 per 100,000 for all forms and 57 for respiratory tuberculosis; these rates were 8 and 7 respectively below the five-years average. The death rate from the principal epidemic diseases, 16 per 100,000, was only half of the average rate for the five preceding second quarters. The deaths in this group included influenza 51, whooping-cough 49, diphtheria 45, cerebrospinal fever 27, measles 21.

**Week Ending September 2**

The notifications of infectious diseases in England and Wales during the week included, scarlet fever 1,137, whooping-cough 1,389, diphtheria 445, measles 1,069, acute pneumonia 297, cerebrospinal fever 27, dysentery 419, paratyphoid 13, typhoid 10, poliomyelitis 25, polio-encephalitis. 7

## Medical News

A Regional Conference on Population Problems, under the auspices of the Brush Social Hygiene Council, will be held at the Reardon Smith Lecture Theatre, National Museum of Wales, Cardiff, on Friday, Sept 29. The object is to consider the more effective application of present scientific knowledge to this urgent social problem. Those attending will represent education, health, medicine, law, economics, social welfare, and the Services. The conference will be divided into two sessions, to be preceded at 10.45 a.m. by a civic welcome by the Lord Mayor of Cardiff. The hon. secretary of the local Conference Committee is Dr. J. Greenwood Wilson, F.R.C.P., Public Health Department, City Hall, Cardiff.

Twenty-six cases of blindness caused by flying bombs have already been notified to the National Institute for the Blind. They include 7 men, 13 women, 5 young people, and a child of 18 months. The baby is in one of the Institute's Sunshine Homes, and ten of the others are at its Homes of Recovery receiving special training for their changed conditions ahead. Some are still in hospital. Relatives of such casualties are urged to notify the National Institute, 224, Great Portland Street, W1, as soon as the medical verdict is known. In the earliest days much can be done to restore the blinded person's confidence, and training can be begun during convalescence.

In view of the continuance of emergency conditions the Minister of Health has extended until March 31, 1946, the period during which complete arrangements under the Cancer Act, 1939, should be submitted by local authorities.

Dr. James Ferguson, M O H, Surrey County Council, has been elected chairman of the Council of the Royal Sanitary Institute, to take office on Oct. 1.

Lieut.-Gen. Sicé, who recently visited France, as a delegate for the Frec French social services and representative of the French Red Cross Society, to investigate conditions in Normandy, Brittany, and Anjou, has reported that, while the inhabitants of the rural districts have not suffered too severely from war conditions, the plight of adults and children in towns and cities is serious. He found no sign of epidemics, but the general level of health was not good, especially in Normandy. Substantial medical supplies had been sent for the immediate use of children and sick persons, but one of the chief difficulties was that no great ports were available in France. Lorries loaded up in this country were taken on board ship and disembarked without unloading, so that they could drive straight away after landing. General Sicé paid a tribute to the British Red Cross organization for what it had already done, but added that milk, condensed milk, and fats or halibut and cod-liver oil were required for children who had long been almost completely deprived of fats, and also meat extracts for anaemic children. The child mortality was very much higher than in normal times, especially as a result of tuberculosis.

The use of dried milk in combating gastro-enteritis, which has become prevalent among young children in Glasgow, is advised by Sir Alexander Macgregor, M.O.H. for the city. Where liquid milk is given to babies, mothers are advised to boil it first.

## The Services

Fl. Lieut. Alfred George Spencer, R.A.F.V.R., and Flying Officer Albert Arthur, R.A.F.V.R., have been awarded the George Medal. The citation in the *London Gazette* reads as follows:

One day in February, 1944, an aircraft, carrying a 500-lb. bomb and incendiaries, crashed near a Royal Air Force station and immediately caught fire. Flying Officer Arthur, a gunnery instructor, was soon on the scene, and despite the great heat and exploding ammunition, he attempted to rescue the crew. Shortly afterwards he was joined by Fl. Lieut. Spencer, the station medical officer. The wreckage was blazing from end to end, and several times these officers were compelled to break off their rescue attempts. Flying Officer Arthur entered the burning aircraft no less than four times, with a handkerchief tied round his nose and mouth. At the fourth attempt he was driven back by the heat and flames, his eyebrows being burnt off and his right trouser leg and pocket burnt. Fl. Lieut. Spencer stayed close at hand and searched in the wreckage for possible survivors. It was not until the bombs were red hot and Fl. Lieut. Spencer was certain that the crew must be dead from the heat that these officers abandoned their efforts. They then warned the fire party to withdraw and cleared the area of spectators just before the 500-lb. bomb exploded. Although the attempts of these officers to rescue the crew were in vain, they displayed high courage and a complete disregard of their own safety.

### CASUALTIES IN THE MEDICAL SERVICES

Capt. EDWARD NEIL WHITLEY, R.A.M.C., who was wounded in Normandy in June and died at a hospital in England on Aug. 29, aged 26, studied for the medical profession at Cambridge and at the London Hospital, qualifying M.R.C.S., L.R.C.P. in 1942; in November of that year he joined the R.A.M.C. as a temporary lieutenant, after serving as receiving-room officer at the London Hospital.

*Killed in action in Normandy while attending wounded.*—Capt. R. J. D. Carrick, R.A.M.C.

*Died of wounds.*—War Subs. Lieut. T. Notman, R.A.M.C.

*Wounded.*—Temp. Col. R. D. Cameron, M.C.; Temp. Lieut.-Col. G. C. Dansey-Browning; Temp. Major M. F. X. Slattery; Capt. W. J. Morrissey; War Subs. Capt. W. N. Calder, W. F. Caldwell, S. Conlan, J. Cowan, T. S. Jones, T. S. Maw, W. H. P. Minto, J. Morrison, J. G. Mott, G. M. Sinclair, and A. Young; Lieuts. I. G. D. Bell and W. G. Harding, R.A.M.C.

## Universities and Colleges

### UNIVERSITY OF EDINBURGH

The Nutfield Provincial Hospitals Trust, on the recommendation of its Scottish Advisory Committee, has made a grant in aid of further research in neonatal and infant problems, to be carried out by the Department of Child Life and Health of Edinburgh University at the Simpson Maternity Pavilion. The research will be directed by Prof. Charles McNeil and the experiment will be under the auspices of the University and the Royal Infirmary of Edinburgh.

### ROYAL FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW

At a meeting of the Faculty held on Sept. 4, the President, Dr. James H. MacDonald, in the chair, the following was admitted a Fellow of Faculty *qua* Physician: R. Y. Keers, M.D. R. Mailer, M.D., F.R.C.S.Ed., was admitted a Fellow of Faculty *qua* Surgeon.

## Letters, Notes, and Answers

All communications with regard to editorial business should be addressed to THE EDITOR, BRITISH MEDICAL JOURNAL, B.M.A. HOUSE, TAVISTOCK SQUARE, LONDON, W.C.1. TELEPHONE: EUSTON 2111. TELEGRAMS: *Articulate Westcent, London*. ORIGINAL ARTICLES AND LETTERS forwarded for publication are understood to be offered to the *British Medical Journal* alone unless the contrary be stated.

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### ANY QUESTIONS?

#### Sensitivity to Sulphonamides

**Q.**—Is there any way of desensitizing a patient who is hypersensitive to sulphathiazole? One gramme of the drug causes irritation of the hands, round the edges of the lips, and round the anal margin, with the formation of an urticarial rash on the dorsum of the hands. Sulphapyridine causes a similar reaction.

**A.**—It is not really possible to give a safe answer to this question as experience has been so limited. The available literature was reviewed in the *Lancet*, 1944, 1, 406, and the *Journal*, 1944, 2, 248. It is shown that desensitization to the sulphonamides has been brought about by oral administration of the drug to which the patient is sensitive, beginning treatment with a small amount—e.g., 0.1 g. b.d.—and rapidly stepping up the dose—e.g., to 1.0 g. five times a day on the 8th and 9th days. The procedure seems hazardous in view of the risk of exfoliative dermatitis and other complications. Desensitization might more safely be begun by the injection of blood serum from a donor who has been taking sulphathiazole for five days. Such serum contains an antigen which causes an allergic type of response after intradermal injection in sensitive individuals. The initial dose would be 0.05 c.cm. It is not known whether this technique has actually been put into practice. Neither of these procedures can be strongly recommended now that penicillin is becoming available and sulphonamides are presumably no longer indispensable. Nothing is to be gained by trying other sulphonamides as the patient is almost certainly sensitive to the sulphanilic acid radicle, which is common to the whole group.

#### Tubercle Bacilli in Junket

**Q.**—A patient tells me it is a well-known fact that in the process of making junket any tubercle bacilli in the milk will be destroyed, but I can find no reference to this in the literature. I should like authoritative information on the subject.

**A.**—We know of no evidence to support this statement. Observations on Cheddar cheese made from infected raw milk have shown that tubercle bacilli may survive for several weeks. In cheesemaking, in which both an acid-producing "starter" and rennet are used, the acidity reached is considerably higher than in the preparation of junket, in which rennet alone is used. If it is assumed that the acid is mainly responsible for the gradual destruction of tubercle bacilli in cheese—at any rate in the early stages of ripening—it is difficult to understand why junket should prove more active in this respect than cheese. This statement might be classed with other "well-known facts," such as that junket cannot be made from pasteurized milk, which are known to be cherished fallacies.

#### Ingrowing Toenail

**Q.**—What is the best palliative treatment for ingrowing toenail? When should one decide that removal of the nail is necessary?

**A.**—There are several palliative methods of treatment for ingrowing toenail which are adopted in home treatment. The best-known are cutting a V-shaped wedge from the free edge of the nail as far back as possible towards its root (rather hard on the socks), scraping or filing the centre of the nail so that it can arch upwards and thus relieve some of the pressure on the lateral grooves, or applying a small piece of thin metal foil under the lateral nail edge and bringing it out over the rolled-over fold of skin. A most important point is to determine whether there is a spicule (splinter) of nail growing forwards in the lateral groove due to the difficulty of cutting the nail right out to its hidden lateral margin. This spicule must always be removed, for it is a common cause of pain and produces a portal of entry for infection. None of these measures is more than palliative. If the nail causes repeated trouble and disability there should be no hesitation in advising radical surgical

treatment. Removal of the nail is unsatisfactory, even when the nail bed is included; the most certain treatment is partial amputation of the terminal phalanx, including of course the whole of the nail bed, by a long plantar flap. This leaves a slightly shortened nail-less toe which heals rapidly and results in no disability whatsoever.

#### Male Climacteric

Q.—A professional man of 50 years for the past months has had very little sexual desire, and penile erection has been difficult to attain and lasts for a very short time. Intercourse has gradually diminished in time till now it lasts only seconds. Is this a case of "male menopause"? If so, what hormone therapy will restore the sexual powers?

A.—This may be a case of male climacteric, although the age is somewhat early. (The term "menopause" means cessation of menstruation, and should not be used, therefore, in the case of the male.) If the diagnosis is correct 25 mg. of testosterone daily, intramuscularly, should produce improvement within two weeks; then treatment could be continued with methyl testosterone, 5 to 10 mg. three times a day, allowed to dissolve under the tongue, or by implantation of 600 mg. of testosterone in the subcutaneous fat. Should there be a complete absence of response, the question of psychological impotence should be considered.

#### Arum maculatum

Q.—A child recently was believed to have swallowed the seeds of *Arum maculatum* (cuckoo-pint, lords-and-ladies). In three elementary books these seeds are described variously as dangerously poisonous, poisonous, and medicinal. I should be obliged if you would kindly say whether these seeds are in any way harmful.

A.—All parts of the plant of the *Arum maculatum* are poisonous. The reason why different books describe this plant as "dangerously poisonous," "poisonous," and "medicinal" may be due to the fact that most substances which are medicinal in small doses may become poisonous or dangerously poisonous in greater doses. The root particularly contains an acrid juice which acts as a powerful irritant, and although it has been used medicinally as a diuretic and stimulant, and occasionally as a purgative, its use has now been discontinued. The seeds are less poisonous than the tubers, but it may be quite definitely stated that they are poisonous.

#### Rorschach Test

Q.—Where can I obtain the materials necessary to carry out the Rorschach test for temperamental traits? Can the interpretation of the test be self-taught? Which books should be read?

A.—The Rorschach test cards have been on sale at Messrs. H. K. Lewis, Gower Street, London, W.C.1, but are in short supply. The interpretation can be self-taught, but only at the expense of great time, trouble, difficulty, and mistakes. The Rorschach Institute in the U.S.A. demands a 3-year period of training! Read Rorschach's original work, of course—i.e., Hermann Rorschach, *Psychodiagnostik*, translated into English by Lémkau and Kroneberg, Verlag Hans Huber, Berne, Switzerland (distributed in the U.S.A. by Grune and Stratton, New York); also Samuel J. Beck, *Rorschach's Test*, Vol. I, *Basic Processes*, Grune and Stratton, New York. And a simpler manual for the beginner is Klopfer and Kelly, *The Rorschach Technique*, Hartap.

#### Seasickness

Q.—Is there any effective treatment for seasickness? The problem arises in respect of an apprentice to the Trinity House Service. He is very keen to remain at sea, but in bad weather is frequently too ill to perform his duties, and he fears he will be invalided from the service.

A.—A large number of remedies have been proposed for seasickness. Physiotherapeutic measures probably act mainly by suggestion and do not seem to be effective. Drugs with most reputation are those which depress the parasympathetic nervous system—e.g., atropine, hyoscine; those which stimulate the sympathetic nervous system—e.g., amphetamine or benzedrine, and methedrine; and those which depress the central nervous system—e.g., chlorbutol and barbiturates. Careful studies carried out on sea-borne troops in this war suggest that hyoscine in doses of 1/100 gr. is the only remedy which will significantly reduce seasickness and at the same time will not impair efficiency. These results, however, apply only to short voyages, and it is doubtful whether hyoscine can be expected to inhibit seasickness over a period of days. Many famous sailors, including Lord Nelson, were sick whenever they returned to sea again. In such cases acclimatization occurs in about three days and persists so long as the sailor is in the same type of ship. Acclimatization wears off after about three weeks on shore. In a few instances acclimatization never occurs and the subject is always unhappy in rough weather. The tendency nowadays is to think that in these men the mind is divided against itself and the superficial

keenness really hides a latent or unconscious distaste for the sea. Certainly no physical or pharmacological remedy is likely to prove effective, and the victim would be well advised to take up another profession while he is still young.

#### Girl with Large Breasts

Q.—An active girl aged 18, of normal height and weighing 12 stone, is unhappy about the largeness of her breasts. She is very sociable, but the size of her breasts makes it difficult for her to "look well-dressed" and makes her feel self-conscious when she is playing tennis. She is in excellent health, with no menstrual troubles. She is not worried because she is stout, but because her bust is so large. What is the best treatment?

A.—While oestrogens do develop inadequate breast tissue, it is much more difficult to reduce excessive breast tissue or adiposity which is localized in the breast region. Testosterone in large doses might reduce breast tissue, but only by suppressing ovarian activity and producing some degree of hirsutism, the end-result being worse than the initial stage. Diet and thyroid combined with mercurial diuretics might reduce the general adiposity, and incidentally the adiposity in the breast region, but it is questionable whether these are worth while in view of the excellent general health. Plastic surgery sometimes produces excellent results, but not invariably so, and should not be lightly undertaken. On the whole it would appear that a philosophical and psychological approach, which would permit the patient to accommodate herself to her build, is the best course.

#### Tetanus Prophylaxis

Q.—What modifications has the experience of war brought to tetanus prophylaxis, and what differences still exist between the English and American methods? What course of prophylaxis would you suggest for an agricultural community, and how often should it be renewed? Should farm workers be immunized?

A.—The English fighting Forces and the American Army immunize soldiers on enlistment with tetanus toxoid; the American Navy uses alum-toxoid. Two or three injections spread over about six weeks are customary. The tendency is to repeat one or more of these doses periodically—e.g., at six- or twelve-monthly intervals and prior to battle service. Thus far there is no fundamental difference between the English and American methods (*Journal*, 1943, 2, 818). The main difference is in the treatment of the wounded soldier. The American practice has been to inject prophylactic toxoid (or alum-toxoid) into the patient, the aim being to elicit a rapid rise in the man's own self-produced active immunity that will outmarc the production of toxin in the wound. The English authorities believe that this rise may not occur rapidly enough, so they inject antitoxic horse serum, so-called "antitoxin," which gives immediate passive immunity. Probably almost all English immunologists are convinced on the evidence that the English plan is sound, and some American writers favour it.

Among agricultural workers the risk is small; tetanus rarely occurs. The tetanus bacillus requires special conditions for its dire work. A deep war wound with much necrosed tissue or damaged muscle deprived of proper blood supply through arterial damage—plenty of nutrient for the bacillus with little or no oxygen present—provides ideal conditions. So, too, would a compound fracture of the leg of a farm worker crushed by a wagon-wheel in a dung-soiled yard or field. But such lesions are rare in farm practice. Two courses are open to the doctor. (a) If he is cautious and leans strongly towards insurance, he will inject all farm workers with two doses of toxoid separated by six weeks. He can increase the insurance against risk by giving, as in the Army, a reinforcing dose every twelve months. He will thus confer a high protection. In France in 1940 and after Dunkirk eight cases occurred, all in unimmunized men, and later experience in the Middle East and in the American Forces (see *Amer. J. publ. Hlth.*, 1944, 34, 29) fully bore this out. If his farm worker is injured the doctor will also give a dose of tetanus antitoxin—e.g., 3,000 units. (b) Probably the average practitioner will compromise and, in view of the smallness of the risk, will not urge active immunization on his patients. He will always have at hand tetanus antitoxin—modern enzyme-treated or refined, little liable to cause reaction—and will give at least 3,000 units intramuscularly when he meets with a compound fracture of the kind instanced or a deep puncture with the prong of a dung-soiled fork, or even any wound that is not superficial (*Journal*, 1943, 2, 818).

#### B. coli Bacilluria

Q.—Is it safe to continue mandelic acid therapy for a bacilluria (heavy infection, *B. coli*) over a long period? At what period would it be considered useless to continue?

A.—It should first be pointed out that during mandelic acid treatment the pH of the urine should be watched, and reduced to 5.0, if necessary, by the administration of ammonium chloride in addition. If this has not been done it may be the reason for the failure of the treatment. A fortnight should be regarded as the

longest period for which it is likely to be useful to continue such treatment: it should usually achieve its effect in a week. The dangers of this treatment are acidosis and renal damage. Acidosis is not likely to be produced if renal function is good, but hyperpnoea should be watched for, and the alkali reserve estimated should it occur. Some degree of renal damage, if only temporary, is indicated by the presence of large numbers of casts in the urine, and this finding contraindicates long continuance. If the infection is, as stated, due to *B. coli* alone, and unaccompanied by any other lesion of the urinary tract, it should also respond to sulphanilamide.

#### Cumulative Effects of Phenobarbitone

**Q.**—In a reply to a question on the treatment of whooping-cough (Aug. 12, p. 230) you advise phenobarbitone gr. 1/4 b.d. for a child of 1 year, provided cumulative effects are watched for. What are the cumulative effects? I have given it to adults for years and never seen any. Secondly, what dose would you consider safe for a child aged 1½ years, and for one aged 2 years, who are suffering from insomnia? They are active, intelligent children, quite healthy, and in London. They sleep in surface shelters, and keep both the mothers and others awake, to the distress of the mothers. The ordinary bromide and chloral mixtures—e.g., N.W.F.—have been useless, and I have been afraid to push the phenobarbitone further than 1/4 gr., as my experience with this drug in infants is limited.

**A.**—Cumulative effects of phenobarbitone are dizziness, lethargy, weakness, and inability to concentrate. In addition symptoms of idiosyncrasy are more prone to arise if the drug be given over a period of weeks. These are fever, itching, erythematous rashes, nausea, vertigo, diplopia, ataxia, and slurred speech. I should not use phenobarbitone as a hypnotic in young children. Its action as a hypnotic is relatively feeble. For the children in question 10 gr. bromide and 5 to 7 gr. chloral should succeed.

#### A Case for Investigation

**Q.**—A woman aged 59, since x-ray treatment of hyperthyroidism 4 years ago, has complained of severe paroxysms of headache and abdominal "spasms." The heart beats violently in the attacks. The noises in the head, and headaches, compel her to hold her head. She is incapacitated by the illness. She sleeps very little. No collapse after the attack (cf. adrenosympathetic). Functions normal except severe constipation. On examination she is well covered, is garrulous, and has patchy hyperaemia on chest. Pulse 108; B.P. 170/100. No tremors; no sweating. Routine urine examination normal. Amino-acids nil. Blood sugar 68 (repeated). I should particularly like to know whether the symptoms could be attributed to the hypoglycaemia, and whether this has been known to follow x-ray treatment of hyperthyroidism. There is no anaemia and no evident hypothyroidism. Vitamins in urine have been estimated, and this will be repeated after test dosage.

**A.**—It is not clear why elaborate vitamin studies should have been made in a case of this kind. The first question is whether the patient is suffering from hyperthyroidism, which might well account for her present symptoms; for this purpose the basal metabolic rate and the serum cholesterol are the relevant tests. Parathyroid tetany is unlikely to be present, but this possibility could be excluded by examination of the serum calcium. Hypoglycaemia is not known to follow x-ray treatment of hyperthyroidism. In any event hypoglycaemic attacks should not be diagnosed unless (1) the fasting blood sugar is below 60 mg. per 100 c.cm., (2) the blood sugar is below 50 mg. per 100 c.cm. in an attack, and (3) the symptoms are relieved dramatically by the administration of glucose. Other possibilities in this case are psychoneurosis, Ménière's syndrome, migraine, and paroxysmal hypertension; in fact the range is too wide to give help without seeing the patient. As she has been ailing for some years it would seem wise to get a second opinion from a medical consultant who can view biological data and vitamins in their proper perspective.

#### Falling Hair

**Q.**—A married woman of 38 has been going grey for the past 6 years and the hair is continually falling out. There is no excessive seborrhoea, although the scalp is dry. She is perfectly healthy except that her periods are irregular and scanty. Can you suggest a remedy for this condition?

**A.**—Loss of hair may be attributed to both general and local causes. Thus the sudden loss of hair after fevers and the less abrupt thinning accompanying debilitating conditions are well known. Changes in the hair in certain hormonal diseases represent a part of the symptom-complex, as in myxoedema, where the phenomenon may render a patient almost unrecognizable. Men tend to become bald, women do not—a sex distinction which may be relied upon, with, of course, certain exceptions, to base a reassuring prognosis in women where the hair is falling out and where there is fear, without reason, of the onset of complete baldness. If seborrhoea is present, even if only represented by dryness or a

little dandruff, the outlook is favourable, and with treatment considerable improvement may be expected. Pomades and lotions are not favoured because of their messy nature, but this disadvantage can be avoided by applying a *small quantity* of an ointment containing 6% sulphur and 3% salicylic acid, a soft base to it ounce—i.e., arachis oil and vaseline. This is well rubbed into the scalp one night in the week and washed out the next morning, simple procedure easily carried out provided only a small quantity of the pomade has been used and well rubbed into the scalp. Resorcin lotion applied every morning enhances the result, but this is unsuitable for light or grey hair as it stains a yellow-brown. The application of ultra-violet radiation, or high frequency, the hair dresser's "violet-ray," is no better than a thorough brushing. Women's hair was more healthy and profuse before the change of fashion shortened it, because the prolonged nightly brushing an attention improved and maintained its condition. It is well, however, always to inform the patient that hair coming out following the application of a pomade or a shampoo is to be disregarded, as it is only the loose hair which has been cast.

## LETTERS, NOTES, ETC.

#### Yeast in Furunculosis

Dr. M. A. COOKE (Bradford) writes: I was interested to read the letter of Dr. Watson Smith concerning the use of yeast in furunculosis (Aug. 19, p. 256). There is little doubt of its usefulness in certain cases of furunculosis and other skin lesions. Its action has been variously ascribed to its fermentative properties, to its vitamin B content, and also to its nuclein fraction. Supporters of the latter theory claim that yeast is as active therapeutically after it has been heated to 130° C. for about an hour. Concerning the local action of yeast, this has for some time been used in "face-packs"; not, however, with very marked results. This latter fact may be a result of the comparatively inert form of the yeast. I certainly agree with Dr. Watson Smith that brewers' wort is the most therapeutically active form; patients who have taken it not only appear to recover more quickly, but also testify to feeling brighter. It is, of course, difficult to exclude the psychological factor in view of the difficulty of arranging suitable controls. It is possible that it would be more efficacious if applied locally in the actively fermenting form. With reference to the analogy to penicillin, Gram-stained preparations of yeast almost invariably show staphylococci in addition to the various yeasts and fungi always present. This, however, would not exclude the fact that yeast may contain a fraction lethal to these and other organisms under certain conditions of purity and acidity. Certainly, as Dr. Watson Smith states, the pharmacological action of yeast offers many riddles to solve.

#### Wasp and Bee Stings

Dr. H. S. RUSSELL writes: The answer to the question about relief of pain (Aug. 26, p. 295) omits reference to the most effective method—1 c.cm. intradermal wheal of novocain adjuvant and including the sting. Relief is complete, immediate, and lasting.

#### ? Case of Alkaptonuria

"GAMMA" writes: I was interested in the "Any Questions?" answer about a vaginal discharge (Aug. 26, p. 296). Would it be possible for the inquirer to test the urine for homogentisic acid, as it sounds like a case of alkaptonuria which has not been diagnosed hitherto? If this is the case, it is not the discharge which is staining the underclothes but the urine, which after the birth of the child tends to leak away more than it did and so now attracts attention.

#### "Vitamin B Deficiency in Allergic Patients": Correction

Dr. ARTHUR F. COCA, Medical Director, Lederle Laboratories, New York, writes: Referring to my previous communication [Jul 22, p. 128] concerning the article by Drs. McSorley and Davidson I have to apologize for overlooking the fact that they were referring to the anti-anaemic liver extract, not the preparation of vitamin B complex.

#### Correction

In our column of Medical News (Aug. 26, p. 294) Miss Florene Horsburgh, M.P., was reported as stating that more than 300,000 beds in maternity homes have been provided during the war. The figure should of course have been 3,000.

T. J. Smith and Nephew Ltd., Neptune Street, Hull, have issued a pamphlet *Plaster of Paris in the Treatment of Burns*. This, they state, has been compiled with the help of surgeons with experience of war and civilian casualties, and it includes references to recent literature on treatment of burns. So far as restricted supplies allow a copy will be sent to any doctor on request.



LONDON SATURDAY SEPTEMBER 23 1944

## INFLUENCE OF SYNTHETIC OESTROGENS UPON ADVANCED MALIGNANT DISEASE

BY

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AND

EDITH PATERSON, M.B., F.R.C.P.Ed.

WITH AN

ADDENDUM by P. C. KOLLER, D.Sc., Ph.D.

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In an investigation of the mechanism of action of tumour-producing compounds it was found that many carcinogenic hydrocarbons possess the property of retarding the growth of tissues, both normal and malignant (Haddow, 1935, for later references see Badger, Elson, Haddow, Hewett, and Robinson, 1942). In these compounds the correlation between carcinogenicity and growth inhibitory activity assumes considerable statistical significance, and it was further suggested that it is of aetiological importance as well tumour production by these substances being envisaged as a cellular adaptation to a protracted period of growth repression. In subsequent work to elucidate the molecular conditions determining inhibitory action, attention was paid to the synthetic oestrogens. It may be recalled that a few of the carcinogenic hydrocarbons themselves possess slight oestrogenic activity, while in certain cases these two classes show interesting relationships on chemical grounds. Thus the results obtained in animal experiments with a number of derivatives of the oestrogen triphenylethylene which may be likened, for instance, to a 9-phenylphenanthrene (with one ring disrupted) indicated that growth inhibitory activity may still be shown by compounds which depart from the polycyclic structure and possess only a resemblance in their carbon skeleton.

These findings may possibly be correlated with the fact that, contrariwise, certain of the oestrogens exert carcinogenic action in animals, although in a somewhat restricted sense and in experimental circumstances (of dosage, strain susceptibility, etc.) which are unlikely to be duplicated under the conditions of radiation in the human subject. The reviews of Gardner (1939) and Allen (1942) cite numerous instances of tumours occurring in experimental animals after long continued treatment with oestrogens examples being carcinoma of the cervix in mice, uterine fibromyomas in guinea pigs, mammary cancer, interstitial cell tumours of the testis in mice, pituitary adenomatosis in mice and rats, tumours of the suprarenal cortex in mice, osteogenic transformations in mice, and various lymphoid and connective-tissue tumours including sarcoma. The induction of animal tumours by oestrogens is most readily elicited although by no means exclusively, in those tissues which are highly responsive to the physiological action of such compounds and the greatest number of reports deal with the induction of mammary cancer in mice—e.g. by the synthetic oestrogens stilboestrol (Lacassagne 1938, Shimkin and Grady 1940) and triphenylethylene (Robson and Bonser 1938). Since the testis is markedly sensitive to oestrogen action which results in varying degrees of atrophy, the production of hypertrophy and tumours of the interstitial cells in the testes of mice

receiving oestrogens is of especial significance (e.g. Gardner, 1937, Hooker, Gardner and Pfeiffer, 1940, Bonser and Robson, 1940). There is, in short, a group of growth inhibitory substances which are clearly associated with the production of individual classes of tumour in laboratory animals under specially defined experimental conditions. The oestrogens thus provide a further example of the relation (only apparently paradoxical) that compounds possessing growth retarding properties in certain circumstances may also have either with the physiological stimulation of growth or with the induction of tumours.

The growth-retarding property of polycyclic aromatic compounds although under some experimental conditions more marked than that shown by the oestrogens, remains a subject for persistent investigation rather than clinical application. However it was judged reasonable to undertake the clinical trial of synthetic oestrogens in advanced human cancer which was beyond treatment by either surgery or radiation, with particular reference to tumours arising from such normal tissues as are most reactive to the physiological stimulus of these compounds—e.g. tumours of the breast or of the testis. Such an investigation is facilitated by the ready availability and low toxicity of the synthetic oestrogens.

The present paper reports the findings in 40 cases of carcinoma of the breast and in 33 cases of malignant disease in other organs, the majority of which were treated with triphenylchloroethylene, and the first of which (carcinoma of the bladder—see below) began treatment on Feb 18, 1941. Triphenylchloroethylene is of interest in two respects: first, because of its comparatively prolonged action (cf. Robson, Schonberg and Fahm, 1938), which seems to be related to its insolubility in body fluids, and, secondly, since Emmens (1941) showed it to be a true oestrogen—that is, one acting directly, or after chemical changes which can be effected locally, in contrast with the pro-oestrogens (including the parent hydrocarbon triphenylethylene) which require to pass into the general circulation before exhibiting oestrogenic properties. Apart from those cases treated with triphenylchloroethylene 7 were treated with the compound in which the chlorine atom is replaced by a methyl group (triphenylmethyl ethylene), and 14 with stilboestrol.

### A. Triphenylchloroethylene

#### 1. Late Malignant Disease of the Breast

Table I summarizes the data obtained in 22 cases. The drug was administered by mouth in all save Nos 21 and 22, which received it by the intramuscular injection of an aqueous dispersion.



It is clear that a proportion of cases showed a significant—although temporary—retardation of the growth of the tumour. Indeed, an initial regression of the lesions occurred in 10 of the 22 cases (Nos. 1, 2, 4, 6, 7, 12, 17, 18, 20, 21, Table I). In Case 1 a skin nodule remained stationary for a period of three months, during which the primary tumour was regressing. Again, secondary deposits in the lung developed in Case 18 during treatment, although the lesion in the breast showed

all of whom are now dead or have steadily advanced. It may be noted that the degree of retardation obtained was probably much less than could be expected from local irradiation.

In responsive cases the sequence of changes was characteristic, consisting of a purplish discoloration of previously red, a flattening followed by disappearance of skin nodules, and the ulceration and disappearance of

TABLE I.—22 Cases of Late Malignant Disease of the Breast treated with Triphenylchloroethylene

Case	Age (yrs)	Previous History	Condition at Beginning of Treatment (No biopsy or section unless stated)	Treatment (Amounts in Grammes refer to Triphenylchloroethylene)	Result of Treatment (b.t. = Beginning of treatment)
1	71	Lump breast for 1 yr., ulcerated	Ulcer 12 x 9 cm replacing breast. Nodule over sternum. Enlarged lymph nodes both axillae.	10 g per week initial 252 g in 3 m. Interval of 2 m. then 336 g. in 8 m.	Almost complete regression of tumour, then steady growth. No regression of axillary nodes. Died of lesion in 16 m. after b.t.
2	33	Lump under arm 18 m. X-ray therapy. Recurrence 1 yr. later	Pregnant. Tumour lt breast. Skin nodules, nodes involved.	21 g per week for 2 m. Interval of 2 m while patient confined, then 525 g in 6 m.	Entire diseased breast sloughed off 4 m. after b.t. Fresh nodules in opp. breast 13 m. after b.t.
3	71	Retraction and ulcer nipple for 5 yrs	Lt nipple destroyed by ulc. Small tumour beneath nipple. Fixed supraclav. and axillary nodes.	21 g per week for 9 m. Total 756 g.	Stationary over 13 m. Death 13 m. after b.t.
4	40	Radical amp lt breast 2 yrs. ago, then x-ray therapy. X-ray therapy for recurrent nodule 8 m. ago	Extensive lesions thorax both sides. Nodes rt axilla and rt side neck.	21 g per week for 8 m. Total 672 g.	Slight diminution in lesions. Treatment stopped because of nausea and vertigo.
5	53	Lump rt breast 4 yrs. Local mastectomy and post-op. x-ray therapy	Menopausal. Recurrence mastectomy area, 11 x 16 cm. Rt supraclavicular nodes. Metas. rt lung.	21 g per wk. for 3 m. Total 252 g.	No alteration in recurrence. Growth of metastases. Died 14 m. after b.t.
6	48	Radical amp. 9 yrs ago. Nodules in scar 1 yr. ago	Skin recurrence 13 cm diam. Hard supraclavicular node. Spheroidal-cell carcinoma.	21 g per week for 18 m.	Within 5 m. ulc. nodules epithelialized. Fresh nodules peripherally. Metas. in vertebrae and lung nodes during treatment.
7	63	Lump rt breast; x-ray therapy, then radical amp	Multiple nodules chest wall; hard supraclavicular nodes. Spheroidal-cell carcinoma.	14-21 g per week for 15 m. Total, 980 g.	After 10 days regression marked. In 3 m. disappeared. In further 3 m. recurrence. Treatment maintained. Metas. local and lungs. Death 17 m. after b.t.
8	55	Lump rt breast 1931, tr. radium 1932; recurrence 1942	Recurrence over sternum 5 cm diam. Lt supraclav. node.	31 g weekly. Total 756 g in 6 m.	Extension of disease. Died 11 m. after b.t.
9	48	Amp rt breast Jan., 1941; x-ray therapy Oct., 1941, to skin nodules. Disease advancing	Intradermal carcinoma chest wall. Nodes axillae and supraclavicular regions. Scirrhus carcinoma.	21 g per week. Total, 279 g. in 2 m.	Died, local extension and metas. 5 m. after b.t.
10	63	Lump rt breast, ulc., 1939. X-ray therapy palliative, poor response	Ulc. tumour breast, fixed axillary nodes. Spheroidal-cell carcinoma.	21 g per week. Total, 588 g in 7 m.	No change during treatment.
11	60	Lump lt breast, uncertain duration. Ulc. 1941	Ulc. tumour. Hard supraclav. and axillary nodes. Spheroidal-cell carcinoma.	21 g per week. Total, 420 g in 5 m.	No regression. Died 6 m. after b.t.
12	52	Lump rt breast and both axillae. X-ray therapy, incomplete resolution, July, 1941	Post-menopausal. Large mass rt breast and axillae. Extensive skin involvement.	21 g. per week. Total, 420 g in 5 m.	Possibly slight local improvement. Lung metastases developed. Died 8 m. after b.t.
13	53	Recurrent nodules after radical amp. lt. breast	Nodules lt chest wall, axilla, and supraclav. region. Scirrhus carcinoma.	18 g. per week. Total, 429 g in 6 m.	No regression. Not followed after 6 m.
14	65	Radical mastectomy, then x-ray therapy, 1941	Recurrence in scar; deposits lt axilla and both supraclav. regions.	21 g per week. Total, 336 g. in 5 m.	No regression. Alive, but lesions advanced.
15	49	Radical mastectomy, 1936. X-ray therapy to recurrence. Temp improvement	Recurrent carcinoma supraclav. and axillary nodes. Metas. dorsal vertebrae. Scirrhus carcinoma.	21 g per week for 3 m. Total uncertain.	No regression. Alive but deteriorating.
16	39	Recurrent carcinoma lt breast. Radium and x-ray therapy	Large mass lt breast and rt axilla. Scirrhus carcinoma.	21 g per week. Total, 630 g. in 7 m.	After stopping treatment, severe metastases. Lesions stationary; total observation 15 m.
17	54 (male)	Radical amp. lt breast, 1939. X-ray palliative therapy local recurrence	Two nodules in op. scar lt chest. Metas. lt. femur and ischium.	21 g per week. Total, 228 g. in 3 m.	Disappearance of nodules after b.t., recurrence next 6 m. Metas. in sacrum. Died 11 m. after b.t.
18	65	Lump rt breast 2 yrs. Ulc. 1 yr.	Ulc. mass 11 x 13 cm. Nodes supraclav. region and both axillae. Spheroidal-cell carcinoma.	21 g per week. Total, 189 g in 9 weeks.	Mass reduced to 9 x 10 cm. Lung metastases developed during treatment.
19	52	Lump lt breast	Mass filling whole lt. breast. Large ulc. area; nodules lt chest wall; nodes axilla and supraclav. region. Scirrhus carcinoma.	21 g per week. Total, 250 g in 4 m.	Lesion advanced during treatment.
20	56	Ulc. lump rt breast; recurrence after x-ray therapy	Tumour 10 x 9 cm whole rt breast; ulcerated. Nodes rt. pectoral region.	21 g per week. Total, 1,000 g in 9 m.	Tumour shrank to 6 x 5 cm. Ulcer small and healed. 7 m. after b.t. ulcer enlarged and healed. After, tumour enlarging, then slow regression.
21	63	Radical amp. for carcinoma lt breast, 1932. Recurrence over sternum	Ulc. mass 7 x 4 cm., 4-5 cm deep. Spheroidal-cell carcinoma.	15 cm dispersion of triphenylchloroethylene by injection in 5 m.	Slight vaginal bleeding and nausea. Lesion much flattened, area ulcerated. Cervical metas. 4 m. after b.t., then regression. X-ray therapy. Nausea during treatment stopped.
22	63	Lt breast "shrinking" for 2 yrs	Whole lt breast involved. Nodes lt supraclavicular area. Lung metas.	9 cm dispersion of triphenylchloroethylene by injection in 3 m.	Lesions progressed. Died 6 m. after treatment.

regression. No evidence was obtained to suggest that the drug will prevent the development of metastases. On the contrary, the impression was gained that the malignant cells become in time progressively more resistant to the inhibitory effects produced by the drug at an earlier stage. Thus only one of the cases has shown prolonged arrest, and the ultimate course of the disease has been in no way altered in the remaining patients,

nodules and masses, followed by epithelialization of the lesions. In exceptional cases the degree of response was considerable. One of these (Case 1) is illustrated in Fig. 1. Biopsy material was examined in 4 of the cases showing regression of the primary tumour. All were highly cellular types, as were also 2 of the 3 cases which maintained a stationary condition, the remaining case being of scirrhus type.

ere would seem to be a greater sensitivity to the action of estrogen in highly cellular than in scirrhous carcinomata (No. 18, spheroidal-cell carcinoma) serial biopsy treatment revealed the disappearance of mitoses and atrophy in the staining alveoli of the cells the appearance did not resemble those seen after irradiation. The

some degree of regression. Relief of pain seemed a real finding in 4 cases—Nos 6, 10, 17, 21.

## 2. Miscellaneous Cases

This series consisted of 30 cases of advanced malignant disease other than carcinoma of the breast. They comprised

TABLE II—14 Cases treated with Stilboestrol

Case	Previous History	Condition at Beginning of Treatment	Date Treatment Started	Dose of Stilboestrol	Result of Treatment
2	Rt. radical mastectomy 1939. H.V. therapy to recurrence Dec. 1941–Sept. 1942. Further recurrence Dec. 1942.	General condition good. Multiple skin nodules over axilla. Chest clear.	Dec. 2, 1942	276 mg. intra-muscularly over 3 months	Deposit in manubrium developed during treatment. Nodules became bluish ulcerated and later scabbed.
3	Lump in rt. breast noticed 1919. Ulcerated 1934. 1 ray therapy to numerous areas rt. and lt. breasts, chest wall and regional nodes Jan. 1939 to Aug. 1942. Recurrent skin nodules Dec. 1942. No section.	Multiple nodules and induration scattered over rt. and lt. chest wall and sternum. 1 ray chest—fluid at left base.	Dec. 22, 1942	410 mg. intra-muscularly over 3 months	Fresh nodules developed. Nodules became more raised and briefer. Uniform scabbing followed. Biopsy. Nodule showed highly cellular carcinoma of anaplastic type. Local area of necrosis present at centre of nodule. General condition deteriorated. Died 4 m. after onset of treatment.
12	Lump in lt. breast noticed Oct. 1939. Treated H.V. therapy Oct. 1940. Diathermy excision res. dual growth April 1941. H.V. therapy to recurrence Dec. 1941 and Oct. 1942. Further 1 ray therapy Dec. 1942. Section. Undifferentiated columnar-cell carcinoma.	Multiple nodules lt. chest wall. Underlying diffuse oedema from axilla across midline to rt. breast which was widely infiltrated and fixed.	Dec. 30, 1942	676 mg. intra-muscularly over 6 months	In 1 month the rt. breast was softer. Oedema of chest wall had diminished. Nodules were paler, softer and smaller. This condition was maintained for 6 weeks after which the local condition progressed. New crops of nodules developed.
40	Lump in lt. breast noticed Mar. 1941. Treated 1 ray therapy 1 ray 1942. Recurrence Nov. 1942. Biopsy. Anaplastic carcinoma.	Ulcer lt. breast 7.5 x 3.2 cm. Regional nodes not enlarged. 1 ray chest—multiple secondary deposits.	Dec. 22, 1942	199 mg. intra-muscularly over 2 months	Ulcer increased in size throughout treatment.
31	Complained of pain rt. hip Sept. 1942. 1 ray pelvis—large secondary deposit pelvis.	Lt. breast—mass 3 x 3 cm. firmly fixed to deep structures. Rt. axilla—2 firm nodes 1.5 cm. across. Pubis—localized tenderness.	Jan. 23, 1943	262 mg. intra-muscularly over 7 wks. 252 mg. orally in 6 wks. H.V. therapy to pubis concurrently.	Breast—slow increase in size of tumour with development of an adjacent skin nodule.
49	Lump in breast noticed Sept. 1939. Treated H.V. therapy 1940. Recurrence Oct. 1942, treated H.V. therapy. Further recurrence Jan. 1943.	Lt. breast—residual mass. Rt. breast—mass 12.5 cm. across. Skin adherent. Fixed deeply. Skin nodules over sternum.	Feb. 10, 1943	480 mg. intra-muscularly over 5 weeks	Tumour rt. breast progressed. Lt. breast—condition stationary. Secondary deposits in skull developed.
4*	Mass lt. breast noticed July, 1940. Hard nodes rt. axilla and rt. supraclavicular regions. Treated 1 ray therapy July, 1941 and Oct., 1942. Recurrence Jan., 1943. No section.	Rt. breast—skin diffusely infiltrated by growth. Rt. side neck—plaque of skin nodules 10 x 6 cm.	Feb. 15, 1943	433 mg. intra-muscularly over 7 weeks	Slow progress of disease.
60	Lump in breast noticed June 1942. Treated 1 ray therapy Oct. 1942. Recurrence Jan., 1943. No section.	Rt. breast solid with growth but no deep infiltration. Skin densely infiltrated. Reddened nodule 2 cm. across above nipple. 1 ray chest—many large secondary deposits. Lungs. Rt. axilla—hard fixed mass 5 cm. across. Nodules rt. chest wall.	Mar. 23, 1943	660 mg. intra-muscularly over 4 weeks	Mass rt. breast and rt. axilla increased in size. General condition deteriorated.
61	Radical mastectomy 1935. Recurrence 1943. Treated 1 ray therapy Oct. 1943. Recurrence Dec., 1943. No section.	Nodules rt. chest wall rt. axilla, and rt. supraclavicular fossa.	Dec., 1943	1 mg. three times a day orally for 4 months. Still under treatment.	After 2 months nodules flatter but size unaltered. In a further month nodules practically gone. After 4 months two fresh nodules developed.
64	Lump in breast 1942. Untreated.	Mass lt. breast 12 x 10 cm. with central ulceration. Mass lt. axilla 6.5 x 4.0 cm.	Feb., 1944	15 mg. weekly intramuscularly and 1 mg. daily orally. Still under treatment.	In 2 weeks ulcer dry. In 12 weeks mass lt. breast 6 x 5.5 cm. Mass lt. axilla 3.5 x 2.5 cm. (Fig. 3). Biopsy. Spheroidal-cell carcinoma.
80	Lump in breast 1937. Grew steadily and ulcerated through skin. 1 ray therapy 1938. Recurred 1939, treated by radium implantation. Recurred 1940.	Ulcer 6 x 6 cm. fixed to muscle. Section. Cellular carcinoma of pavement-cell type.	Sept., 1943	21 mg. weekly by mouth. Total of 315 mg. in 3 months.	By Dec., 24 ulcer reduced in size to 3 x 2 cm. By April 15 two tiny patches ulceration 2 x 1.5 cm. and 1.2 x 1 cm.
67	Lump in breast noticed Oct., 1943.	Bright red mass lt. breast 9 x 8 cm. fixed to skin and muscle. Large lt. axillary node. Section. Papillary adenocarcinoma (malignant intraductal pattern).	Feb., 1944	42 mg. weekly by mouth. Total of 343 mg. in 8 weeks.	Breast mass 7 x 7.5 cm. flatter and purplish. Axillary node not changed in size. Slight nausea, gain of 4 lb. in weight.
68	Radical mastectomy for carcinoma rt. breast 1936. In 1940 noticed lump in breast, and enlarged axillary and supraclavicular nodes. Palliative 1 ray therapy 1940 and 1942. Extensive recurrence Oct., 1943.	Massive involvement en cuirasse back and front of chest. Section. Adenocarcinoma invading subcutaneous tissue.	Feb. 1944	42 mg. weekly by mouth. Total of 378 mg. in 9 weeks.	Lesions progressed during treatment and general condition deteriorated.

ilar changes in this case are shown in Fig. 2. Case 17, which a marked response was obtained, is of special interest being the only male in the series.

The secondary signs of drug action included nausea, pigmentation of the mammary areola, uterine bleeding, improved appetite, and gain in weight. One or more of these changes occurred with special frequency in the group of cases showing

carcinomata of the skin, maxillary antrum, urinary bladder, ovary, rectum, and testis, with reticulo endothelial growths, and one example each of chronic myeloid leukaemia and chronic lymphatic leukaemia. The period of treatment varied between 1 and 16 months. In nearly every case the drug seemed to have no effect on the course of the disease, although side-effects occurred in some. In other cases treatment was

terminated on account of the patient's being transferred to other hospitals, or referred for tumour excision or x-irradiation. Two cases which showed undoubted partial regression of the tumour merit special comment.

**Case 1: Male aged 74; Carcinoma of Bladder.**—The general condition was poor when treatment began. The patient complained of frequency of micturition, passage of blood in the urine, and shooting pains in the back and at the base of the spine. Cystoscopic appearances were typical of carcinoma of the bladder, and x-ray examination revealed a secondary deposit in D. 10. The bladder tumour was apparently slow in growth, since a second cystoscopy after 3 months showed little change. Treatment with triphenylchloroethylene was then begun, and was followed by a rapid improvement of the general condition. After 2 months a third cystoscopy showed marked amelioration of the local condition, with almost complete regression of the primary tumour. At this time tissue for diagnosis was taken through the suprapubic route, and doubtful areas in the bladder were fulgurated. An extract from the pathological report (by Dr. L. M. Hawksley) reads: "In the deeper part of the subepithelial connective tissue and in the fibromuscular tissue focal collections of squamous carcinoma cells, which are definitely identifiable as such, though of viable appearance in only one or two places, have undergone almost complete necrosis." The total dosage of triphenylchloroethylene administered was 760 g. over a period of 9 months. The patient died from circulatory failure 11 months after the beginning of treatment. Necropsy confirmed that viable tumour cells remained in the bladder wall after the disappearance of the primary tumour.

**Case 2: Male aged 60; Carcinoma of Prostate.**—In this case, admitted on account of frequency of micturition and later complaining of shortness of breath and fleeting chest pain, investigation with uroselectan revealed enlargement of the left kidney, with poor function, and a large filling defect in the bladder on the left side. X-ray examination suggested the presence of multiple secondary deposits in the bony pelvis, and in the following weeks similar deposits were recorded in the whole of the dorsal spine, in the ribs, femora, and humeri, and in the lungs. Cystoscopy showed enlargement of both lobes of the prostate, with a large papillomatous mass in the left wall of the bladder. Bladder capacity was much reduced (residual urine, 2 oz.). Biopsy at first gave no undoubted evidence of malignancy, but a second specimen (tissue from bladder removed through cystoscope 11 weeks after starting treatment with triphenylchloroethylene) was reported upon as follows by Dr. Hawksley: "Sections show intact and regular but thinned surface epithelium directly overlying a densely cellular mass of columnar-cell adenocarcinoma of prostatic type, in which well-formed gland lumina occur frequently in the solid cell masses. Although no signs of degenerative change are found, the tumour cells show an unusual absence of evidence of nuclear activity, no mitoses having been seen in the numerous sections examined, and the large, spherical nuclei showing a striking uniformity of size and structure."

Treatment with triphenylchloroethylene had been started on June 9, 1941, and soon produced side-effects (bilateral mastitis and oedema of the ankles) attributable to oestrogen action. Within 3 months the total dose administered exceeded 100 g., and the daily dose had reached 8 g. (maximum). The total dose after 6 months was 700 g., following which the daily dose was decreased (to 3 g.) on account of occasional nausea. During treatment there occurred a decrease in the frequency of micturition and some betterment of the general condition, which after 8 months was regarded as considerably improved. There was, however, no unequivocal radiographic evidence of change in the skeletal deposits, as judged by comparison, after repeated examination, of the various regions involved; but the prostate itself was described as "not obviously enlarged" after 13 months, when a total of 1,346 g. of triphenylchloroethylene had been administered. The plasma acid phosphatase values showed a distinct tendency to increase (from 17 units to 47 King-Armstrong units per 100 ml. over 15 months). The case was then transferred for treatment with stilboestrol in place of triphenylchloroethylene, and is included as Case 6 in a paper by Watkinson *et al.* (1944).

In this series of cases of malignant disease other than carcinoma of the breast, treated with triphenylchloroethylene, the number showing any degree of response was very small, and it may be noted that two of those chosen for comment represented types which might reasonably be expected to possess some special sensitivity to the action of oestrogens. Yet this is not invariably the case, and it is probable that a small proportion of tumours, not derived from tissues of any characteristic or obvious endocrine function or susceptibility, may give a similar response.

#### B. Triphenylmethylethylene

Four cases of carcinoma of the breast and 3 cases of Hodgkin's disease received treatment. The first group (all in

advanced stages of breast cancer) were treated for two months or longer by intramuscular injection of the drug, and only one case (pathologically a spheroidal-cell carcinoma) showed any response. This took the form of flattening of the lesions and the development of a blue coloration of the nodules in the skin. In the four cases, total dosage of the drug varied from 1.4 to 3.8 g.

The main points arising during the treatment of the cases of Hodgkin's disease, in two of which biopsies and serial blood counts were taken, were as follows.

**Case 1.**—A woman aged 42 presented enlargement of the submaxillary, cervical, and inguinal lymph nodes and multiple opacities in both lungs. A biopsy specimen from a node was diagnosed as Hodgkin's disease. When treatment began the blood count was: red cells, 4,580,000 per c.mm.; white cells, 10,000 per c.mm.; total lymphocytes, 1,000 per c.mm. After one month (in which 12 g. of triphenylmethylethylene was given intramuscularly) the blood count had fallen to: red cells, 2,750,000 per c.mm.; white cells, 5,000 per c.mm.; total lymphocytes, 140 per c.mm. The tumours themselves showed no response.

**Case 2.**—A boy aged 15 showed enlargement of the liver to the level of the umbilicus, of the spleen to that of the anterior superior iliac spine, and involvement of the cervical and hilar nodes. His general condition was very poor. He lived for 2½ months, and during this time received 242 g. of the drug by mouth. After 1 month both liver and spleen were notably smaller, and remained so until accurate observation was no longer possible owing to the development of gross ascites. No diminution took place in the size of the cervical or mediastinal nodes. Conclusions based on the blood picture are not possible, since two transfusions of whole blood were given; but no remission occurred during the period of observation. Necropsy revealed destruction of the pancreatic parenchyma by sarcomatous tissue, in view of which it was thought necessary to designate the condition as malignant—viz., Hodgkin's, sarcoma or polymorphic reticulum-cell sarcoma.

**Case 3.**—A male aged 20 presented enlargement of a single group of cervical lymph nodes. Neither the spleen nor the liver was palpably enlarged. Over a period of 1 month 28.9 g. of triphenylmethylethylene was administered by mouth and 8.6 g. by intramuscular injection. During this time the mass in the neck increased in size. The effects on the blood picture seen in Case 1 of this series were not reproduced, both the red cell and lymphocyte counts remaining stationary. The case was then referred for x-irradiation, when the lesions proved to be radiosensitive.

#### C. Stilboestrol

Table II summarizes the details relating to 14 cases of carcinoma of the breast treated with stilboestrol: the most favourable response is shown in Fig. 3 (Case 11). Whether or not by chance, this small series provided a slightly lower proportion of cases showing any marked effect in the shape of changes in the growth and behaviour of the tumour. Assuming such changes to be related wholly to the oestrogenic activity of a given compound, there is no reason to suppose that the repeated administration of stilboestrol, which affords the advantage of effective action in very low dosage, will be less effective in producing them than is continued treatment with triphenylchloroethylene, but rather the contrary. In a few of the present cases treated with triphenylchloroethylene or triphenylmethylethylene administered orally, Mr. F. L. Warren was able to recover from the faeces over 90% of the dose given in a measured period (usually 24 hours). This indicates that the drug absorption is relatively inefficient, and probably highly so when compared with stilboestrol. There remains the possibility that some advantage may accrue from the use of compounds of exceptionally long duration of action (as judged by the persistence of their oestrogenic effects): several such compounds are now available, and this suggestion is being explored.

It is clear that the cases now reported afford no contribution to effective therapy, but they are probably sufficient in number to set the subject, as it stands at present, in a fair light. The results, although illustrating well the special difficulties inherent in the problem, have considerable fundamental interest, and at least provide an incentive to further investigation.

#### Summary

73 cases of advanced cancer received treatment with the synthetic oestrogens triphenylchloroethylene, triphenylmethylethylene, or stilboestrol.



FIG 1—Case 1 (Table I) *Carcinoma of Breast*. The primary lesion (A) at May 20, 1941, and (B) at Oct 29, 1941, after treatment with triphenylchloroethylene

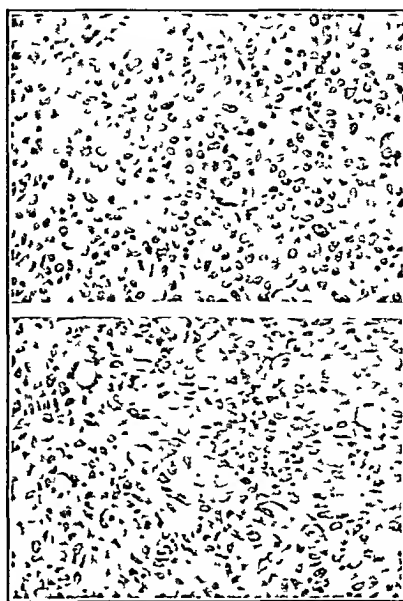


FIG 2—Histological section, Case 13 (Table I). Above — Before treatment with triphenylchloroethylene. H and E  $\times 300$ . Below — After treatment for 1 month. Note irregularity in size shape, and staining of nuclei. H and E  $\times 300$ . Sections stained together

Of 22 cases of late malignant disease of the breast treated with triphenylchloroethylene (usually in doses of 3 to 6 g per day), 10 showed a significant although temporary retardation or even partial regression, of the growth of the tumour. No evidence was obtained to suggest that the drug will prevent the development of metastases. The initial effect of treatment in these cases passed off comparatively rapidly, and only one has shown prolonged arrest, the ultimate course of the disease being in no way altered in the remainder. The degree of retardation was less than could be expected from local palliative irradiation.

Of 30 cases of advanced malignant disease other than cancer of the breast (including carcinoma of the skin, maxillary antrum, urinary bladder, ovary, rectum and testis, with reticulo-endothelial growths and leukaemia) and similarly treated with triphenylchloroethylene, only 2 (carcinoma of the bladder, carcinoma of the prostate) showed undoubted partial regression of the tumour.

Of 4 cases of mammary cancer and 3 cases of Hodgekin's disease treated with triphenylmethylethylene (usually by intramuscular injection) only one (spheroidal cell carcinoma of the breast) showed even a temporarily favourable response.

Of 14 cases of carcinoma of the breast treated with stilboestrol (by intramuscular injection or by mouth over a period of several months), 5 showed alterations in the growth and behaviour of the tumour similar in nature to those produced by triphenylchloroethylene.

Serial biopsies in a few cases with a marked clinical response showed histological alterations (diminution of mitosis rate, variations of staining behaviour, and necrotic changes) of a type not resembling the changes following irradiation.

The secondary signs of drug action included nausea, pigmentation of the mammary areola, mastitis in the male, uterine bleeding, and oedema of the lower extremities. One or more of such changes

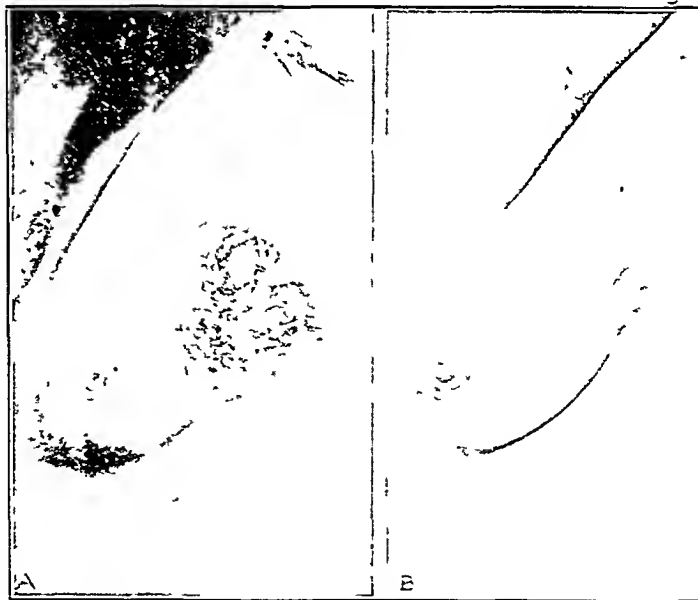


FIG 3—Case 11 (Table II) *Carcinoma of Breast*. The primary lesion (A) at Feb 7, 1944, and (B) at May 22, 1944, after treatment with stilboestrol

occurred with special frequency in cases showing some degree of tumour regression. Several of these cases also manifested improved appetite, gain in weight, and diminution of pain.

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mittee of the Royal Cancer Hospital (Free) for permission to publish details of those cases under their charge, and to Imperial Chemical Industries Ltd. (Dyestuffs Division) for supplies of triphenylchloroethylene and triphenylmethylethylene.

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**ADDENDUM.—CYTOLOGY OF SERIAL BIOPSIES FROM  
A CASE OF CARCINOMA OF THE BREAST TREATED  
WITH STILBOESTROL**

BY

P. C. KOLLER, D.Sc., Ph.D.

The following is a summary of the cytology of serial biopsies from Case 11 (carcinoma of the breast, Table II, above) taken during a period of markedly favourable response (tumour regression) after treatment with stilboestrol.

**Biopsy I. Before Treatment: Feb. 7, 1944**

In respect of nuclear morphology two main cell types could be distinguished in the resting stage. One is characterized by a nucleus which contains several Feulgen-positive chromocentres (the potentially dividing cell). The other has a nucleus with one large or several small nucleoli (the differentiated cell). The proportion of potentially dividing cells in different regions of the biopsy material was found to vary between 12.5 and 27.3%. The division rate was determined in four cell populations (600 cells in each) taken from different regions of the specimen: in these the division rate was found to be 2.3, 5.2, 5.6, and 7.5%. Synchronous division of three or four tumour cells was frequently observed. Chromosome behaviour and spindle formation were normal. The highest incidence of degenerated cells was 2.5%.

**Biopsy II. March 10, 1944 (Treatment started Feb. 9, 1944)**

Nuclear and cytoplasmic changes were observed. Cells were found with one or more vacuoles in the nucleus, which latter gave a weakly positive Feulgen reaction. The frequency of such cells varied between 4 and 7.5% in different regions. Other abnormal cells were seen with deeply staining cytoplasm. The division rate was apparently lower in this biopsy specimen as compared with Biopsy 1: the highest division rate found was 4.6%. In some dividing cells chromosomes were seen lying off the equatorial plate, and these were shorter and thicker than usual. While there appeared to be a decrease in division rate, a significant increase was observed in the proportion of degenerated cells. In one region it was found to be 12.5%. The morphology of the degenerating cells differs from that of cells degenerating as the result of x- or gamma-radiation.

**Biopsy III. During Treatment : April 25, 1944**

The number of cells showing nuclear and cytoplasmic alterations as further increased. Division rate was estimated to vary between 2 and 56%. Apart from chromosome lagging at anaphase in a few dividing cells, no other mitotic abnormalities were seen. The frequency of degenerating cells was about the same as in Biopsy II.

**Biopsy IV. During Treatment: May 29, 1944**

The biopsy material shows marked alterations. The division rate as increased and regions were encountered with 14.3% of cells in division. Synchronous division of several adjacent cells was very frequent. The chromosomes of cells in mitosis were thick and short, they failed to form an equatorial plate at metaphase, and were altered in the cells. Cells with multipolar spindles were also encountered. The proportion of degenerating cells was found to vary between 7.3 and 16.3%. While the cellular abnormalities and the various stages of cell necrosis observed in the second and third biopsies indicated that cell degeneration is brought about by nuclear vacuolization, evidence was obtained from this fourth specimen that cell degeneration may also be due to a breakdown of the mitotic mechanism. The cytological evidence thus suggests that the primary effect of stilboestrol in this case may be localized to the nucleus of the tumour cell.

## REACTIVE HYPERINSULINISM

## CASE REPORT, WITH A DISCUSSION OF THE DIFFERENTIATION FROM ISLET TUMOUR

BY

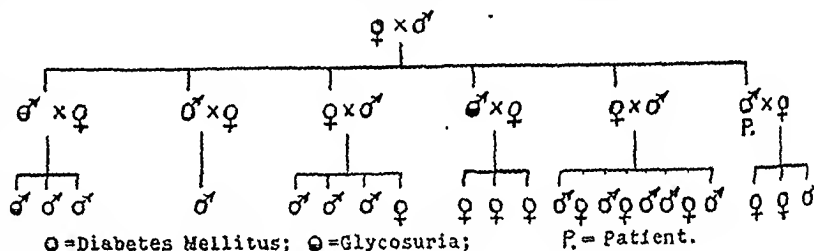
**F. T. G. PRUNTY, M.D., M.R.C.P.**

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The condition known in this country as "hypoglycaemia" (Cambridge, 1924) is described under the term of "hyperinsulinism" or "dysinsulinism" in America, according to the manifestations encountered—dysinsulinism implying an erratic under- and over-secretion of insulin (Harris, 1934). According to this terminology, hyperinsulinism would not include hypoglycaemia due to hepatic damage. The conditions here to be discussed are those in which the pancreatic activity is mainly at fault, and therefore exclude those due to other glandular dyscrasias and hepatic disease. It is the object of this communication to draw attention to a condition which may be termed "reactive hyperinsulinism," as opposed to hyperinsulinism due to overactivity of the pancreas as a result of tumour of the islets, malignant or benign. The term "reactive hyperinsulinism" is to be preferred to that of "functional hyperinsulinism" of Conn (1940), since the word "functional" has other less well defined associations.

## Case Report

A professional man aged 56 complained of attacks consisting of a sinking feeling during the preceding five years and



of continual tiredness for four years. He had had three attacks of arthritis, mainly affecting the larger joints, in the course of ten years. The family history was noteworthy (see genealogical chart). The patient's mother had died of diabetes mellitus, but the father was a healthy man, and lived to the age of 84. The eldest brother had renal glycosuria, and his eldest son has been found to have glycosuria. A second brother has also had glycosuria for many years, recently having had an operation for cataract. There are also a healthy brother and two sisters.

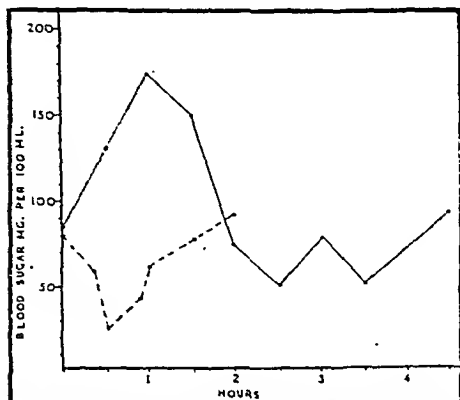
The patient stated that for the last four years he had had a continual feeling of tiredness accompanied by considerable difficulty in concentrating. During this period his work had greatly increased and his hours had been long, with short intervals for meals. For five years he had had acute attacks consisting of a sinking feeling in the epigastrium and intense weakness, followed by a cold sweat. He was forced to sit down during the attacks, but never fainted. After the attack had passed off his appetite was ravenous. The attacks always occurred in the afternoon or early evening, about three hours after the last meal. It appeared that his wife had been in the habit of "fortifying" him daily with a large tea consisting mainly of carbohydrate, including a great amount of honey or jam. Furthermore, the greater the quantity of such food consumed the greater the severity of the subsequent attack. The attacks passed off spontaneously with rest for about ten minutes or on taking carbohydrate. Their frequency was variable, six weeks sometimes elapsing between them, at other times two occurring in a week. In general their frequency and severity had increased with the passage of time. Occasionally exercise—e.g., gardening—brought on an attack, but only at the time of day already mentioned. Usually he could take considerable exercise and little food without getting symptoms. He had had no polydipsia or polyuria and no headache. He had lost one stone in weight in three years.

On examination the patient was not obese. There were no physical signs and no evidence suggestive of glandular or hepatic disease. Circumstances did not permit of special investigations of liver function, but the blood-sugar curve does not conform to the type seen in hepatic disease. There was no glycosuria.

## Investigations of Blood Sugar

A month before he was seen reports on his blood sugar were: p.m. (during an attack), 48 mg. per 100 ml.; 14 days later, 8 a.m. (before breakfast), 71 mg. per 100 ml. At 8.30 a.m. a carbohydrate breakfast was taken; at 10 a.m. the blood sugar was 1 mg. and at 11 a.m. 66 mg. per 100 ml., the value at 12 noon being the same.

While in hospital the blood sugar was found to be 85 mg. per 100 ml. on two occasions before breakfast. Immediately after lunch the value was 87 mg. per 100 ml. The patient then took a rapid 40-hour walk in hilly country, producing a moderate degree of fatigue, and at the end of this time the blood sugar was 97 mg. per 100 ml. The accompanying Graph shows the results obtained with



Continuous line represents glucose-tolerance test: 50 g. glucose orally after 12 hours' fast. Dotted line represents insulin tolerance: 6 units of insulin intravenously, fasting.

Glucose-tolerance and insulin-sensitivity tests, the patient at the time receiving a full ward diet. There was no glycosuria during the glucose-tolerance test. Typical symptoms of one of the patient's hypoglycaemic attacks occurred when the blood sugar had fallen to 48 mg. per 100 ml., and persisted for one hour. The symptoms consisted of blurring of vision, the distant appearance of near objects, difficulty of finding words in speech or writing, inability to concentrate, coldness and clamminess, and a sinking feeling in the epigastrium. The insulin-tolerance test showed a slight increase of sensitivity to insulin. During this test there was another typical hypoglycaemic reaction when the blood sugar had fallen to 40 mg. per 100 ml. The symptoms disappeared without intervention, and there was no question of the patient's approaching a comatose state.

A diagnosis was made of reactive hyperinsulinism due to excessive insulin response resulting from the stimulus of administered carbohydrate. The patient was advised to cut down the consumption of carbohydrate at tea and replace this with protein or fat—e.g., in the form of an egg—if necessary. Having reduced the consumption of potato for lunch and dinner, together with the omission of jam or honey and curtailment of bread-and-butter and cake at tea, the patient has experienced no further attacks over a period of twelve months. This is in spite of the fact that his work has continued as before.

## Discussion

The chief differential diagnosis in this case is from organic hyperinsulinism due to tumour of the pancreatic islets, which is present might be malignant. A search of the literature reveals that there is a lack of criteria for establishing this diagnosis see especially Harris, 1936-7). However, there are apparently certain points that may be of diagnostic value. For instance, Conn (1940) considers that the presence of a low value for the fasting blood sugar before breakfast, the diet being normal, is a point strongly in favour of organic disease. It is well known that there is no relation between the blood-sugar level and the severity of a hypoglycaemic attack, although many of his cases do in fact have such attacks at this time. The second point for special examination is the shape of the glucose-tolerance curve. Conn and Conn (1941) consider that in "functional hyperinsulinism" the blood-sugar level shows a precipitate fall after a large amount of carbohydrate. Examination of the case reports of Finney and Finney (1928), Feinier *et al.*

(1935-6), and Fraser *et al.* (1938) show, for example, sugar-tolerance tests of the "plateau type." Whipple *et al.* (1941) in an analysis of 17 cases due to tumour found that the curve had a decided trend towards the diabetic type, this presumably being a manifestation of dysinsulinism. Their average figures showed a resting value below normal, with a subsequent persistent blood-sugar level of about 150 mg. per 100 ml. for a period of two to three hours. However, in their report two cases diverged from this type and gave low flat curves—a finding also observed by Conn and Conn (1941).

There are fewer reports available on the value of the insulin tolerance. Hartmann and Jaudon (1937) found an unusual sensitivity to insulin in newborn hypoglycaemic children whose mothers were diabetic, the hypoglycaemia being due to prolonged foetal islet stimulation. Furthermore, the findings of Fraser *et al.* (1938) in a case of islet tumour are so striking, and in such contrast to those in the present case, that they merit further study. Those authors found that, although the sensitivity to insulin was approximately normal, there was no tendency for the spontaneous recovery of the blood sugar within two hours. The injection of insulin in the fasting state was a reliable means of producing a severe hypoglycaemic reaction which only terminated on the administration of adrenaline or glucose. The finding of the adrenaline sensitivity is opposed to the views of Wilder *et al.* (1927)—who were supported by Allen (1941)—that resistance to adrenaline is a diagnostic point in favour of tumour. Cammidge and Poulton (1933), commenting on the case reported by Griffiths and de Wesselow (1933), pointed out that this test may be difficult to interpret.

A final point that may be of value in the differential diagnosis is the severity and irregularity of the symptoms. In general it appears that the more severe they are, without any tendency to spontaneous alleviation if glucose is not given, and the more irregular their onset, the more likely is organic disease. Conn (1940) and Harris (1936-7) both gave criteria indicating the necessity for laparotomy, the latter author suggesting that the inability to control the attacks by diet within a few weeks should be taken into account. Allen (1941) considered that the ability to control symptoms by means of a high-protein diet is indicative of but a mild degree of insulin excess. However, in view of the malignancy of carcinoma of the pancreatic islets and the inoperability consequent upon the occurrence of metastases, it is clearly essential to establish criteria for laparotomy requiring as short a period of observation as possible.

The following summarizes the features of the present case for contrast with the foregoing points:

1. Absence of low fasting blood sugar before breakfast and after exercise.
2. The marked post-prandial fall in blood sugar during the glucose-tolerance test, accompanied by the onset of symptoms of hypoglycaemia, together with an instability of the blood-sugar-regulating mechanism for a period of two hours. This finding is in close agreement with the history obtained of the most severe attacks occurring after the largest amounts of carbohydrate had been taken for tea.
3. A slight increase in the sensitivity to insulin, the occurrence of a typical hypoglycaemic attack after intravenous administration of insulin, and the spontaneous return of the blood-sugar level to normal limits with disappearance of symptoms.
4. The mildness and ease of control of the symptoms by means of reduction in carbohydrate intake.
5. The family history of diabetes and renal glycosuria.

In connexion with the last of the above points the case of MacPherson (1941) may help to throw some light on the aetiology of these attacks. His case showed a sugar-tolerance curve resembling that in the present case. In addition to this his patient had renal glycosuria—a condition recognized as occurring with, and possibly playing a part in the production of, "functional hyperinsulinism" (Conn, 1940). MacPherson suggested that two of the precipitating factors in his case were irregularity in meals and hard work. In the present case it appears from the history that there was some definite relation of the onset of symptoms to increasing severity of work and to increase of worry. Although humoral mechanisms are involved in the control of blood-sugar levels, Wacchope (1933) and Conn (1940) indicated that imbalance of the autonomic



nervous system may have a bearing on the production of "functional hyperinsulinism." Cori (1931) in an extensive review concluded that vagal impulses play a part in the finer regulation of the insulin production, and Cannon *et al.* (1924) have shown that nervous control of the adrenal medulla via the splanchnic nerves ensures a rapid adrenaline response.

It can well be appreciated how the continuance of abnormal stress in a susceptible individual may give rise to abnormality or instability in the control of these opposing impulses by the hypothalamic region. The terminal stages of the glucose-tolerance test is illustrative of this.

### Summary

A case of "reactive hyperinsulinism," manifest by an excessive post-prandial fall of the blood-sugar level, is described. Points in the differential diagnosis from hyperinsulinism due to tumour of the pancreatic islets are discussed.

My thanks are due to Dr. H. Gardiner-Hill for his interest and permission to publish this case, and to Dr. C. Ede for assistance, especially with the history.

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## TRAUMATIC RUPTURE OF THE AORTA

BY

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The following case of rupture of the aorta due to a blow on the epigastrium presents clinical and pathological features interesting enough to be placed on record.

### Clinical History

The patient was a farmer, aged 37, who was described by his relatives as being in robust health. He had no relevant medical history, but his family doctor had observed that he had a very high threshold for pain. On Jan. 20, 1944, he went ploughing at 1 p.m., and at 3 p.m. left the field to call at a neighbouring farmhouse for a drink of water. He there complained that shortly before that time his plough had struck a stone, and the plough handle, rearing up, had hit him somewhere in the region of the praecordium. The blow had shaken him badly, and from statements he made to various people it appears that immediately after the accident he felt very ill, owing presumably to shock; but he soon recovered, continued to plough till about 4 p.m., and made no further reference to the accident. He returned home at 5 p.m., when he complained of pain the left side of the chest radiating through to his back. It was observed that he was cold, clammy, and pale, and he had to go to bed. He was examined later the same evening by his doctor, who found that his temperature was 100° F. and that friction could be heard in the cardiac area. The patient made no reference to the accident, and his doctor was in complete ignorance of the incident till after the man died. He passed a restless night because of chest pain, and vomited three times. Next morning the pyrexia had disappeared, and though he still complained of pain he did not seem to be particularly ill. His condition remained much the same till late afternoon, when he died suddenly within a few minutes of sitting up in bed to drink a cup of tea.

### Post-mortem Findings

The deceased was well built and there was no external evidence of injury. No bones were broken. There was an area of bruising in the areolar tissue of the anterior mediastinum, and the bruising extended up the right side of the neck as far as the level of the larynx in the line of the great vessels and sterno-mastoid muscle. The pericardial sac was distended with blood, which had infiltrated

the wall, particularly in the region of the base of the heart. On the posterior wall of the first part of the aorta there were three tears in the vessel—one just above the valve cusps, a second at the beginning of the arch, and a third midway between the first two. The upper tear was half an inch and the others each a quarter of an inch in length. All the tears were oblique to the transverse axis of the vessel, but were not parallel to one another. The aorta was not dilated, and the only abnormality was some early atheroma, which appeared as small patches hardly elevated from the general level of the intima and free from calcification and ulceration. The heart weighed 28 oz. (793.5 g.), but the hypertrophy was evenly distributed throughout all the chambers; there was no dilatation; all the valves were competent and their cusps healthy. The heart muscle was of excellent tone and free from all sign of disease, both on gross examination and microscopically, but the individual fibres were hypertrophied. The coronary vessels were capacious, and on the left one there were a few small patches of early atheroma, but quite insufficient to interfere with the blood supply. The right coronary artery was healthy.

In the peritoneal cavity there was a little slightly blood-stained serum. On the posterior abdominal wall some haemorrhage could be seen shining through the peritoneum in the region of the pancreas. The left half of the body and tail of that organ were haemorrhagic, but no fat necrosis was anywhere observed. The other structures in this cavity were uninjured. The only abdominal disease found was an early hydronephrosis of the left kidney, and, though the entire urinary tract was dissected, no satisfactory explanation was discovered for this abnormality. There was no sign of chronic nephritis or any significant abnormality in other structures.

### Comment

Contusion and rupture of the pancreas are relatively rare injuries. Vance (1928) quotes Gall to the effect that they occur in 4.4% of all visceral injuries, and most other authors agree with this figure. The pancreas lies in such a position that it could only be injured, in the absence of an open wound, by some hard object coming forcibly in contact with the epigastrium and crushing the gland against the body of the second lumbar vertebra. It is possible, however, that the view of Boesch (1921) is correct—namely, that the gland may frequently be injured without the condition being recognized during life. This case tends to support that view, as the patient made no complaint referable to the abdomen and was neither rigid nor tender in that region. Furthermore, the fact that fat necrosis was not present indicates that the pancreas was contused and not ruptured, and it seems likely that the condition might have resolved and remained unrecognized had the patient not sustained other more serious injuries which proved fatal.

It is clear, then, that the handle of the plough struck him a deep, powerful blow in the epigastrium. There were no injuries of any kind to the thoracic wall in the shape either of subcutaneous or muscular bruises or of fractures of the ribs or sternum, and it is almost inconceivable that a relatively sharp object like a plough handle could strike that region with enough force to produce the internal injuries described without leaving some mark on the soft tissues or the thoracic cage. It follows, therefore, that the damage to the aorta must have been produced indirectly by transmission of the force through the diaphragm. This thesis is supported by the fact that the anterior mediastinal tissues were contused in the absence of more superficial damage, the bleeding being no doubt due to the rupture of small vessels consequent upon the sudden dislocation of the pericardial sac. The heart is suspended in the pericardium by the aorta and superior vena cava, but is given basal fixation by the inferior vena cava and the structures of the lung roots. Its potential mobility is strictly limited in all directions, and it seems unlikely that rupture of the aorta alone could occur, due purely to displacement of the heart and traction on the vessels, by a force applied to the diaphragmatic surface of the heart from the abdomen.

Ruptures of the aorta are relatively frequent, but when they occur it is nearly always as a result of crush injuries, in which the osseous structures of the thoracic wall may or may not be fractured, depending largely on their elasticity. The tear is usually transverse, and is located just above the aortic valve cusps. It is due to a force thrusting the heart downwards and tearing it from its points of suspension. In these cases, as a rule, the tear is complete and the outcome immediately fatal. Partial ruptures—which become complete later—are more uncommon, and may arise in the absence of trauma if the

requisite predisposing factors are present Peery (1942) has recorded the finding of healed partial tears in the first part of the aorta. According to him, partial tears are usually encountered in the ascending portion of the arch, are usually transverse or oblique and are rarely longitudinal. An essential predisposing factor, in Peery's opinion, is severe hypertension of long standing and he is not certain that there need be any abnormality in the wall of the vessel. Microscopical sections from the aorta taken near the lesion, but not including it, usually do not show any recognizable abnormality. Arteriosclerosis is probably not a cause for this condition, since the tears seldom occur through an atheromatous plaque or ulcer. The precipitating factor in most cases is exertion, which, by raising the already elevated blood pressure, exceeds the pressure the aortic wall can stand and rupture occurs.

Another predisposing condition is the presence of coarctation of the aorta, in which the vessel tears below the constriction, presumably owing to the increased pressure in that part of the artery (Moragues, Moore, and Rossen, 1942).

A few cases of partial rupture of the aorta have been recorded in which trauma was the immediate cause. In Heller's (1904) case the partial tear was due to a heavy burden falling on a man's chest. In the case reported by Oppenheim (1918) clinical manifestations followed a blow by a falling piece of granite. Nordlander (1927) and Oppenheim (1918) both referred to the occurrence of ruptured aorta in aviators falling from a high altitude.

The present case is unusual, if not unique, because of the method of production of the damage to the vessel. This man had a grossly hypertrophied heart, and, though his blood pressure was never recorded and there were no symptoms or other post mortem changes to suggest it, he probably suffered from essential hypertension, though the fact that he had followed a strenuous occupation may have been partly responsible for the hypertrophy. There is no such lesion now recognized as idiopathic cardiac hypertrophy in an adult, and, in the opinion of Kugel and Stoloff (1933), it appears doubtful whether there is such a condition in infants and young children, as some workers maintain. The heart, as stated, weighed 793 g. According to Aschoff (1924) the normal heart weight in men is up to 355 g., while Parkinson (1936) quotes Evans to the effect that the upper limit is 390 g. By either of those standards this heart was grossly hypertrophied, and though many hearts weighing more have been reported (Strong and Munroe, 1940; Rosenow and Smith, 1939, and Royster, Lisa, and Carroll, 1941) some other factor in addition to essential hypertension has usually been present to account for the hypertrophy. The mechanism of production of the aortic lesions therefore seems to have been the increased pressure in that vessel. The sudden compression of the heart must have further raised the already high pressure in the left ventricle and aorta to such a degree that the vessel wall was incapable of withstanding it and partial rupture ensued.

The clinical symptoms in cases of partial rupture of the aorta are always indefinite, and the literature does not seem to record a case in which this condition has been diagnosed ante mortem. According to Peery (1942), "the most common symptom is a choking sensation or a feeling of suffocation. Dyspnoea may come on suddenly and continue for some time. Pain is also a frequent symptom, and may be stabbing or tearing, although pain is less frequent and less severe when dissection supervenes immediately. Occasionally cough, haemoptysis, and fever are the presenting symptoms, and may be associated with pain of pleuritic type. The most important physical finding is undoubtedly the presence of heart murmurs. These may be either systolic or diastolic, and are usually best heard in the aortic area. The systolic murmur is as a rule harsh, and is probably due to vibration, in the blood current, of the abrupt shelf like edge of the tear or to eddying of blood over the small pouch between the lips of the tear. In a considerable proportion of cases however, dissection of the aorta occurs days, weeks, or months later, with the usual manifestations of the condition. In other cases the clinical picture becomes one of aortic regurgitation with congestive heart failure." In the present case there was no immediate pain referable to the thorax, and two hours elapsed before pain started. Probably during that time dissection was not occurring

and the acute pain in the left side of the chest radiating through to the back became manifest when dissection through the media began to develop. Final rupture 26 hours after the original injury is in keeping with other cases reported and, as in a proportion of these, it occurred after some mild exertion—in this case sitting up in bed.

It is interesting to speculate what the outcome might have been if the patient had stopped work after the injury and gone to bed. Perhaps the intimal tears might have healed, as happened in the cases reported (Peery, 1942).

Many cases have been recorded in which hypertension has been associated with a unilateral renal lesion of some sort, and hydronephrosis is one of the conditions mentioned. Baggenstoss and Barker (1941) have reviewed the literature and reported a series of their own cases. Their series is short and, they admit, insufficient to draw statistical conclusions in the case of hydronephrosis, but they nevertheless tend to the opinion that this condition does not appear to influence the onset of hypertension. This aspect of the case is mentioned merely for the sake of completeness, in view of the work of Goldblatt (1940) and of Wilson and Byrom (1939) on the relationship between unilateral renal ischaemia and hypertension.

### Summary

The clinical and pathological features of a case of rupture of the aorta due to a blow on the epigastrium are discussed.

Gross cardiac hypertrophy and essential hypertension are considered as factors in the mechanism of production of the aortic lesion.

The aetiology and symptomatology of partial rupture of the aorta are reviewed.

My thanks are due to Dr James McCartan of Sheffield for particulars of the clinical history of the patient.

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## A FATAL CASE OF PURPURA AFTER SULPHAPYRIDINE

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An opportunity recently occurred of making observations on a case of acute purpura occurring during the course of sulphapyridine therapy for pneumonia. As we have found records of only 18 cases in the literature, this seems to be one of the rarer complications of sulphonamide administration. For this reason we report the essential details of the case.

### Case Report

On Oct. 12, 1943, a publican aged 52 became ill with a febrile condition diagnosed as pneumonia. Sulphapyridine was administered outside hospital, 30 g. being given in seven days. The immediate response was satisfactory, but five days after cessation of treatment a rise of temperature gave cause for anxiety. Recrudescence of pneumonia or empyema was considered. Sulphapyridine therapy was restarted, 4½ g. being given during the next five days. The malaise and pyrexia, however, persisted. It was noted that the temperature rose after each dose of sulphapyridine. On Oct. 23 there was slight

\* Working on behalf of the Medical Research Council

epistaxis. The patient was admitted to hospital on Oct. 30 for investigation.

Apart from trench fever in the last war the patient had enjoyed good health. He had not been subject to asthma, hay-fever, or urticaria; he had never taken sulphonamide drugs previously; and there was no personal or family history of a haemorrhagic diathesis. He was a heavy beer-drinker. An obese heavily-built man, he showed some difficulty in maintaining attention. Mucous membranes were pale. Temperature was 101.6°. The fundus oculi had some arterial thickening, but there were no haemorrhages. The nose was bleeding. There was much oral sepsis. B.P. 205/120. The chest revealed signs interpreted as those of a resolving right lower lobe pneumonia. Spleen and liver were not palpable. There was no enlargement of peripheral lymph glands.

By Oct. 31 the temperature was subsiding, and on Nov. 1 had become normal. B.P. was now 160/110. On this day an extensive purpuric eruption appeared on the palate, arms, and legs. Epistaxis persisted, and blood was oozing from the gums. Three times during the day he vomited coffee-ground material giving a positive benzidine reaction. The urine, normal in quantity, had become frankly blood-stained. The ankles presented pitting oedema.

On Nov. 2 his condition showed further deterioration. Purpura was even more gross, and blood was flowing freely from the nose and mouth. There were many submucous haemorrhages in the mouth, and in the tongue they were particularly well marked. Haematemesis and haematuria persisted. Sternal puncture was performed, and compatible blood was transfused through the site of puncture. As the procedure was started the patient complained of a bursting sensation in the head: 2½ hours later he was in coma. Respirations became laboured and gurgling, and blood-stained saliva was coming from his mouth. The fundus oculi, which earlier in the day had been clear, now showed numerous flame-shaped haemorrhages. There was a left hemiplegia, and plantar responses were bilaterally extensor. B.P. was 260/140. In a further 2½ hours coma had become profound. Fundal haemorrhages were more pronounced and blurring of the disk margins was observed. There was a flaccid paralysis of all the limbs. A finger-prick, made 2½ hours before, was still bleeding freely. Death rapidly supervened.

#### Investigations

*X-ray chest*, Nov. 1:—Left ventricle enlarged. Aorta unfolded. The appearances in the lung fields suggested bilateral recent resolving pneumonia. *Sputum* showed a scanty growth of *Strep. pneumoniae* and *neisseriae*. *Haematology*, Nov. 1:—Erythrocytes, 2,500,000 per c.mm.; Hb (Haden), 47% (733 g. per 100 c.c.m.); C.I., 0.94; reticulocytes, less than 0.1%. Leucocytes, 10,000 per c.mm.: 3,200 lymphocytes, 6,000 neutrophil polymorphs, 500 eosinophils, and 300 monocytes. Platelets, 150,000 (direct method, using Lempert's modification of Kristenson's technique). Bleeding time (Duke's), 36½ min. (normal 2-5 min.); coagulation time (Lee and White), 27 min. (normal 5-8 min.); clot retraction, 1 hour (Macfarlane), 19% (normal 44-66%). Capillary resistance test by a positive-pressure method indicated very marked fragility. Smears of sternal marrow revealed no grossly abnormal features, except some preponderance of the myeloid elements. Megakaryocytes were present (0.4%), and these appeared normal. The leuco-erythrocytic ratio was 4:1. *Biochemistry* (7 hours ante mortem):—Plasma urea, 214 mg per 100 c.c.m. Plasma uric acid, 7.3 mg./100 c.c.m. Plasma proteins, total 6.4 g./100 c.c.m., of which 3.3 g. was albumin, 2.6 g. globulin, and 0.5 g. fibrinogen. Plasma bilirubin, less than 0.5 mg/100 c.c.m. Plasma sulphapyridine: free 2.1 mg/100 c.c.m.; total 4.44 mg/100 c.c.m.

*Urine Analysis*—On admission the urine was acid in reaction and contained albumin. The specific gravity was 1008. The centrifuged deposit showed only occasional leucocytes. Haematuria appeared on Nov. 1 and persisted. A sample passed 6 hours before it had a specific gravity of 1007, and albumin was present. There was no urobilinuria. Microscopy of the deposit revealed a number of red blood cells. Leucocytes were 6 per h.p. field, and there were very numerous coarsely granular casts.

*Necropsy*—(34 hours after death; Dr. C. Keith Simpson.) The heart showed subpericardial, myocardial, and endocardial haemorrhages. Coarse purpuric haemorrhages were present throughout both lungs, causing extensive coarse nodular consolidation. No superimposed infection could be established. There was extensive purpura throughout the alimentary tract, mainly subperitoneal and with but little actual bleeding. The liver showed some purpura. Pulp haemorrhages were present in the spleen. Both kidneys were shot with innumerable purpuric haemorrhages resulting in virtual infarction. The renal pelvis, ureters, and bladder contained no crystalline deposits and there was mild purpura only. The brain showed coarse purpuric haemorrhages into the cortex, into the white matter, including a vast area of confluent purpura in the right frontal lobe, and also into the ventricular system.

*Histology* (J. C. W.)—*Lungs*:—The essential lesion was a widespread haemorrhagic consolidation, mainly confluent. Intervening

arcas were emphysematous, acutely oedematous, or collapsed. Infiltration of the alveoli by inflammatory cells was observed only at the periphery of the haemorrhagic areas. There was no unresolved pneumonia. The pulmonary capillaries were congested, particularly subpleurally. In some capillaries the endothelial lining cells were swollen. Myocardium revealed only scattered haemorrhages. *Liver* showed no gross pathological change. *Spleen*:—The splenic pulp contained scattered areas of haemorrhage, particularly in the subcapsular region. Moderate amounts of haemosiderin were demonstrated in the splenic pulp. *Kidneys*:—There were multiple haemorrhages. These were especially numerous in the subcapsular region, and formed wedge-shaped extensions into the deeper parts of the cortex. Focal areas of round-celled, mainly plasma cell, infiltration were scattered throughout. These bore no relation to any particular structure. The glomeruli were free from pathological change apart from slight thickening of the capsular basement membrane and occasional distension of the capsular space by red blood cells. There was considerable degenerative change in the epithelium of both convoluted tubules. A few of the collecting tubules contained acidophil hyaline material but no crystals. The interlobular arteries showed hyperplastic thickening and the afferent arterioles a slight degree of hyalinization. There was some increase in renal interstitial tissue, and large numbers of effete red cells were present. Little increase in collagen or reticulin could be demonstrated. Haemosiderin was practically absent.

Sections of femoral bone-marrow showed no architectural change.

#### Diagnosis

This patient's fatal illness could be attributed to the effects of sulphyridine. The original lesion was a pneumonia, and the bleeding tendency did not become apparent until 16 days after the onset of this illness. At necropsy the pneumonia had resolved. A bleeding diathesis may be associated with nitrogen retention. In our case the plasma urea was 214 mg. per 100 c.c.m. Though he was a hypertensive subject, the kidneys showed only moderate vascular changes. It would therefore appear more likely that the recent severe haemorrhagic changes in the kidney were responsible for impairment of function. In addition, the effects of gastro-intestinal haemorrhage would play a part in producing azotaemia (Black, 1942). The haemorrhagic state in our patient, therefore, was probably the cause rather than the result of the uraemia.

#### Discussion

The pathogenesis of sulphonamide purpura is a subject for conjecture. The drug is sometimes directly toxic to the bone-marrow. The structure of the sulphonamide drugs is similar to that of benzol derivatives having a known myelotoxic action. The occurrence of agranulocytosis and aplastic anaemia during sulphonamide medication is well known. In such cases thrombopenia associated with the aplastic anaemia (Meyer and Perlmuter, 1942) and the agranulocytosis (Dolgopol and Hobart, 1939) has been recorded. However, the red and white cell elements are usually well maintained in the peripheral blood in the acute purpura associated with sulphonamide therapy, the former showing only a slight fall consequent upon haemorrhage, and the latter often being raised. Bone-marrow studies in our case revealed abundant megakaryocytes and increased cellularity, particularly of the myeloid elements. Similar findings have been reported (Markel and Rike, 1939; Russell and Page, 1940; Losada and Fernandez, 1942; Gorham et al., 1943). More probably the purpura results from a generalized vascular defect.

In recent years the importance of the capillaries in the pathogenesis of purpura has been stressed (Mackay, 1931; Macfarlane, 1941; Scarborough, 1943). In all the 7 recorded cases of purpura following sulphonamide therapy in which the resistance of the capillaries was tested a marked fragility was noted. In 9 out of 12 cases the bleeding time was prolonged. In 4 of the reported cases, including our own, the platelet count, although low, had not been reduced to the level usually associated with bleeding in essential thrombocytopenic purpura. Scarborough in a recent personal communication mentioned a case of thrombocytopenic purpura following the local application of sulphathiazole ointment in which, after recovery from the acute phase, and when the platelet level was restored to normal, application of sulphonamide drugs to the skin led to a marked fall in capillary resistance in parts remote from the site of application. There was no significant change in the platelet count. The effect on the vessels may be due to hypersensitivity. If drugs are administered in two courses hypersensitive phenomena are more likely to occur. In our case

the drug was given for 7 days; then a 5-day interval was allowed to elapse before restarting it. It was only on the second occasion that the supposed intolerance became apparent. The only other instances of spaced dosage associated with purpura are recorded by Russell and Page (1940), Harries (1942), Werner (1942), Gorham *et al.* (1943), and Hurd and Jacob (1943). In 8 cases the administration was uninterrupted. Drug hypersensitivity may remain after recovery. Hurd and Jacob found that giving a small dose of sulphathiazole or sulphadiazine to their patient caused a marked fall in the platelet count with an increased bleeding time and a positive tourniquet test. Rosenfeld and Feldman (1942), however, were able to give a later course to their patient with no further purpura.

In the reported cases no member of the sulphonamide group of drugs seems exempt as a causative agent, and sulphanilamide, sulphapyridine, sulphathiazole, and sulphadiazine have all been held responsible.

The high mortality of this condition—8 out of 9 cases proved fatal—makes early recognition essential. The first clinical sign is nearly always epistaxis. If this or other spontaneous bleeding is discovered in a patient receiving sulphonamide drugs the administration should be stopped immediately and a bleeding time and capillary resistance test done. Adequate transfusion of fresh blood is probably the best line of treatment.

### Summary

A fatal case of acute purpura occurring in the course of sulphapyridine therapy in pneumonia is recorded.

The pathogenesis of this condition is discussed. Vascular lesions as a basis for its causation are emphasized.

In view of its high mortality a watch for extraneous bleeding should be made in all cases receiving sulphonamide drugs.

We wish to express our thanks to Prof. J. H. Dible and Dr. J. McMichael for much helpful criticism. The necropsy findings are reported by kind permission of Dr. C. Keith Simpson.

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## HAEMOGLOBIN LEVELS IN THE WOMEN'S AUXILIARY AIR FORCE

BY

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Between May, 1943, and April, 1944, a survey of haemoglobin levels among various groups of W.A.A.F. personnel was carried out. The main purpose of the survey was to determine whether the average haemoglobin levels showed any significant change during service in the W.A.A.F. In addition some of the results have been incorporated into the report of the nation-wide survey of haemoglobin levels initiated by the Haemoglobin Survey Committee of the Medical Research Council, whose report will shortly be published.

### Plan of Experiment

The following groups were chosen: (1) W.A.A.F. personnel arriving to join the Service in May and June, 1943. (2) W.A.A.F. personnel attending an N.C.O.s' course in June, 1943. (3) W.A.A.F. personnel at a bomber station and a training wing in Sept., 1943. At each station all the personnel were asked to volunteer for the test, and, except at the training wing, almost all volunteered.

The girls completed a card giving information required by the Haemoglobin Survey Committee of the Medical Research Council (see Appendix). The haemoglobin level was then

determined on a sample of blood from the ear, using the technique suggested by the Committee and a standardized Haldane haemoglobinometer.

### Results

Most of the W.A.A.F. were between 18 and 25 years of age and all between 18 and 35. The distribution of the haemoglobin levels in the groups of W.A.A.F. examined is given in the accompanying Table according to length of service. Separate analysis of the results for the N.C.O.s and the W.A.A.F. personnel from the bomber station and training wing shows no significant difference, so these groups have been combined.

It is seen that all the groups who had been in the Service for more than six months had significantly higher haemoglobin levels than the group of W.A.A.F. just entering the Service, but that after six months to a year there is no further improvement. The coefficient of variation, however, becomes steadily smaller with longer service. The mean value for all those who had been in the Service for more than six months is 103.05, with standard deviation 9.12. The results have also been analysed according to trade. Some of the trades are represented by very few W.A.A.F., so that comparison has been possible only for a few. There is no significant difference between the results for cooks and butchers, motor transport drivers, clerks, aircraft loads (general duty), and telephone operators.\* Analysis of the results according to age shows no significant differences in the age groups represented (18–35 years).

Table showing Distribution of Haemoglobin Levels of W.A.A.F. according to Length of Service

Hb %	On Entry	Length of Service				
		1–1 Yr.	1–2 Yrs	2–3 Yrs	More than 3 Yrs	Total More than 6 Mths.
126–	—	1	2	—	—	3
121–	—	1	9	—	—	1
116–	6	2	6	6	—	18
111–	6	5	9	16	1	32
106–	41	8	18	22	5	53
101–	80	10	26	25	5	66
96–	118	4	25	32	7	64
91–	143	14	12	15	1	48
86–	87	2	3	7	0	12
81–	52	0	1	2	1	4
76–	10	1	0	—	—	2
71–	8	—	0	—	—	0
66–	3	—	0	—	—	0
61–	2	—	1	—	—	1
56–	0	—	—	—	—	—
51–	0	—	—	—	—	—
46–	0	—	—	—	—	—
41–	1	—	—	—	—	—
Total	559	48	103	127	24	307
Mean value %	94.84	102.46	104.10	102.71	101.62	103.05
Standard deviation	9.22	9.50	9.51	8.47	8.26	9.12
Coeff. of variation	9.72	9.66	9.14	8.25	8.13	8.85

Forty of the W.A.A.F. from Group 1 were retested after ten months' service. The mean value of the haemoglobin levels of these girls on entry was 98.8 (standard deviation 8.32); after ten months the mean improvement was 4.25. This improvement is statistically significant ( $4.25 \pm 1.70$ ). The level reached is similar to that in the other groups with more than six months' service.

### Discussion

**Choice of Groups.**—Almost all the girls in each group volunteered, so that there was practically no selection within the groups. The group of N.C.O.s were drawn from many stations to attend the course, and so constituted a fairly random sample of W.A.A.F. population so far as location is concerned. On the other hand, they were all training as N.C.O.s and were to that extent selected. They were presumably of more than average intelligence and their period of service was comparatively long; there was probably also some slight selection by trade. The group of W.A.A.F. from the bomber station and training wing, however, although selected as to location, were not selected by rank or trade. As the results for this group are not significantly different from those for the N.C.O.s,

\* A smaller survey carried out on 82 W.A.A.F. aircraft fitters and 59 W.A.A.F. electricians showed the mean Hb of these to be 106.92 (standard deviation 10.2) and 106.87 (standard deviation 9.1) respectively. These figures are significantly higher than the mean for the general W.A.A.F. population after more than six months' service (difference  $3.82 \pm 0.91$ ).

it appears that the selection in the two groups did not affect the accuracy of the estimate of mean haemoglobin levels. It is possible that the group of W.A.A.F. which entered the Service some time ago might be differently constituted as regards social status, etc., from those which were entering later. The results for the new entrants are, however, similar to those of other groups of the population (M.R.C. report, 1944), and it seems very unlikely that earlier entrants could have had haemoglobin levels so much higher. Furthermore, the haemoglobin levels of the 40 girls of this group retested after ten months were by that time similar to those of other groups of more than six months' service.

**Accuracy of Results.**—Errors in the estimation of haemoglobin by the method used in this survey arise from three sources: inaccuracies in the apparatus, errors in collecting the sample of blood, and the error in matching. The apparatus was standardized and the appropriate correction applied to all readings. These corrected values are those given in the Table. The error in collection has been estimated by collecting samples from the ear and vein of 25 subjects and measuring the haemoglobin level in the usual way. This test showed that the samples from the ear were approximately 4.2% higher than those from the vein. It is probable that the levels as estimated from venous blood are more accurate. The error in matching was assessed by a test instituted by the Haemoglobin Survey Committee. The full results of this test are published in the report of the Committee; it may be stated, however, that I tended to read too low, as did most of the others taking part. The average correction to be applied in the ten samples estimated was approximately +4.4%. It is probable that a similar correction may be applied to all the results given in this report. The errors in collection and matching are similar in size but tend to alter the true values in opposite directions, so that the results given in the Table may be taken as being about the true values. The retesting of the 40 girls in Group 1 was carried out after the results of the matching test had been made known, and it was possible, therefore, that this error was being unconsciously corrected at the second test. A further 194 girls who had just come into the Service were therefore tested. The mean haemoglobin value of this group was 96.15 (standard deviation 10.0), which is not significantly different from that of the girls in Group 1 (difference  $1.31 \pm 0.817$ ). It appears likely, then, that the error in matching was not being corrected and that the improvement in the 40 girls was real.

**Normal Haemoglobin Values.**—The mean haemoglobin level reached after six months' service is higher than any of the levels usually regarded as normal. The figure given by Price-Jones (1931) is 98.3%, and this has usually been accepted as the best estimate of normal averages. On the other hand, the value reached by the W.A.A.F. after six months' service (103% approximately) is well maintained without further improvement. This would suggest that the normal value is at least as high as this. It is possible that some of the W.A.A.F. with low values might not be consuming much of the Service diet and might be capable of showing further improvement; this would tend to make the mean value even higher.

**Cause of Improvement.**—The improvement is probably largely due to the high iron intake of women in the Service. The average intake per person per day is about 35 mg. (see Macrae, 1944); much of this iron comes from iron cooking vessels, which are rarely used in domestic cookery. What part is played by the intake of much protein of high biological value is not known, but there is little evidence of deficient intake of protein in the general population (H.M.S.O., 1944). It is doubtful if vitamin C intake plays any part in the improvement. The average ascorbic acid intake of W.A.A.F. personnel is about 25 mg. a day in the autumn and about 18 mg. a day in the spring (Macrae, 1944). It is probably at least as high among civilians, because domestic cooking methods are on the whole less destructive of this vitamin. Some slight improvement in average values may be due to the medical treatment of a few W.A.A.F. with low haemoglobin who develop symptoms during Service life.

#### Summary

The haemoglobin levels of W.A.A.F. personnel entering the service is about 95% (standard deviation 9.22) on the standard

Haldane scale. The haemoglobin level after six months service is about 103% (standard deviation 9.12). This level is reached in six months to a year and is maintained thereafter. The error in collection results in readings which average approximately 4.2% too high, and errors in matching in readings which average approximately 4.4% too low. Correction for both these errors thus leaves the readings as given in the Table. It is probable that the "normal" mean value of women of this age group is at least 103%.

The improvement is probably due mainly to the high iron intake of W.A.A.F. personnel.

I am indebted to the commanding officers and W.A.A.F. administrative officers of the stations concerned and the W.A.A.F. personnel who took part in the test for their co-operation; to Dr. Bradford Hill for advice concerning the plan of the experiment and in the analyses of the results; and to Dr. Davies, pathologist to the Royal Gloucester Infirmary, for granting me laboratory facilities during May and June, 1943.

#### APPENDIX

##### Copy of Proforma Used in R.A.F. Haemoglobin Survey

Name.....	No.....	Serial No.....
Date of joining W.A.A.F.....	Age last birthday.....	
Home address.....	Married, Single, Widow.....	
Previous occupation and town of work.....		
Occupation of husband.....		
Mark with a cross the circumstances applicable before joining the W.A.A.F.		
a. Lived with family on civilian rations usually supplemented by regular meal (5 or more a week) at canteen or restaurant.....		
b. Lived with family on civilian rations usually supplemented by some meal (less than 5 a week) at canteen or restaurant.....		
c. Lived with family on civilian rations without supplementary meals as described or with some meals as follows (Give short description).....		
d. Lived in hostel, institution, or other communal life as follows (Give short description).....		
e. Other circumstances as follows (Give short description).....		
Serious illnesses during past six months ("Serious illness" if confined to bed for a week or more).....		
Were you a blood donor?..... No. of donations in past 2 years.....		
Date of last donation.....		
No. of previous pregnancies..... Date of end of last.....		

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## Medical Memoranda

### A Note on Red Hair, Rheumatism, Tuberculosis, and Bleeding

The question of rheumatism, red hair, and bleeding has been raised again in the *Journal* (July 1, 1944, p. 33), and the stimulating reply there given suggests that the following data are worth stating.

#### RED HAIR

Of late all patients with red hair who consulted me have been noted, and this report concerns 100 consecutive red-haired patients. The accompanying Table shows the conditions in which the red-haired were seen with any frequency. It is clear that only a small minority (6%) of patients with rheumatic fever had red hair. The 3% of pneumonia patients with red hair probably coincides with the incidence of red hair in the population dealt with. Hill and Allan (1929) found an incidence of 3.1% in London children. A larger series will be necessary before it can be affirmed that the incidence of red hair in rheumatic patients is substantially greater than that in pneumonia or in the general population.

Hill and Allan (1929) found that 6.4% of 562 rheumatic cases had red hair, but only 3.1% of 536 controls (percentages which I confirm). According to the contributor in the *Journal*, this difference in 500 patients is probably significant. Yet Hill and Allan concluded that there were no physical characteristics peculiar to rheumatic children, no doubt because they considered other colours of hair and also eye colour, and did not concentrate on red hair alone. Shrubsall (1903) found that blond traits were associated with acute rheumatism and tonsillitis, and brunette traits with pulmonary tuberculosis and malignant disease. Yet pulmonary tuberculosis was the chief disease with red-haired sufferers among these 100 red-haired.



But in conformity with Shrubbsall I saw malignant disease in 2 red-haired patients only. It should be of value further to study the incidence of red hair in pulmonary tuberculosis, rheumatic fever, acute tonsillitis, purpura simplex, and epilepsy.

## BLEEDING

The contributor to the *Journal* stated that he had no knowledge of any work on red hair and excessive bleeding. There is, however, evidence that rheumatic fever is associated with unusual (if not excessive) tendency to bleed. The tendency of rheumatic persons to nose-bleeding is discussed by Levine, Andren, and Homans (1930). Coburn (1933) found post-mortem evidence that rheumatic fever was associated with diffuse haemorrhagic changes. I (Davis, 1941, 1943) have given evidence of a special association between purpura simplex and rheumatism. I do not yet know whether this association is stronger in red-haired rheumatic subjects. Although many clinicians will have seen purpura in tuberculosis the association is relatively rare (Davis, 1943). It might also be worth while investigating this association in red-haired tuberculous patients.

*Details of a Series of 100 Red-haired Patients (Diseases in which Red Hair was seen in more than 3 Patients)*

Dis ease	Total Cases	Cases with Red Hair	Percentage of 100 Red-haired Patients
Pulmonary tuberculosis	296	23 (7.8%)	23
Rheumatic fever (past or present)	248	15 (6.0%)	15
Acute tonsillitis	162	2 (7.4%)	12
Pneumonia	270	3 (3.0%)	8
Purpura simplex	59	7 (12.0%)	7
Epilepsy	47	6 (13.0%)	6

## COMMENT

Of 240 patients with rheumatic fever 6% had red hair, as against 3% of pneumonia patients and 7.8% of sufferers from pulmonary tuberculosis. Of a series of 100 red-haired patients, 15% were rheumatic, 23% were tuberculous, and 12% had acute tonsillitis. There is a special association between rheumatism and purpura.

I thank Mr J. R. M. Whigham, F.R.C.S., and the staff of St Andrew's Hospital for their help.

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## Intussusception after Appendectomy

The following case is recorded as a rare instance of intestinal obstruction after operation.

An otherwise healthy boy was admitted on June 22, 1944, suffering from abdominal pain and vomiting of 12 hours' duration. His temperature was 99.8° and pulse 120, and he was tender in the right iliac fossa. The same day I removed his appendix, which was long and inflamed. Nothing else appeared wrong, though in view of the pathological appendix I did not make a search. His temperature fell to 98.4° the next day. He was happy, free from pain, ate his meals, had his bowels open, and was apparently convalescent.

On June 29—the seventh day after operation—his condition changed. His appetite went and he was fretful, but he did not complain of any sudden or serious abdominal pain. His bowels were open for the last time on that evening. The next day he began vomiting, he had absolute constipation to enemas, and his abdomen was tender to palpation. The wound was well healed. I did not think I could feel any definite abdominal mass. Some mucus was passed per rectum, but no blood.

On July 1 his abdomen was distended and there was visible peristalsis. I opened the abdomen again, and found a large, fairly tight enteric intussusception in the ileum, about a foot from the ileo-caecal valve. With a little difficulty it was reduced. The gut was viable. There was no Meckel's diverticulum. The next day his condition was excellent. He was happy again, began taking light diet, and his bowels were opened regularly. His convalescence since then has been uneventful.

The question arises: Could he have had the intussusception when I removed his appendix on June 22, or was it initiated by the abdominal manipulations? It was reducible and viable nine days after the initial operation.

I wish to thank Dr. Geoffrey Dudley for permission to report this case.

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## Reviews

## PHYSIOLOGY OF THE C.N.S.

*Physiology of the Nervous System* By J. F. Fulton, M.D., Sterling Professor of Physiology Yale University; formerly Fellow of Magdalen College, Oxford. Second edition. (Pp 614 38s) London. Oxford University Press

The appearance of the first edition of this book in 1938 marked an important phase in the current intensive study of the central nervous system, and was a most welcome addition to physiological literature. The second edition puts us still further in Prof. Fulton's debt, by bringing the subject well up to date, and introducing further improvements in the display of facts and figures.

Some of the chapters have been largely rewritten, and particular stress has been laid on the biochemical aspects of the subject, such as the significance of acetyl choline in relation to nerve transmission, and on the important developments of the method of following nerve impulses by recording the electrical variations from point to point. Important results of developmental research are incorporated, and also advances in our knowledge of cutaneous receptors, of the functions of the basal ganglia and parietal lobes. There is a chapter on conditioned reflexes by Dr H. S. Liddell, which gives an account of interesting work on sheep, and to general somewhat modifies the point of view taken by the Pavlov school.

A remarkable feature of the book is the splendid bibliography: one would expect a good list of references from Prof. Fulton, but this one is quite exceptionally valuable. The general get-up of the volume is excellent.

## HEALTH SERVICES

*The Nation's Health* By Prof J. M. Mackintosh. Target for Tomorrow No. V. (Pp 64, illustrated, 4s 6d) London. The Pilot Press

A series of books under the general title of *Target for Tomorrow* is being published under the supervision of Sir William Beveridge, Dr. Julian Huxley, and Sir John Boyd Orr. The fifth volume in this series, by Prof. James Mackintosh, in 64 profusely illustrated pages, tells the general reader a good deal of the story and breathes the spirit of a reformer more interested, perhaps, in the wider problems of the public health than in those that beset the private individual when he seeks the advice of his family doctor.

The very short chapters are successively entitled: "Health: the Problem"; "Doctor: Patient and Health Insurance"; "Hospital, Consultant and Nursing Services"; "Maternity and Child Welfare"; "Other Health Services"; "The Problem of Health Administration"; "Medical Research"; "In Other Countries"; "Health: Plans and Opinions"; "A Target for National Health". The short text is pithy and informative, and the author has evidently relied on photographs to fill in the gaps he has left. It is not always clear why he has chosen the pictures he has: for example, in the 4½ pages given to "Hospital, Consultant and Nursing Services," 2½ are occupied by reproductions of Florence Nightingale in the military hospital at Scutari, Lister in a King's College Hospital in 1893 (in a charmingly old-fashioned group), and of one of the latest and brightest wards in "an up-to-date public hospital run by the London County Council." A lay person will no doubt say to himself, "The public hospital has it." But the comparison, if a comparison is intended, is unfair. To give one whole page to a photograph of a small boy cleaning his teeth does not really throw much light on the dental services of the country or on the problem of dental caries, and to give 4½ pages to illustrating the Peckham Health Centre seems a little out of balance in a book of this size. On the other hand, a full-page view of an occupied bedroom in West Ham says more about the evils of overcrowding than any number of tables, charts, or verbal description: this picture tells a story and drives it straight home.

The author may have been writing against time, and his book was already drafted when the Government issued its White Paper in 1944: he must be congratulated on the skill with which he met this awkward situation and on the excellent and concise summary he gives of the Paper. But we doubt whether members of the



public health service, of which he is a distinguished representative, would agree with him that the White Paper provides a solution for the "confusion in local health administration." It may, however, provide a solution for the "duality of the voluntary and public hospitals," but the solution is one that disturbs those who still cling to the idea that the voluntary hospitals of this country represent something that is of profound significance in our communal life. Prof. Mackintosh, discussing the organization of professional and hospital services, refers to the "obstinate traditions and habits of thought" of "these institutions": it appears—though this is not quite clear—that he refers to hospitals. Does this adjective "obstinate" reflect the ambitions of the reformer who sees little virtue in the continuity of history, and looks upon tradition as an obstacle and not as a guide? At all events, he seems to dispose quite easily of the tradition of freedom when he says of the Medical Appointments Committee which he believes should control the distribution of doctors, "they should be able, in addition, to divert medical men to areas where the number of doctors is insufficient."

In a last short note under the heading "Experiment and Research" he writes: "The Medical Research Council should continue to supervise this all-important side of the forward drive towards the health target, but under the general direction of the central health authority." Does Prof. Mackintosh suggest that the work of the Medical Research Council should come under the control of the Ministry of Health? We may recall that on the creation of the Ministry of Health in 1919 the direction of the M.R.C. was transferred to a Committee of the Privy Council when it ceased to be the Medical Research Committee established to administer the money for medical research provided by funds under the National Insurance Act. The secretary of the M.R.C. is also secretary of the Privy Council Committee for Medical Research, and this and the method of appointment to the M.R.C. safeguard it from too much State interference. We think Prof. Mackintosh's proposal would push the clock back, not on.

In a couple of pages the author describes with admirable brevity some points in the health services of the U.S.A., the U.S.S.R., and Sweden. Describing what happens in the U.S.S.R., he writes: "Under the Soviet Constitution citizens are guaranteed the right to medical treatment at the expense of the State, and they also receive maintenance in the event of loss of working capacity through illness. This general principle has made it possible to build up a comprehensive medical service at the expense of the State, which pays and employs all medical and auxiliary workers." No doubt this is the only way a comprehensive medical service can be built up under the Soviet Constitution, but we believe that it is possible to reach the same goal by different means under the British Constitution. Yet this short description of what is now done in Russia might almost be used to describe what the Government is proposing should be done in Great Britain.

## MEDICAL PARASITOLOGY

*Medical Parasitology*. By James T. Culbertson. (Pp. 285. \$4 25 or 28s.) New York: Columbia University Press; London: Oxford University Press.

This book does not claim to be a complete treatise on medical parasitology. It has been written for medical men and medical dentists who have in no way specialized in tropical medicine, who in the future will require to know the fundamentals of the subject, since the intermingling of populations owing to the war and the increased facilities for travel will break down many of the barriers which have separated tropical from temperate diseases. It is increasingly realized that the sharp demarcation between the temperate and tropical countries no longer exists, and that many of the parasites and the diseases they produce which were regarded as peculiarly tropical will to an increasing extent be world-wide in their distribution. Accordingly the author has written this book primarily for medical men whose sphere of work is outside the Tropics. There is no lengthy description of the structure or development of the parasites, but enough information is given to make intelligible what is said under the headings of pathogenicity, immunity, diagnosis, specific therapy, and prophylaxis. The illustrations are simple and adequate, though in some cases

possibly a little sketchy. All the disease-producing protozoa and helminths are considered, as also the Arthropoda of medical importance. There is a useful appendix of the more important technical methods employed for the detection and examination of the various parasites; also an introductory section giving general consideration to the subjects of infection, epidemiology, natural and acquired immunity, diagnosis, specific therapy, and prophylaxis.

The book is undoubtedly a useful one, and more particularly so for those who are taking up the study of human parasitology for the first time.

## THE BILIARY SYSTEM

*Clinical Lectures on the Gallbladder and Bile Ducts*. By Samuel Weiss, M.D., F.A.C.P. (Pp. 504; illustrated \$5.50 or £1 14s. 6d.) Chicago: Year Book Publishers, Inc.; London: H. K. Lewis and Co.

This book presents an account of the anatomy, physiology, and diseases of the biliary system from the physician's point of view, together with the appropriate methods of examination and investigation. Surgical technique is completely excluded. The material is obtained in part from the author's experience, but even more from the literature, and it tends to fall between the two stools of the personal investigation and the full-scale review. The title "Clinical Lectures" is unfortunate in so far as it invites comparison with vivid writers such as Trousseau and Hutchison. The main faults of Dr. Weiss's book are that it is dull reading and that the reader is often given no guiding thread to find his way through the contradictory opinions that are quoted. The chapter on liver function tests, for example, has no broad discussion of the tests, no hint of the theories on which investigators have worked, no summing-up of the relative value of the tests, but merely a sequence of tests arranged without rhyme or reason. Neither pernicious anaemia nor acholic jaundice is mentioned in the index or in the text, though both diseases are often complicated by gall-stones. The book will be most useful to the physician preparing to give a lecture or present a case of biliary disease. It is too undigested for the student. It is well produced, with good illustrations, though it is a little difficult to see why a kneeling Venus should have been chosen as the model for surface markings and reflex disturbances; she is certainly not the gall-bladder type.

## Notes on Books

Volume XII (1943) of the *Brompton Hospital Reports* (price 8s. 7d. post free from the Secretary of the hospital) contains 13 papers by members of the staff. Only two of these papers have not previously been published. Six articles deal with various aspects of tuberculosis. Mr. Price Thomas and Dr. Cleland discuss exhaustively, with excellent illustrations, the indications, technique, and complications of extrafascial apicectomy with thoracoplasty. In another paper, on the results of thoracoplasty, they show that the death rates have been materially reduced as increased experience has been gained in selecting cases and in operative technique; and that more expensive operations, employing mobilization, increase the prospects of cavity closure and sputum conversion, but they do not increase the mortality or risk of complications. In the paper prepared by Dr. A. Margaret C. Macpherson—"Childhood Infection and its Relation to Adolescent and Adult Pulmonary Tuberculosis: A Record of the Work of the Brompton Hospital Research Department during the last 14 Years"—it is stated that a shallow pneumothorax with only a short stay in hospital is the correct form of treatment for "symptomless adolescent pulmonary tuberculosis." Many tuberculosis workers will disagree with this. Among the articles dealing with subjects other than tuberculosis, attention should be drawn to the painstaking work of Dr. Foster-Carter on the anatomy of the bronchi; and all members of the medical profession will be interested in Dr. Hope Gosse's survey, "The Health of the Doctor." The volume also contains the hospital's medical reports for the years 1939-42, and an index of authors and a general index of Volumes I to XII.

In *Cape Horn Sunsets* (Mellifont Press Ltd.; 1s.) Dr. M. F. McElligott describes his experiences as a ship surgeon on a voyage to Australia, outward round the Cape of Good Hope and homeward round Cape Horn. The book is chiefly written in the form of a somewhat discursive diary, whose pages are freely sprinkled with the author's reflections and reminiscences.

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## BRITISH MEDICAL JOURNAL

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## VESALIUS THE MAN

The *De humani corporis Fabrica* of Vesalius, first printed at Basle in 1543, is the greatest single contribution to the medical sciences. Moreover it ranks among the most beautiful books of the sixteenth century with an assured place in the annals of draughtsmanship and of the wood-cutter's art. Its plan and execution, with those of its companion the *Epitome*, were completed within the astonishingly brief space of three and a half years. Its author was then but twenty-eight. Nought else by him is of even secondary scientific value. Without these twin books his career would be of little interest. Despite much research we have only meagre details of his life. The late Prof. Roth of Basle spent many years seeking details of his career, for which Roth's monograph of 1892 is still our chief source. It is a model of exact statement but quite fails to yield the picture of a personality. Beyond a few references in contemporary sources and half a dozen rather improbable traditional stories we have only Vesalius's own writings in which to discern him. For such reasons his other works are worth close examination.

Harvey Cushing applied himself during some forty years to the task of eliciting a picture of the real Vesalius from his writings and from direct and indirect references to them. He left his book about half finished. It exhibits extraordinary bibliographic skill and patience, and has been prepared for publication by Prof. Fulton, assisted by Dr. W. W. Francis.<sup>1</sup> Their modest reticence prevents us, as they would wish, from ascribing an exact share to either. In effect something like a quarter of their beautiful volume must be regarded as a pious memorial by these two scholars to their late colleague. Bibliography does not lend itself to detailed criticism. The proof lies in the use thereof. During several months we have referred repeatedly to this book, and testify to its completeness, convenience, and reliability. We discuss some of its information, treating the works of Vesalius in chronological order.

I. His first publication was a paraphrase of a Latin translation of part of a book by the well-known Arab writer Rhazes, printed at Louvain in 1537. It may be regarded as a graduation thesis. In it we can ourselves discern neither originality nor promise nor deep scholarship. There is some evidence that it was mainly copied from a document in the possession of his family. That it appeared six times in its own century only proves once again that mediæval medicine died hard. Perhaps it is not quite dead yet.

II. The *Tabulae sex*, printed at Venice in 1538, is a group of large anatomical sheets, three of the heart, great vessels, and generative organs drawn by Vesalius himself, and three of the skeleton drawn by the artist Calcar. Those by Vesalius

are highly traditional. We believe the figures of the heart and vessels to be based on animal anatomy and probably on that of a rhesus monkey. Those by Calcar are drawn direct from the skeleton of a youth of 18 articulated by Vesalius. They are a real advance on representations of the kind. All six plates have a running text that is at once a monument and a curiosity of anatomical nomenclature. To this text Cushing unfortunately gave no attention. The *Tabulae* were immediately copied by plagiarists. To them, on the other hand, Cushing gave more of his time and skill than their interest seems to us to warrant. He demonstrated, however, that the scheme spread very rapidly in German lands. Base imitations took the place of the original, which was not reprinted. Perhaps it was too large for convenient transit and too expensive for slender purses. Only two copies survive. The original figures were used for class demonstration. Vesalius added a drawing of the cranial nerves which has disappeared but is substantially represented in the *Fabrica*.

III. *The Institutes of Anatomy according to the opinion of Galen, for Students in Medicine, by Johannes Guenther of Andernach, edited, amplified and corrected by Vesalius*; Basle, 1538.—Guenther (1505-74) was a good Greek scholar whose laborious life was largely spent in making over-hasty translations of works of Galen into Latin. He came to Paris in 1527. Some six years later Vesalius began to study under him. The master had a deep influence on his pupil. We could wish that he had transmitted his own clear manner of writing. Guenther's *Institutiones anatomicae* was what we would now call a "cram-book." It appeared first at Basle in 1536, and contains a statement that the promising young Vesalius had demonstrated "for the first time" that the "origins" of the spermatic veins differ from those of the arteries and also from each other on the two sides. It has perhaps not hitherto been noticed that this fact had been recorded at Bologna, the leading Italian school till Vesalius, by Mondino da Luzzi in 1316 and by Giacompo Berengario da Carpi in 1523. The works of both had been reprinted several times by 1536. That Guenther had not heard of this point illustrates, what we know well on other grounds, that the Parisian medical school was almost completely isolated from the Italian schools. Vesalius revised this work of Guenther at the same time as the *Tabulae sex* was issued. "What may have led Vesalius to edit a new edition of Guenther's compendium is not apparent," writes Cushing. We suggest that he regarded it as the best available companion to the *Tabulae*. It would be worth collating the edition revised by Vesalius with the original to see how the changes fit the *Tabulae*.

IV. *The Venesection Epistle*—Basle, 1539—is a member of a long, fierce, and futile controversy as to which side to bleed in pleurisy. Vesalius based his view on the course of the azygos vein and its tributaries and accessories. These we now know to be highly variable. In any event they are irrelevant to such treatment.

V. Contributions to the *Opera* of Galen—Renaissance appetite for ancient medical literature was insatiable. Its *bonne bouche* was a set of huge tomes of the works of Galen. Some twenty editions appeared in the sixteenth century. The most prized were those of the Venetian firm of Giunta. From 1541 onward they included three works revised by Vesalius. The largest was *De anatomiac administationibus*, of which only about half was then known. Rendered into Latin by Guenther and printed at Paris in 1531 and several times since, it formed the staple text for more advanced students at Paris. In revising it Vesalius was on very familiar ground, as he was for the two small tracts which he revised for the same volume. A collation of these three revisions with their originals is necessary before any clear verdict can be given on the Greek scholarship of Vesalius. Indications suggest to us that it was quite superficial.

VI and VII. *The Fabrica* and its companion the *Epitome* must form the main theme of every account of Vesalius. To these works we devoted a leading article on their centenary last year (see our issue of June 26, 1943). It is a puzzle why Vesalius, working at Padua and often visiting Venice, the great neighbouring printing centre, should risk woodblocks and MSS. by sending them across the Alps on a journey of

<sup>1</sup> *A Bio-Bibliography of Andreas Vesalius* By Harvey Cushing. Shuman's New York, 1943; \$15.00.

350 miles, to have his work printed at Basle. We suggest that Basle, being on the Rhine, was convenient for distributing such very heavy books. They could go by water to the north and west of Europe and notably to Germanic lands, where Vesalius wished specially to be read. A German translation of the *Epitome* was in fact made under his own eyes at Basle. Its circumstances have been examined by Prof. Sigerist.<sup>2</sup> Much has been written on the famous title-page of *Fabrica* and *Epitome*. Cushing exhibits the alleged first, second, and third stages of this remarkable work of art. We confess scepticism as to their genuineness. On the other hand, there can be no doubt that the background of the famous muscle figures has been identified as a landscape near Padua. It must have been drawn on a panoramic scale and the figures afterwards filled in. By studying watermarks Cushing proves that at least one copy survives of a second edition of the *Epitome* printed in 1555 from the same blocks as the first.

VIII. The *Epistle on China-Root*—Basle, 1546—is scientifically the least worthy of the Vesalian works. Its medical outlook is not above that of the day, and is far below that of its greater contemporary exponents, such as Fernel. It reveals, however, some personal relations of Vesalius. For this reason Cushing rightly investigates it thoroughly.

IX. There survive a few *Consilia* of Vesalius. These are replies to questions from professional colleagues concerning specific cases—a conventional literary form of the day. One or two disclose surgical acumen. We could hardly expect less.

X. Second (folio) edition of the *Fabrica*—Basle, 1555, with some not very important improvements on the first edition.

XI. A long *Letter to Fallopius*, printed in 1564 in reply to legitimate criticisms of the *Fabrica*. It weakly stresses verbal rather than real points of difference. Perhaps it was not written for publication.

This is a very poor output for a life centred round the glorious *Fabrica* and *Epitome*. Except for them nothing by Vesalius would be any loss to science. There is the problem. Why was the unique genius of the man fertile only for three or four years? How came it that the greatest exponent of science of his century abandoned his career for a place at court? What sort of character can we descry through the fog of eulogy and legend and sheer hero-worship? To this enquiry, the background for which has been provided by Cushing, three solutions have recently been propounded.<sup>3</sup>

Dr. Ludwig Edelstein pictures Vesalius as embracing ardently the programme of the "humanist" party. To this he adhered in a deeper sense than in mere respect for classical antiquity. He was a humanist in holding certain aesthetic, historical, and philosophical views characteristic of that great movement and different from those of most of his contemporaries. The points are well made and we concur. But this aspect of Vesalius needs further annotation. First, the "humanist" language of the *Fabrica* is conspicuously unsuited to scientific discourse. Vanity led him to adopt a pseudo-classical style which is neither lucid nor succinct nor beautiful: a thoroughly bad linguistic choice. Secondly, a particular kind of humanism had given him a special bent. From 1531 to 1533, when he was between 17 and 19, he was at the "Collegium trilingue" at Louvain. This three-tongued college and its typical product the "trilinguis homo" had a meaning peculiar to its time and place. Erasmus (1467–1536), embodiment of the humanist spirit, when he coined the term meant one who had gained entry into the spirit of the Latin, Greek, and Hebrew literatures.

The trilingual college at Louvain had been founded a few years earlier by a friend of Erasmus and of Sir Thomas More. Its distinctive ideal left its mark on the young Vesalius though already fading in the place of its birth. Most "humanists" of the day had come to live in a mental atmosphere composed almost entirely of language. Vesalius was far too great to be of these. His sympathies, we suggest, were with the Erasmian school, though he could never have become a trilinguis homo. But his exhibitionist temper led him to overstrain his equipment, so that we see him at once a poor ape of Cicero and a literary dandy flaunting spurious linguistic jewels. His boastfulness bewrayed and betrayed him.

Dr. Zilboorg, an eminent psychiatrist, has sought to display the inner mental life of Vesalius. He regards him as a split and withdrawn personality who, in the end, approached the border-line of insanity. Dr. Zilboorg's theory fits very well the scanty and uncertain data concerning the later years of the great man, but seems to us to fit ill what we know of his earlier years. For we cannot follow Dr. Zilboorg in distinguishing anything sadistic, and still less necrophilic, in the young Vesalius. His boyish interest in the insides of animals seems a healthy inquiry into living mechanism and structure, while his great work cries aloud that it is on *living* anatomy. Nor does Dr. Zilboorg's portrayal fit the well-known portrait of the cocksure, extroverted, sarcastic, vigorous little man that certainly represents the great Paduan teacher. But Dr. Zilboorg renders a service in stressing that, after leaving Padua, Vesalius really did undergo some profound mental change. It seems more likely to us that this took its rise in some intercurrent stress or intoxication. But his immediate reason for abandoning anatomy seems to us no mystery at all. In a worldly sense it was great promotion for a Paduan professor to become physician to the Emperor. No one has yet suggested that Vesalius was unworldly.

Lastly, in a highly erudite, provocative, and witty contribution, Mr. W. M. Ivins of the Metropolitan Museum of Art, New York, would solve the problem of Vesalius by treating him as a Renaissance Mrs. 'Arris. His figure, he suggests, has been created partly by the imagination of scholars and partly by the man's own success in appropriating the work of another. Between 1539 and 1542 "Vesalius according to his own account (1) made two trips to Bologna, where he performed a public anatomy, (2) began and finished editing three of Galen's texts, (3) read Avicenna with Lazarus Hebraeus and compared the text with Hebrew MSS., (4) wrote a careful paraphrase of all ten books of Rhazes, (5) collected the recipes of the classical authors, (6) conceived the ideas for a number of other books . . . (7) carried on his professional task of lecturing and dissecting, and . . . (8) began the text of the *Fabrica*, which he finished in August, 1542." In addition (9) he supervised the artist or artists in the preparation of the 280 woodcuts to the *Fabrica* and *Epitome*.

Since this achievement seems a miracle rather than a *tour de force* of genius, it is well to scrutinize Mr. Ivins's list. The editing of the texts of Galen (2) was a mere trifle involving a few days or perhaps hours. Vesalius surely had ample notes on them from his student days. Two are mere

<sup>2</sup> *Bulletin of the History of Medicine*, Vol. XIV. Baltimore, 1943.

<sup>3</sup> All three appear in the same number of the *Bulletin*.

short tracts. The reading of Avicenna in Hebrew (3) may be dismissed altogether. Vesalius, whatever he may suggest, was quite ignorant of both Hebrew and Arabic. He had hardly grasped even the phonetic value of the letters of these languages. There is no evidence that he ever approached the text of Rhazes (4) with any serious editorial intent. Neither collecting recipes (5) nor conceiving ideas (6) is a time-consuming process. Demonstrations (7) are to most professors what they care to make them. Before the days of preservatives anatomies could never be prolonged. In any event, they fitted the scheme of the *Fabrica*, as did (1) his two visits to Bologna, a short and easy journey. Lecturing (7) would be but trying out the text of the *Fabrica*. As for that text, its obscure and pretentious style is involved and repetitious to the last maddening degree. Easy writing makes hard reading, and the book shows many signs of haste. It might well have been compressed to a quarter of its bulk. It is certain that the greatness of the man was not in the written word. Vesalius is ungenerous and perhaps disingenuous in failing to mention his artist. It is usually assumed, on slender evidence, that Calcar was the man, but there are points against him and we are far from convinced. Mr. Ivins seems to overstress the difficulties of an anatomically untrained draughtsman in representing structural detail under skilled guidance. At the same time he underestimates the draughtsmanship of Vesalius himself, of which we have some means of judging. To Calcar Mr. Ivins gives most of the credit of the *Fabrica*. But of Calcar we know even less than of Vesalius.

Seyde Plato, "Ye, sir, and is it thus?"

This is ignotum pro ignotius."

(Chaucer, *Canon Yeoman's Tale*, lines 1456-7.)

No, there was certainly a human and a very great Vesalius. He was clearly not a man of many friends. He had some repellent traits; in his later years he was secretive and eccentric and may even have been semi-insane. He was certainly vain and boastful, and as a writer had most of the faults of the humanists and few of their virtues. His worst feature perhaps came out in his ambition, for he abandoned, as have many, a great scientific career for the meanly reflected glamour of a life at court. But there is every reason to believe that he was, in every material sense, the creator of the *Fabrica* and the *Epitome*. He was therefore the greatest of modern medical men. But much more patient research is needed before we can discern clearly the essential elements of his character.

## MEDICINE AND POLITICS

The present lull in medical politics will give many the much-needed opportunity to reflect upon events before the Annual Representative Meeting at the beginning of December. The Press generally, and the *Times* in particular, have given generous space to discussion on the numerous controversial points that have come to the fore since the publication of the White Paper. The political

axe-grinders have tried to prejudice the issue by suggesting that opinions held by the medical profession and the B.M.A. have hardened into reactionary opposition. The medical profession has, indeed, reacted to the attacks made upon it, and to the misrepresentations made by those who want to use medicine to further their political aims. As Lord Dawson in his admirably phrased and wise letter in the *Times* of Sept. 16 observed, "There is a school of political thought desirous of seizing this opportunity for furthering its particular ideology of socialization, which would mean for medicine a whole-time service as part of the Civil Service and its members one and all paid by salary." Lord Dawson shows how fully aware he is of the activity of "extraneous forces" when he goes on to say: "The intent and impact of this influence, in the face of the Government's repeated assurance that they have no such intentions, *undermine confidence and render difficult the efforts of those on both sides who are seeking the way of agreement*" (our italics). And he lends force to his own observations by quoting the following from a recent speech by the Prime Minister: "Ideology too often presents itself as undue regimentation of ideas and may be very likely incompatible with freedom." These views have been consistently expressed by the *Journal* and reiterated in several leading articles over the past two years. Doctors up and down the country have become more and more disquieted by the attempt on the part of "ideologists" to exploit the situation created by the war with the aim of imposing their doctrinaire political conceptions upon a profession which is perhaps ill acquainted with the astuteness of political propagandists. That doctors have "reacted" to this situation is a welcome sign. It is, however, false to interpret this "reaction" either as a refusal to co-operate with the Government or as a sign of ignoring the need for medical reforms. As Lord Dawson points out once more, this is contrary to the facts. "There is," he states, "little dispute over objectives, but there are differences about methods of administration on which accommodation is being sought." He says flatly that "advisory committees standing alone outside the executive body are futile," and that "the profession insists on a substantial share in the planning and administration of the proposed service at every level." One thing this war has taught us, he acutely observes, is "that national enterprise must be guided by expert knowledge." "Can it be pretended," he asks, "that local authorities know anything about medicine?"; and suggests a way out of this obvious dilemma by proposing that "medical and other skilled persons" should serve on local bodies alongside the elected representatives of the people. He emphasizes that the profession does not seek to dominate but to share the work of planning and execution. Turning to central administration, he asserts that the profession has no wish to wrest from the Minister and Parliament final responsibility for the proposed service, but he is equally clear that the profession "will not accept *subjugation by the service*" (our italics). The fear of doctors that civil servants want to be the "masters" and not the "obedient servants" is by no means groundless. Lord Dawson has put an unerring finger on the central weakness of the planner's anatomy.



**SODI. BIC.**

The dyspeptic is always with us, and sodium bicarbonate alone or in company is in many instances his sheet anchor. This drug, however, has fallen on evil days among the pharmacologists. The usual teaching is that after a brief period of neutralization hydrochloric acid appears in increased amount in the gastric juice. The mechanism underlying this "rebound" secretion has not been satisfactorily explained. Adams and his colleagues<sup>1</sup> mention the possibility that the increase in hydrochloric acid concentration may be due to more rapid emptying of the stomach, with consequent decrease in the dilution of the high acid secretion of the oxyntic cells. In an attempt to throw light on this problem they made use of the Cope gastric pouch in dogs and thus obtained an accessory stomach with nerve supply intact, and so situated as to act as its own collection vessel. The sole drawback to this technique was the necessity to use an antacid to prevent peptic ulceration: for this purpose measured amounts of aluminium hydroxide were employed with advantage. By this means it was possible to measure gastric secretion continuously. Control investigations showed that under constant conditions the day-to-day variations were very slight. The effect of sodium bicarbonate was determined by the intragastric administration of 50 c.cm. of 1.5 or 2% solution of sodium bicarbonate or by placing a 4% solution directly into the pouch. The 24-hour volume and total chloride were unchanged, but greater amounts appeared directly after the administration of the alkali. The secretion of free acid also showed an immediate increase which was only partly compensated by the later decrease, so that the amount secreted during the 24 hours was significantly higher than in the control period. The rebound increase in free acid which has been noted in the human subject is therefore in part due to a more rapid secretion produced by the bicarbonate, and the acid concentration is still further enhanced by more rapid emptying of the stomach. The actual mechanism producing these changes is still obscure, but the fact that the effects are the same whether alkali is put into the stomach or into the pouch suggests that it is more than a mere local effect on the secreting cells. If necessary this work confirms still further the view that continued administration of sodium bicarbonate is deleterious to patients with peptic ulceration, because for a long period after each ingestion of the alkali the ulcerated area is exposed to higher concentrations of free acid.

**CHAIR OF CHILD HEALTH IN LONDON**

With Lord Nuffield's full approval the Trustees of the Nuffield Foundation have decided to allocate £10,000 annum for a period of 10 years for a Chair of Child Health in the University of London. The offer of the Trustees has been gratefully accepted by the University. The financial assistance provided by the Foundation will enable a postgraduate Institute to be created for teaching and research on all aspects of child health. It is proposed that the Institute should be associated with the Hospital for Sick Children, Great Ormond Street, and the Obstetric Department of the British Postgraduate Medical School at the Hammersmith (L.C.C.) Hospital, London. Lord Nuffield and the Trustees of his Foundation believe that the promotion of child health must have a prominent place in the organization of the future health services of the country. They appreciate that the development of research and training in this sphere of health service requires new and enlarged facilities. The provision of academic centres for the teaching of child health is

already being undertaken in several provincial universities, and the Nuffield Provincial Hospitals Trust has, within the last three years, made a substantial contribution to the University of Durham to assist in the creation of a Chair of Child Health at King's College, Newcastle-upon-Tyne. The munificent grant the Nuffield Foundation is now making has been influenced by the desire of the Trustees that the exceptional resources of the University of London for medical postgraduate education and research may be developed in a manner which will make the new Institute of Child Health worthy of the capital city of the country and the Empire.

**BIOPSY IN SCHIZOPHRENIA**

It is notoriously difficult to protect after death tissues removed from the body from post-mortem changes which complicate and obscure the histological picture. Furthermore, there will often have been changes during the terminal illness to add to the difficulties of interpretation. The pathologist is, in effect, forced to rely on his wide experience of control material, in the form of tissues believed to have been healthy, for a comparison on which to base his judgment. It might be thought that the whole difficulty could be evaded by the use of biopsy material. Tissues removed from the living body and fixed with great speed might be expected to be fairly free from these unwanted adventitious changes. There then arises, however, a second source of difficulty. The new method introduces cellular changes of its own, and the pathologist, as a rule, has by no means the same wealth of experience of control material to guide him. Bioptic examination of the brain is of much interest and value. For some purposes—e.g., studies on the oligodendroglia—it is essential, as agonal changes lead to swelling of these cells.<sup>1</sup> In neurosurgical practice biopsy investigations are of the greatest value in connexion with the treatment of tumours. Nevertheless the artefacts which can be produced in these small pieces of tissue, and which are then liable to misinterpretation as pathological findings, were well known to Nissl,<sup>2</sup> and have been made the subject of an experimental study by Rose.<sup>3</sup> Nissl's chronic change of cell sclerosis may be entirely due to the effects of fixation.

Kirschbaum and Heilbrunn<sup>4</sup> have recently reported an investigation by biopsy of the brains of schizophrenic patients and experimental animals. Fully aware of the dangers referred to, they took precautions by procuring animal controls. It is not clear that this control work was on an entirely adequate scale. Their human material was obtained from physically healthy schizophrenic patients during the operation of prefrontal lobotomy. The cases were chronic, with an average duration of illness of over fourteen years, so that the changes that might be looked for with a fresh and florid psychosis could not be expected. The authors found degenerative changes of the ganglion cells and progressive and regressive reactions of the glia and blood vessels, such as are commonly seen in cases of chronic intoxications and metabolic disorders. Their experimental controls indicated that these changes could not be attributed to the ether narcosis employed. The changes they describe are, however, slender, in some ways obscure, and nowhere far from the normal or accidental range. But this method of attack on the aetiology and pathogenesis of schizophrenia is of interest and holds some promise. It is to be thought of in connexion with other lines of attack—e.g., physiological and electro-encephalographic. Schizophrenia is commonly looked on as a

<sup>1</sup> Elledge and Reed, *Arch. Neurol. Psychiat.*, 1938, 40, 227.

<sup>2</sup> See Scholz, *Z. ges. Neurol. Psychiat.*, 1933, 145, 471.

<sup>3</sup> J. *Psychol. Neurol.*, 1929, 39, 155.

<sup>4</sup> *Arch. Neurol. Psychiat.*, 1944, 51, 155.

<sup>1</sup> *Amer. J. Physiol.*, 1943, 139, 355.

progressive disease, or as a "process" taking place in the brain; but the occasional reversibility of signs and symptoms even in chronic and denicited cases suggests that gross structural changes are unlikely. It is, perhaps, more probable that the final clue will be found in a deviation of brain metabolism, which once started tends to perpetuate itself in a vicious circle.

### VITAMIN C AND CALCIFICATION

It is well established that adequate amounts of vitamin C are necessary for the laying down of the organic matrix of bone, but until recently it was not known that the vitamin is necessary for the production of bone salt. Thus Wolbach and Bessey<sup>1</sup> have stated that vitamin C plays no part in the process of calcification, and Boyle, Bessey, and Howe<sup>2</sup> reported that calcification continues in the teeth of guinea-pigs even when they have been a long time on a scorbutic diet. Bourne<sup>3</sup> of Oxford has recently described experiments the results of which suggest that the deposition of bone salt in normal and regenerating bone is retarded in scorbutic animals, but not in the bone of animals receiving adequate amounts of vitamin C. In the normal animal it would seem that so long as there is sufficient vitamin C to produce the organic matrix of bone the matrix will be calcified. The apparent failure of certain bones to deposit bone salt in scurvy may be due to the fact that there is no matrix on which the calcium may be deposited. It will be recalled that the earlier workers on bone formation and vitamin-C deficiency used lemon and orange juices as sources of vitamin C. Bourne has shown that it is actually vitamin C and not associated substances, such as vitamin P or citric acid, that is responsible for the laying down of the bone matrix and the deposition of calcium salts. Both vitamin P and citrates were devoid of any effect. He suggests that the function of vitamin C in bone formation is to facilitate the production not only of bone matrix but of bone matrix impregnated with phosphatase. The association of vitamin C with phosphatase activity in bone has been confirmed by Schwachman and Gould,<sup>4</sup> who have shown that there is a reduction of both bone and serum phosphatase in scurvy. There is no evidence at the moment that vitamin C is the coenzyme of the phosphatase in calcification. As Bourne points out, the apparent reduction of phosphatase activity in scurvy is probably due to a reduction in the amount of bone matrix produced, rather than to a reduction in phosphatase *per se*. Any matrix formed at all in vitamin-C deficiency will probably be as heavily calcified as the matrix formed in normal animals.

### SICKNESS ABSENCE IN INDUSTRY

The importance of recording the sickness absence of their workers is recognized by many if not by most large industrial organizations, for such records enable them to determine their effective labour strength and to gain knowledge of the influence of various conditions of work on the health of those employed. Unfortunately the methods adopted by different firms lack uniformity, so it is often impossible to compare the sickness rates of the firms by valid statistical methods. A uniform method of calculating sickness rates is therefore an outstanding need, and a committee of the Industrial Health Research Board has now issued a preliminary report<sup>5</sup> with the endeavour, in the words of the report, of making "a complicated and, in some respects, a controversial subject as simple as possible."

The system of record-keeping recommended has already been put to the test by several large firms, and the cost of the clerical help required appears to work out at less than 4s. per worker per annum. The cards used for the records show the certified and uncertified sickness absence, absence due to accidents, and absences due to other causes, for a two-year period. The disease groups into which the illnesses are classified are seven in number, based on a provisional classification used by the Medical Research Council. Illustrative forms are given by the committee for classifying the causes of sickness, and for the group analysis of absence due to sickness and accidents.

Related, in some of its aspects, to the Health Board's report on sickness absence is the memorandum by the Factory Department of the Ministry of Labour and National Service on medical supervision in factories.<sup>6</sup> This memorandum summarizes the principal duties of a works medical officer, including the examination of the workers under certain conditions, and their interview, or examination, on return to work after injury or illness. It maintains that the works medical officer will have an essential part to play in any schemes for the reconditioning and resettlement of disabled persons in industry, for he has first-hand knowledge of the processes carried out in the factories under his supervision, and of the physical requirements necessary. Thus it is essential for him to make himself acquainted with all the processes in the factory, whereby he may be enabled to assess the relative liability to sickness and injury from each process concerned. Arrangements for first aid and the personnel who carry it out are discussed, the employment of a State-registered nurse (or nurses) being strongly recommended. Medical records of each worker should be kept; these must be under the care of the medical officer, and some attempt at uniformity should be made for purposes of comparison.

### A NEW APPROACH TO GOUT

It is well known that chickens, as do other birds, excrete much nitrogen in the form of urates. Apparently if chickens are fed not on the usual grain diet, but on a meat diet, the plasma uric acid rises and deposits of uric acid are formed exactly like the tophi of human gout. Oppenheimer and Kunkel<sup>7</sup> have fed chickens in this way, observing the plasma uric acid to rise from 3 or 4 mg. per 100 c.cm. plasma to 15-17 mg. and tophi to appear in 8 weeks. They have obtained from pig's liver a preparation of uricase which, after purification, they inject into the chickens intramuscularly. This enzyme causes a lowering of plasma uric acid, so that from 50 to 80% of the uric acid disappears in one hour, the effect lasting for varying periods up to 32 hours. Oppenheimer and Kunkel also found that daily injections of uricase kept the plasma uric acid well below that of control chickens over periods of two months. These observations may provide a method of treating gout in human subjects. At present it is not possible because of the large amounts of uricase needed, and it will be necessary to concentrate the uricase considerably before it can be used. The authors have, however, injected into one gouty subject as much as 17 c.cm. of their purest material, and though it did the patient no good they are pleased that it did him no harm. The solution of uricase can be sterilized by filtration.

Lord Dawson of Penn has entered hospital for an operation. He expects to be back at work in seven or eight weeks.

<sup>1</sup> *Physiol. Rev.*, 1942, 22, 233.

<sup>2</sup> *Arch. Pathol.*, 1940, 30, 90.

<sup>3</sup> *J. Physiol.*, 1943, 102, 517.

<sup>4</sup> *J. Nutr.*, 1942, 23, 271.

<sup>5</sup> *The Recording of Sickness Absence in Industry*. M.R.C. Industrial Health Research Board Report No. 85, 1944. H.M. Stationery Office. (4d.)

<sup>6</sup> *Memorandum on Medical Supervision in Factories*. Form 327 (Revised), June, 1944. H.M. Stationery Office. (2d.)

<sup>7</sup> *J. Am. Hosp. Assn.*, 1943, 73, 40.

## MINERS' PHTHISIS BUREAU OF S. AFRICA

The report of the Miners' Phthisis Medical Bureau, Union of South Africa, for the three years ended July 31, 1941, records a considerable decrease in the number of initial examinations of miners, partly due to the intensive Army recruiting which followed the German invasion of the Low Countries. In other respects, except for the absence of some members of the staff on military service, the work of the Bureau has not been appreciably affected by the war, for it has been the policy of the Union Government that there should be no curtailment of the activities of the gold-mining industry. With the institution of a more intensive system of seeking out possible cases of pulmonary tuberculosis or of silicosis the number of examinations of native labourers has increased. The Bureau is now housed in a new building specially designed for the purpose. Within it are stored about one million x-ray films and the clinical and radiographic records of over 177,000 European and 48,000 native labourers.

From an analysis of a large number of fatal cases of primary cancer of the lung in Europeans it would appear that this disease is no more prevalent among silicotic than among non-silicotic miners or even men working above ground. The Bureau investigated the incidence of silicosis in an iron ore mine at Thabazimbi in the Rustenburg district. In this mine hand-held machine drills are employed, and silica, although present in the ore only in a very small percentage, is reduced by the drilling to extremely fine particles. Examination of a number of European and native workers from this mine showed pathological changes in the lung similar to those produced in a generalized simple silicosis; but in the early stages the lesions were finer than those observed in similar cases among Witwatersrand gold miners. Post-mortem examinations of the lungs of two workers, one European and one native, from the mine shed some light on the pathological condition produced. Earlier radiographs had shown "generalized small mottling" in both cases. The native died later of lobar pneumonia, and the lungs showed widespread, haematite pigmentation but no fibrosis. The European died from right-sided cardiac failure. In his case the pigmentation was accompanied by fibrotic changes, and microscopical examination confirmed the presence of a marked degree of sidero-silicosis. Since the enforcement of regulations to reduce the danger from dust in this mine no further serious cases have been seen, and the examination of a cat and several guinea-pigs, which were kept at the working faces for more than a year, revealed only slight deposits of haematite dust and no sign of any fibrosis.

## RAPID SURVEYS OF AIR POLLUTION

Atmospheric pollution, which is the chief cause of the difference between the air in towns and the fresh air of the countryside, may in general be said to consist of (1) relatively coarse solid matter, such as ash or grit, which is usually deposited fairly quickly near to its place of origin; (2) fine solid matter, such as smoke, which remains suspended in the air for a relatively long time; and (3) gases, such as sulphur dioxide emitted from domestic or industrial chimneys, engines, etc. It is relatively simple to record the quantities of each of these forms of pollution, and from the records over a period of time to determine whether the pollution in a town is changing in its quality or quantity. It is becoming increasingly important, however, to be able to make more rapid estimates of the distribution of pollution in a particular locality at any given time, because although the normal type of recording apparatus is very simple it cannot usually provide reliable information quickly. Where such information is wanted at short notice—e.g., as part of consideration of post-war industrial or housing plans—it may be obtained with sufficient accuracy for the immediate purpose by the methods described in a memorandum drawn up by the Atmospheric Pollution Research Committee of the Department of Scientific and Industrial Research, Teddington, Middlesex. The memorandum describes rapid methods of measuring (1) deposited solid matter, (2) suspended solid matter, and (3) SO<sub>2</sub> in the atmosphere. Copies of it, and advice on the conduct of such surveys, may be had from the secretary of the committee.

R. J. Needles and P. D. Gilbert (*Arch. intern. Med.*, 1944, 23, 113), who record their observations on 125 cases of atypical pneumonia with only one death, maintain that there is an increasing number of cases of an interstitial pneumonitis associated with capillary bronchitis, of undetermined cause or little tendency to excessive mortality. Evidence shows that the cause is to be found in the group of virus-Rickettsia agents. The symptoms and pathological changes strikingly resemble those present in some cases of influenzal pneumonia. Treatment must remain symptomatic until new effective therapeutic agents are discovered.

## Correspondence

## Pituitary Cachexia

SIR,—The recent paper by Hemphill and Reiss (Aug. 12, p. 211) is of special interest to me, and as the theoretical basis of their treatment is open to misinterpretation I wish to discuss their observations.

Pituitary cachexia (Simmonds's disease) is generally understood to signify the clinical consequence of some organic lesion of the anterior lobe. It is a term which is in less use now than hitherto, as recent observers have stressed that cachexia is not a necessary or even characteristic feature of the disease (Sheehan, 1938). Hypopituitarism (or the more unwieldy term "pan-anterior hypopituitarism") is now more commonly used. Hypopituitarism of a severe degree is invariably due to an organic lesion (primary hypopituitarism), while milder manifestations frequently occur in many wasting cachexias (secondary hypopituitarism). Stephens (1941) has fully discussed the evidence to support this latter contention in the case of anorexia nervosa, but the arguments apply just as well in diseases of malabsorption—e.g., small-bowel diseases—or diseases of metabolism, such as chronic, insufficiently treated diabetes mellitus. Under such conditions, it would seem as if the body conserved itself by stopping growth and menstruation, and lowering O<sub>2</sub> consumption. Spontaneous energy is the last to diminish, and probably depends largely on the efficiency of the adrenal cortex. It is as if the pituitary hormones are progressively inhibited in reverse order of their immediate importance to the survival of the individual.

This general theory of selective pituitary secretion has been advanced in a preliminary communication by the author in 1943. Since then a reasonable amount of clinical data has been accumulated to support it. Some evidence suggests that if the cachexia is secondary to a subacute or chronic infection—e.g., tuberculosis—the pituitary reacts by inhibiting growth and gonadotrophic hormones and increasing the secretion of at least corticotrophic hormone. The idea of the pituitary switching from the less essential to the more essential hormones in times of stress was originally put forward by Selye (1936) from studies in rats. The application of these views to clinical endocrinology would tend to avoid confusion and make more explicable to students some of the commonest types of endocrine disturbances, such as amenorrhoea or retarded growth and sexual development secondary to some not too obvious disease elsewhere. It would also explain some of the vagaries of diabetes mellitus.

Presumably, therefore, Hemphill and Reiss have been dealing with an example of mild hypopituitarism secondary to a distaste for food coupled with mental symptoms. The anorexia caused the cachexia, and hypopituitarism followed—just as it would if the patient had carcinoma of the oesophagus. In fact, their patient started to get well when the appetite returned. It does not follow, as one might be tempted to deduce, that corticotrophic hormone is indicated in any wasting condition of obscure origin even with biochemical evidence of hypopituitarism. I mean in no way to minimize the importance of their observation in the particular type of patient they reported. So far as I am aware the accepted basis of treatment in such emaciated mental cases is intensive and even forced feeding to improve their general health. Hemphill and Reiss may well have found a more superior therapy in corticotrophic hormone, and it is not improbable that adrenal cortical extracts, with salt and D.O.C.A., would have achieved a similar success. Possibly this patient was in a vicious circle in which the loss of appetite caused a hypopituitarism which in turn lowered the general health and further exaggerated her mental condition with its associated anorexia. The fact that their patient continued to improve long after the injections were stopped substantiates the view of a temporary inhibition of the anterior-lobe secretion (secondary hypopituitarism) rather than a true "pituitary cachexia."

I have recently observed the response to corticotrophic hormone in a patient suffering from typical Simmonds's disease (due to post-partum necrosis). After seven days the patient noticed a general sense of well-being with improved appetite and diminished asthenia. By twenty-seven days the weight had increased 5 lb. (to 108 lb.) and the B.P. had increased from 95/60 to 100/70. Notwithstanding injections for over three weeks there was no further improvement. The insulin tolerance was not appreciably improved at any stage of the treatment. The patient deteriorated in later courses of injections.

suggesting the formation of antihormone, although it is possible the extract had lost some of its activity. The response, therefore, was entirely different, as one would expect, from that observed by Hemphill and Reiss.—I am, etc.,

Dublin

D. K. O'DONOVAN.

## REFERENCES

- 20, 667.  
8, 227.  
*ibid.*, 1, 257.  
*ibid.*, 1, 63.

## Intramuscular Quinine

SIR.—Sir Philip Manson-Bahr, in the course of his interesting letter on war malaria in the *Journal* for Sept. 9, refers to the efficiency of intramuscular injections of quinine. From an experience of 20 years in East Africa, during which I have given some thousands of injections, I can heartily endorse Sir Philip's observations. Intramuscular injections are particularly useful in cases of pregnancy, and where incessant vomiting is a bar to oral administration. There are two points to which I wish to attract attention. First, the site of the injection should be thoroughly and deeply massaged for a full minute to disperse the acid and to dilute it with the body fluids. I have never had a case of sloughing or paralysis, but have seen several where this ritual has not been performed. The second point is that a mineral acid would not seem to be the best vehicle for an intramuscular injection. I would suggest lactate of quinine, in which the acid is a normal product of muscle metabolism, should be more suitable theoretically. Unfortunately I can find no reference to its solubility, though other hydroxy acids, such as tartaric, produce a soluble salt. The point is worthy of further investigation, I think.—I am, etc.,

W. L. PEACOCK,  
S.M.O. Carda (ret.)

Slough

## The Metric System in Medicine

SIR.—Prof. W. C. W. Nixon's plea<sup>1</sup> for the exclusive use of the metric system in medicine comes at a singularly opportune moment: (i) there is every indication that there will be extensive changes in medical organization and practice in other directions; (ii) limitation of supplies of drugs has altered prescribing habits, and tended to favour drugs—e.g. sulphonamides—which are dispensed metrically; (iii) the many men who will be returning from the Services to civilian practice should find it relatively easy, among the much greater adjustments that they will have to make, to assimilate this reform. It seems improbable that such a favourable combination of circumstances will recur.

While there may be strong arguments against the change to the metric system in engineering, the case for retaining imperial and apothecaries' units in medicine is surely very feeble. It has been argued that the older systems provide more convenient doses, but even this dubious advantage is fast disappearing with the increasing number of metrically dosed synthetic drugs. Further, the arbitrary "t.d.s., p.c." convention of dosage tends to be replaced by a rational schedule designed to bring about the necessary concentration of the drug in the body fluids for the necessary time. It is inconceivable that concentrations of drugs in the body would ever be measured in terms of grains per pint, and with changing conceptions of pharmacotherapy the position has almost been reached at which the system of mensuration used for a drug, with the exception of a few active principles of plants and inorganic compounds, may be regarded as an indicator of its value.

There is no point in pleading for the use of the metric system by medical scientists, because they have adopted it without question. It is only in medical and pharmaceutical practice that the older units survive as worthless anachronisms. Quite apart from the relative merits of the different measures, the existence of a dual system of mensuration in medicine is an intolerable anomaly. It is not uncommon for prescriptions to contain a blend of imperial and metric units, or, as Siehle<sup>2</sup> has pointed out, for ampoules to be dispensed according to metric volume and imperial weight—e.g. "ephedrine sulphate, 3/4 gr. in 1 c.c." Siehle has also drawn attention to another absurdity: "Year after year, when medical students reach the clinical subjects, they abandon the most satisfactory system of weights and measures ever devised and adopt

either the imperial or apothecaries' system. . . . They do even more than this. They adopt Roman numerals in preference to Arabic and signs in preference to words." What is the value of these signs? They are of such antiquity that the date of their introduction and their original significance are matters for dispute,<sup>3</sup> and they have the serious practical disadvantage that their use is a notorious source of prescribing errors. They, and the use of grains, minims, and drachms, belong to a vanished age which was entertainingly described by Sir Clifford Allbutt: "When I began practice it was customary at every consultation to prepare a writing-table, pens, and ink for 'the prescription.' This script, even in my young days, was of formidable composition, a drug for every symptom, and a few more for the pool, it was solemnly set forth, and signed by two or more physicians, by the patient's friends this was understood, if but long enough, to be the organ of his restoration. No occasion was left for modification according to circumstances, or the various phases of the disorder; to it the doctor in attendance was to be as submissive as the patient to whom it was scrupulously administered."

Although prescription writing is no longer an "art," and consultations are less of a pantomime, the old measures and signs remain as relics of obscurantism, and of ignorance masked by pomposity and pretence. If any should regard the proposal to abandon imperial and apothecaries' measures in medicine as premature, they will be relieved to know that, 118 years ago, Andrew Duncan senior pointed out,<sup>4</sup> at the respectable age of 82, that their use was "attended with many inconveniences," and suggested that "without adopting the new French weights" we should imitate them by using decimal multiples of the grain. Duncan did not give any reasons against the metric system. Possibly, as a recent product of the French Revolution, it was not considered acceptable. The *Lancet*<sup>5</sup> approved Duncan's suggestion in principle, but recommended that "instead of adopting an alteration of weights for pharmacy, as proposed in this letter, it would be more advisable to wait a little, until the Government shall ordain the decimal proportions of weights and measures to be generally used, which we anticipate to see done in a few years." Although other countries, one after another, have adopted the metric system, and its claims in medicine have often been reiterated, the *Lancet's* prophecy remains unfulfilled after nearly a century and a quarter.

Some further reasons against adherence to imperial and apothecaries' weights and measures may be summarized as follows: (i) Their use is a formidable barrier to the understanding of British medical literature by medical men of most other countries. (ii) They are a source of ambiguities—for example, "ounce" is often used in such a context as to make it difficult to determine whether solid or fluid measure is intended. (iii) A dual mensuration in medicine is not only irrational but dangerous—"gr." means "gramme" in Continental and "grain" in British medical literature, and the confusion of these two units has, even in this country, caused many accidents. (iv) The relation between imperial and apothecaries' units is confusing. (v) The range of units available is inadequate for present needs. (vi) Calculations are laborious. (vii) There is no simple relation between linear, solid, and fluid units.

In December, 1943, the Council on Pharmacy and Chemistry of the American Medical Association gave<sup>6</sup> its reasons for the exclusive adoption of metric quantities and dosages in all its publications, and concluded "The universal adoption of the metric system would be a manifestation of rationality and of interprofessional and international co-operation of high practical utility." In this country the Pharmaceutical Society has recently said<sup>7</sup> that "there is no doubt that the pharmacist finds the metric system more easy, convenient, and, what is as important, nearly fool-proof."

There may be some who think that it would be difficult to abandon the old habits of mensuration. The experience of working before the war for 18 months in a country in which the metric system was exclusively employed convinced me that the change could be made very easily, and that the advantages of working metrically not only in medicine but in the kitchen, the nursery, and the improvised dark-room of the amateur photographer, were considerable.

In the light of these considerations, there would seem to be no valid reason for continuing to make ourselves unintelligible to our medical colleagues in other parts of the world. I

<sup>1</sup> Wootton, A. C., *Chronicles of Pharmacy*, Vol. 2, London, 1910.

<sup>2</sup> Allbutt, C., *Greek Medicine in Rome*, London, 1921.

<sup>3</sup> Duncan, A., *Lancet*, 1826, 11, 144.

<sup>4</sup> *Lancet*, 1826, 11, 143.

<sup>5</sup> Council on Pharmacy and Chemistry, *J. Amer. med. Ass.*, 1943, 123, 500.

<sup>6</sup> *Pharmaceutical Journal*, 1944, 152, 221.

<sup>1</sup> Nixon, W. C. W., *British Medical Journal*, 1944, 2, 320.

<sup>2</sup> Siehle, R. L., *Canad. med. Ass. J.*, 1942, 46, 463.

suggest that it would be fitting for the *Journal* to take a lead in this matter by asking all contributors to use metric units or to give metric equivalents to other units in parentheses.—I am, etc.,

N. HOWARD JONES.

SIR,—Many readers will agree with Prof. W. C. W. Nixon (Sept. 2, p. 320) that the time is opportune for the adoption of the metric system in medicine. This development—which is ultimately inevitable—is being allowed to take place gradually, but haphazardly, and is a potential source of much confusion and error which could be avoided or passed over quickly by a deliberate change from one system to the other. I agree with your correspondent that the best opportunity likely to occur for many years will present itself in the near future.

If the present rate of medical progress is maintained, doctors will soon find themselves in a position to appreciate that a clear decision is necessary. In medical research, and in laboratories providing routine services for the medical profession, the metric system is established. Whenever scientific methods are applied in medicine the metric system is employed as a matter of course. This will affect the general practitioner; as research becomes more closely integrated with clinical practice, and the use of laboratory facilities is extended, he will find himself forced to adopt the metric system also, or be prepared to perform a series of mental acrobatics at increasingly frequent intervals. Already the metric system is used where applicable for reporting the results of laboratory tests, and I have heard no complaint on that score. Blood sugar, for example, is given as so many milligrammes per 100 c.cm. Toxicity is stated in terms of grammes per kilogramme body weight, and, logically, dosage is sometimes computed on a similar basis; a little thought will bring to mind several similar instances. Doctors are familiar with the use of the metric system in parenteral therapy, although they persist in using solutions containing so many grains per c.cm. The vitamins, minerals, and the newer therapeutic preparations, such as the sulphonamides, the synthetic oestrogens, local anaesthetics, pethidine, hexobarbitone, mepacrine, and others, are being prescribed in metric doses without—so far as I am aware—any great strain in the consulting room. This tendency is obviously going to become more extensive, with at least one unfortunate consequence. I have already seen prescriptions in which the dose of one ingredient was stated metrically while the others were according to the apothecary system. This is not only ridiculous, it is potentially dangerous. It is not always easy to determine whether grains or grammes are intended, and if these expressions in their abbreviated illegible forms are to appear in one prescription trouble must be expected. A deliberate adoption of the metric system might not eliminate all possibility of confusion and error, but it would limit their duration, to as short a time as possible, and, I forecast, would not cause very much more disturbance than the introduction of a new edition of the *B.P.* or the *National Formulary*. Doctors may take a second or two longer to write a prescription, but if the result is greater clarity who can object?—I am, etc.,

Concord Middlesex

J. THOS. MARSH.

### Pentothal Anaesthesia

SIR,—We have been looking forward each week recently to the *British Medical Journal* with much more interest than usual, in order to read the latest notions about anaesthetics, especially pentothal. In this department pentothal has been almost exclusively used since its introduction, as being most convenient and the safest anaesthetic for radium insertions and minor operations; and, since no fewer than 100 cases per annum are done, one of us at least (R. R. M.) can lay claim to considerable experience of it.

The cases represented by those requiring radium insertions form, in our opinion, the worst group of anaesthetic risks in the surgical field. Few patients are under 50 years of age, most are over 60, and many are between 70 and 80. The vast majority have arteriosclerosis to a more or less marked degree, and many have demonstrably poor myocardial function. Not a few are obviously toxic from their neoplastic process. Yet we have not one case to record of an anaesthetic death, either on the table or in bed after operation. Only on rare occasions, when an inexperienced anaesthetist has allowed partial asphyxia to occur, has operation had to be suspended. We have never

seen vomiting on the table; it has happened—mildly only—in a very few cases during the stage of recovery. Laryngeal spasm has been met with once or twice, but only when the patient has been allowed to become too lightly anaesthetized: when it does occur it proves most intractable, even if the anaesthetic is then pushed. Bronchopneumonia, which is very frequent in radium needling of the mouth region under inhalational anaesthesia, has been practically abolished by the routine use of pentothal.

Briefly, our routine technique is as follows:

1. Premedication: morph. sulph. gr. 1/4 and atropine sulph. gr. 1/100. This appears to lessen the requirements of pentothal.

2. 1 g. of pentothal in 20 c.cm. is used. More than this has never been necessary for our purposes, the average length of anaesthesia in our cases being 15 to 20 minutes. Long intravenous needles with a short bevel are used. The largest ante-cubital vein (variable in position) is chosen. The skin is wiped with spirit, an elastic bandage tourniquet applied, and the patient told to open and close the hand while the surgeon is scrubbing; ample time is thus given for the veins to become prominent.

3. When the vein is entered, the tourniquet is removed and the patient asked to count out loud. Induction is rapid—at the rate of approximately 1 c.cm. every two seconds. The counting almost invariably stops at about "16." Another 3 c.cm. is then given and administration is stopped. The average amount required for induction is 8 to 9 c.cm.

4. Further pentothal is given, 1 c.cm. at a time, as indicated. We find that when the patient is fully induced, as described above, the breathing is inaudible and one has to watch closely to perceive respiratory movement. The criterion adopted is that when breathing becomes audible more is required. We find that if this rule is not followed, face-twitching or slight leg movements soon begin. During the whole anaesthesia positive pressure is kept on the syringe plunger to prevent blood reflux and clotting within the needles. So far this accident has not occurred.

The main difficulty experienced in all pentothal cases is the inveterate tendency of the tongue to become completely flaccid and fall back. Probably the tendency is not greater than in ordinary anaesthesia, but it assumes greater prominence as the anaesthetist is away from the head and unable to exert manual control of the jaw. We have now adopted the practice of employing tongue forceps almost as a routine, handing them over to an assistant. A small point of technique, which we find makes a vital difference in a busy theatre where two or three pentothal cases are following in quick succession, is as follows. The needles, freshly sharpened before each theatre day, arrive in the theatre in brass trays: they remain in these during sterilization, and are removed only immediately before use. Blunting by hitting against dishes, etc., is thus avoided. This rule about needles is strictly enforced. Pentothal has accidentally been spilled into the tissues on a few occasions, but not once recently has there been any local reaction. For some time we ordered hot fomentations on return to bed in such cases, but have given these up without ill effects. Some months ago reactions sometimes occurred after spilling, and in two or three cases caused sloughing, which healed without difficulty. It is thought that some abnormality in materials may have accounted for this.

In conclusion, our judgment is that pentothal is not only ideal for the special purpose of a radium therapy department but has also proved very safe in a series of unselected cases, including many bad risks. It appears to us that any patient who is clinically likely to survive more than a month is a safe risk for pentothal. We now give it without hesitation to patients in the seventh and eighth decades; to those with cardiac irregularities, often gross; and to those showing obvious signs of toxæmia. Many of the anaesthetics in our series have been given by inexperienced house-surgeons under guidance from the surgeon. On other occasions more senior residents have acted as anaesthetists. Probably not more than 10 inductions have been given by specialist anaesthetists. The last 50 or so cases have been anaesthetized by one of us (D. M. M.) without the surgeon on any occasion requiring to cease operation or to give any attention to the patient so far as the anaesthesia was concerned.—We are, etc.,

ROBERT R. MORRISON, M.B., D.M.R.E.,  
Medical Officer in Charge, Radiotherapy  
Department, Glasgow Royal Infirmary.

DONALD M. MACKAY, M.B.,  
Ex-Resident House-surgeon,  
Glasgow Royal Infirmary.



## Pentothal in Nasopharyngeal Operations

SIR—There has been so much oral discussion on and printed correspondence about Dr E R Dingles and Dr F W Roberts's letters that appeared in your *Journal* of July 29 and my letter of July 15 that I should like to state that I agree with Dr Roberts's first point.

If I were an anaesthetist I should refuse to give sodium pentothal unless the operator packed off the nasopharynx with gauze and had an aspirating motor beside him. The anaesthetists who anaesthetize my patients insert a metal airway into the mouth during the induction of anaesthesia, and then, when the patient is asleep, they insert a rubber airway which passes over the back of the tongue, and through this a catheter is passed for the administration of oxygen. Before I begin operating on the nose I pass a piece of gauze with tape attached into each nostril, passing the gauze into the nasopharynx and letting the tape lie on the floor of the nose to facilitate its removal. Besides this I have a hand electric suction motor to suck blood from the pharynx in case the pharyngeal dam is ineffective.

In a tonsil dissection, after the patient is under the sodium pentothal I introduce a Boyle Davis gag, extending the patient's head by placing two pillows under his shoulders. This position allows the blood to flow into the nasopharynx, from which it can be aspirated by the suction motor. If general anaesthesia is necessary following on the sodium pentothal a Magill tube is introduced, and, in future, when a Magill tube is used I would recommend that Rowbotham's balloon be used (*Lancet*, July 1, 1944), which will certainly prevent any aspiration of blood into the bronchi.

As regards Dr Roberts's criticism on the use of picrotoxin, in future I shall accept his criticism and use leptazol, which is as active as picrotoxin if given in larger doses than picrotoxin, and is certainly more potent than coramine.

As regards the dose of morphine, it is true that I have used 1/4 gr doses, but on account of recent criticism I have cut it down to 1/6—giving morphine 1/6, scopolamine 1/200, and atropine 1/100.

As regards Dr Dingle's letter, he states he gained the impression that the death of my patient was considered to be due to primary cardiac failure. That does not mean that Dr Dingle himself believed that death was due to that cause—merely a piece of politeness showered on me—for he has told me in conversation that he knows that sodium pentothal never produces primary cardiac failure, but that it always first produces respiratory failure, and it is for this reason that he has planned his treatment.

I hope now that young anaesthetists will be armed with rules, and will have the courage to enforce them—i.e., not operating without oxygen and an aspirator, having proper packing off of the nasopharynx, and in case of necessity using leptazol—I am, etc.,

Hartogate

W S THACKER NEVILLE

## Sulphonamide Sensitivity

SIR—I would like to support the warning given in your leading article (Aug 19, p 248) about the dangers of sulphonamide sensitivity. I have recently seen several cases in which rashes have been produced by sulphaguanidine so that the patient who was originally suffering from a mild diarrhoea has been off work for weeks because of his skin. In some of these cases the patients already knew that they were sensitive to sulpha drugs but did not realize what was being given to them, which shows the importance of taking an accurate history before starting treatment. Sulphaguanidine is a great saver of man power, but neither it nor any other sulpha drug should be given until it is certain that the patient has had no previous skin reaction. There are, of course, exceptional cases where the risk must be run.

One point in diagnosis is worth recording. Rashes from sulpha drugs are often difficult to diagnose from German measles, especially as glandular enlargement is said to occur in both. However, a careful search will often show small papulo-vesicular lesions on the backs of the hands and fingers in the former which will settle the diagnosis—I am, etc.

F F HELLIER

Lieut.-Col. R.A.M.C.

## Rate of Artificial Respiration

SIR—Now that uniformity as regards the timing of Schafer's method appears to have been attained, may I enter the lists and point out that no uniformity exists as regards rate either in this or in Eve's rocking method. Whereas the St John's textbook and those of the Royal Navy, Army, and Royal Life-Saving Society advocate 12 times a minute—approximating normal respiration on—the B.R.C.S. *First Aid Manual* advises 15 to 18 times a minute—a possible 50% increase. Again, Dr Eve, in a communication in the *Lancet* (about April, 1944), recommended 10 double rocks a minute—4 seconds head down, 2 seconds feet down. But Surg. Lieut. Gibbens (*Journal*, Dec 26, 1942) advocated 12 to 15 double rocks a minute—again a possible increase of 50%—whereas your leading article (June 24, 1944) suggests 8 to 9 rocks a minute—4 seconds head down, 3 seconds feet down.

Truly the way of the instructor is hard, and he may well join with Macbeth and say

we do but teach

Bloody instructions, which being taught, return  
To plague the inventor.

—I am, etc.,

Gulldford

J L BARFORD

## Postgraduate Medicine

SIR—Dr Walshe's considerations on higher or postgraduate medical studies are bound to make a great impression on the readers of the *Journal*. They are so carefully collected and so ably presented that one's first reaction is to applaud the resonant note. It is only on deeper percussion that the tympanic sound becomes apparent. The reason is the common one—the premisses are fallacious.

First, he presumes that medicine is a science. Although it should have a scientific basis, it is still, thank God, an art—an art which cannot be mastered in the monastic precincts of "the good postgraduate school" set aside "for advanced and original studies." Secondly, there is the presumption (in both senses of the word) that the general practitioner is of lesser breed, unworthy to be associated with the blue-blooded aristocracy of the "consultants and specialists." Where, oh where, would medicine be now but for the host of general practitioners who have been responsible *while in general practice* for the advancement of our knowledge? One has only to mention such names as Edward Jenner and James Mackenzie utterly to refute such an aspersion. Lastly, there is, without a shred of evidence, the wholesale damnation of "refresher courses." Admittedly these courses vary in their value. Some are bad, some indifferent, the majority are extremely good. Let Dr Walshe do a little research work on his own, and take, say, fifty doctors who have never attended a refresher course and fifty who make a habit of it, and then judge, on his own standards, which are the better doctors—I am, etc.,

Torquay

B VENN DUNN, M.D., F.R.C.S.

SIR—In your issue of Sept 2 Dr Walshe makes some interesting and important points about the future of postgraduate medicine. Writing as a teacher, he rightly stresses the value of the special hospitals and the need to encourage research instead of creating cram courses and diploma machines. From the student's aspect, however, there are also one or two things to say. While it is essential to have schools devoted like that at Hammersmith, to the advancement of higher medicine it is also necessary to have some institution in which cater primarily for the need of the general practitioner. Short refresher courses given by a number of consultants and specialists without a knowledge of the problems arising in general practice, do not benefit those who attend them. The student picks up a scattered handful of unrelated facts, many of which are not applicable to his daily round. A syllabus created by those with intimate knowledge of the requirements of the general practitioner, from personal experience might be more useful to the postgraduate. Also, it is certain that the short intensive course is less stimulating and informative than say an afternoon a week for three or four months spent in the out-patient department and wards of a hospital as clinical



assistant to an honorary physician or surgeon: The intervals between visits give time for meditation on what has been seen.

As practical therapeutics is an important part of general practice, facilities for doctors to learn such things as the injection treatment of piles, simple physiotherapy, and so on, would be very welcome. At present, students waste a considerable amount of time finding the clinics or departments most suited to their needs.

Let us hope, therefore, that in the brave new world of post-graduate medicine there will be some place which caters for the conscious inadequacy of the many, as well as facilities for the more ambitious few.—I am, etc.,

Leighton Buzzard.

TREVOR H. HOWELL.

### Disadvantages of Lay Psychotherapy

SIR.—In the *Journal* of Sept. 2 a letter was printed supporting the use of lay psychotherapists, and claiming that medical knowledge was not necessary provided the therapist knew sufficient about psychotherapy.

Now "anxiety state" is a condition commonly treated by psychotherapy. Briefly the symptoms of an anxiety state may be listed as follows: *Bodily Symptoms*.—Tachycardia, tremor, sweating, brisk tendon reflexes, raised blood pressure (temporary), diarrhoea, dyspepsia, enuresis, impotence, and so on. *Mental Symptoms*.—Insomnia, headaches, vertigo, all sorts of fears, inferiority feelings, hypochondriacal complaints, etc. Often the patient presents only one main symptom, so that it is necessary to have a knowledge of the differential diagnoses of, say, tachycardia, tremor, dyspepsia, and enuresis, and in my opinion this entails a great deal of both medical knowledge and experience. Again, even when an anxiety state is frankly present, it has to be diagnosed from organic disease, as early general paralysis, cerebro-arteriosclerosis, thyrotoxicosis, chronic toxæmias, cerebral injury, etc. Further, an anxiety state may be but a feature of schizophrenia, involutional melancholia, neurasthenia, cyclothymia; or it may be intermingled with hysteria and obsessional disorders.

It therefore appears to me that anyone who undertakes to treat a mental illness should have a sound knowledge not only of psychotherapy but also of psychological and general medicine. There may be a few lay psychotherapists who have had good results, but I think the idea that lay psychotherapists are qualified to treat mental illness is a wrong one, and it is to prevent this idea gaining ground that I have been prompted to write this letter.—I am, etc.,

Edinburgh.

KENNETH HAZELL, M.R.C.P., D.P.M.

SIR.—The suggestion of Dr. D. Stanley-Jones that psychotherapists should be trained without their first having acquired a general medical training is surely both hazardous and unmindful of the essentials of successful psychotherapy. I would have thought that it was by now generally accepted that physical and mental illness often go together, and that it was realized that psychotherapy cannot be safely practised without first a correct diagnosis. In which case it surely follows that a psychiatrist requires to be an experienced clinician and neurologist in order to differentiate organic disease from mental illness before he is able with safety to diagnose the different forms of mental illness.

I suppose it would be possible for the psychiatrist to advise the "lay" psychotherapist on the form of treatment, but even so the latter would surely be working at a disadvantage, since he would not be in a position to beget the same confidence that a medical practitioner might be able to gain.—I am, etc.,

M. F. BETHELL, M.R.C.S., L.R.C.P.

### Morale in the Services

SIR.—Temp. Surg. Capt. Curran and Temp. Surg. Lieut. Garnamy, writing on "Post-operational Strain in the Navy" (*B.M.J.*, July 29, p. 144), were unfortunate in their use of terms when comparing factors contributing to good morale in the Navy with that of the Air Force and Tank Corps. To describe either a tank or an aircraft as a "contraption" shows that in their own admirable devotion to the Senior Service they have

lost an appreciation of that wider view which all good psychiatrists should possess. It should be a matter of common knowledge that tank crews feel in a "vividly personal way" about their machines. The five members of a Churchill, for instance, have usually spent two or three years as a small team in constant charge of their vehicle, which they come to regard as an extension of themselves. It is the practice in the Tank Corps to change personnel who "do not fit," thus increasing the idea and feeling of a happy team.

From the numerical point of view it is fairer to compare a ship with a regiment, but although at first sight it might appear that men are more devoted to a ship, I doubt whether in practice this is the case. Even with such a large unit as a Division great personal pride is felt. There is considerable satisfaction experienced in being a "Desert Rat," probably more than in a comparable naval formation. As one officer aptly put it, "It would be a hell of a blow to take down the Divisional sign!"

I have no figures to support this criticism, but I doubt whether the writers had any evidence to support their own attitude towards this particular problem.—I am, etc.,

A. S. THORLEY.

Major, R.A.M.C., Psychiatric Specialist.

### Military Psychiatry

SIR.—Lieut.-Col. Craigie's article on military psychiatry and his frank reply to Dr. Shaw's criticism have illustrated the great defect in Service psychiatry. It is clear that in the Services non-medical considerations are allowed to override sound principles of psychiatry to the inevitable detriment of the patient. While it is true that Service considerations will sometimes interfere with correct treatment in other branches of medicine, the conflict does not occur as frequently in somatic medicine as it does in psychiatry.

Since it appears that the war—in Europe at least—will shortly be over, it would be academic to pursue this issue if it were not that Service psychiatric practice will certainly have a considerable influence on post-war medicine. During wartime the psychological element in illness has received much more attention than formerly, and there will be a continuing demand for the help of psychiatrists in dealing with a great variety of minor illnesses, especially those psychosomatic and neurotic diseases which cause so much wastage of man-power in industry. The demand for psychiatrists will presumably be met very largely from those who have been trained under Service conditions. It will be a social disaster if they take with them into civilian practice the Service attitude towards their patients.

It may seem that I am unduly alarmist in suggesting such a possibility. A quotation from Curran and Guttman's recent textbook on psychological medicine provides evidence in support of my fears. They suggest that:

"Social changes . . . may well lead the community to demand more of the individual . . . and to permit him less freedom of choice and action. It is also probable that what are in fact neurotic reactions to economic stress or to the continuance of regimentation in civilian life will be rationalized as being due to war service and will result in claims for pension and compensation. The wartime orientation of the medical profession as regards the emphasis on its duty to the community rather than to the individual will need to continue in order to deal satisfactorily with problems of this kind" (p. 141, op. cit.).

It requires little imagination to foresee that a social system demanding the "continuance of regimentation in civilian life," in which the industrial misfits are dealt with by a corps of psychiatrists whose first duty is to the "community," would be uncomfortably like the totalitarian regimes of the Continent. If, in addition, the psychiatrist's duty to the community is reinforced by his enrolment in the State Medical Service, so that he lacks even the monetary inducement to put his patient first, then individual liberty will be still further menaced. Since it seems inevitable that society will be much more planned in the future, I hope that the medical profession will be concerned to mitigate the pressure of such planning when it bears too hardly on the individual, and that once the stress of war is over the first duty of a doctor will again be to his patient.—I am, etc.,

Carlisle.

J. BERNANT PHILLIPS.

## Service Medicine

SIR.—The letter from Dr. P. B. Corbett (*Journal*, Sept. 9) is revealing, if revelation was necessary. Of course the advantages of the R.A.F. Medical Services, and those of the R.N. and the Army, are great from both the patients' and doctors' points of view. No one doubts it. But there are "buts."

(a) The complete history sheet is of the greatest value while the man is in the Service. If and when he is discharged it becomes so much waste paper. The man is not told the grounds on which he is discharged, nor the findings of a medical board. His medical attendant is equally left in the dark. (b) Expensive drugs and appliances are supplied generously and promptly. (c) The observation wards are the greatest boon. (d) Specialists of high standing are always on tap. (e) Adequate trained clinical and clerical assistance is always to hand. Obviously all these are admirable from both the patients' and the doctors' points of view. They are what the medical profession are pressing for through the B.M.A., and they are what the Government are extremely unlikely, and probably unwilling, to provide on account of the cost.

In wartime the civilian has little value in comparison to the man in the Services; and so far the same appears to be the official attitude in peacetime. One further point is that Dr. Corbett appears to be fortunate in his superior officers (which is not always so); but would it be equally pleasant, or work so well, if those superiors happened to be a Ministry official, an appointed administrative officer, or some "local authority"? The majority of doctors with experience of such conditions think it would not.—I am, etc.,

Deddingdon, Oxon.

G. M. HODGES.

SIR.—On reading the letter by "Temporary Serving Officer" (Aug. 19, p. 255) one can only assume that he has something wrong with his make-up or that he has had a bad time at the hands of Service medical administration or that he has not obtained the promotion and recognition to which he considers his professional ability entitles him. It is also obvious that he has little or no knowledge of either Service or civil medical administration, or he would hardly be willing to hand it over to laymen. It is against rash and ill-informed statements such as he has made that we have to be very guarded, especially at a time when we are fighting for the control of our own professional destiny.

The sudden and rapid expansion of the Services, and the difficulties under which the civilian medical services have accordingly had to work, have called for and obtained the highest administrative capabilities. It is, indeed, a matter for congratulation rather than the abuse which your correspondent has seen fit to heap upon it. Does he seriously suggest that the organization of the Army Blood Supply Centre or the evacuation of thousands of casualties from Normandy—to name two problems only—could have been dealt with by laymen? Surely the officers who devised the policy in these two cases and their assistants who administered it are worthy of the rank and pay which go with it.

It is also necessary to point out that the medical administrator's duty towards the sick does not—like that of the hospital clinical staff—end with the patient's discharge from hospital. He has to peruse carefully those despised "redundant documents"—sample documents which it appears that many temporary serving officers are quite incapable of completing properly—in order that the sick man's interest may be fully safeguarded in years to come.

Another point upon which your anonymous correspondent is quite ignorant is that most Service medical administrators are the representatives of the profession on formation headquarters staffs. In this capacity they not only have to administer policy laid down by higher authority but also make decisions on domestic matters in their own formations. It is therefore obvious that they have to be not only doctors but men of considerable experience in Service matters. It is also obvious that they must be given sufficient rank in order that medical policy may be fully stressed and enforced. It is in this way that the despised ex-regular officer has been of the utmost value to the State. That there are misfits in all branches of the Service cannot be denied—there always will be. "Temporary Serving Officer" would appear to be one of them. My own

experience of Service administrative medical officers is that they have been kindly, helpful, and co-operative, but men who do not suffer fools gladly.

There is no doubt that some form of State Medical Service is coming, and the profession is agreed that its administration must be in the hands of doctors. The administration should be neither master nor servant of the profession, but an integral part of it; one part cannot work without the other. Therefore let the medical policy of the State be devised by representatives of all parties concerned, duly appointed in accordance with democratic principles, let its administrators be well-qualified doctors who have a flair for this kind of work, and let all branches of the profession work together as a team for its professed ideals.—I am, etc.,

C. H. PAULI,  
Major, R.A.M.C.

## Medical Services—Home and Colonial

SIR.—Readers of the *B.M.J.* who have had any lingering doubts of the democratic outlook of its editorial panel (and these doubters have not been few) must surely have had those doubts dispelled during the past year by the publication *inter alia* of Dr. Geoffrey Bourne's several articles on State medicine, and more recently by the letters of Dr. H. B. Morgan on July 1 on the Colonial Medical Service, and by "Temporary Serving Officer" on Aug. 19 on Service medicine. The ethical and political importance of this stand should be appreciated by all doctors, especially those in the Services at home and in the Colonies, as these have no other organ through which to voice their opinions and to afford them moral support. I have had many opportunities to bear from my colleague in the R.A.F. evidence which confirms the views of "Temporary Serving Officer." But it is of the Colonial Service I would write, having served in the Gold Coast from 1923 to 1942. "Temporary Serving Officer" has been obliged to preserve his anonymity, but I am not so handicapped, having resigned from the Colonial Medical Service in 1942.

I would first recall Dr. Morgan's letter. Colonial medical officers who read that letter were not at all likely to have misunderstood its implications, nor were they likely to be distressed by his alluding to the Colonial Service as the "worst medical service in the world." They might, however, have been more pleased had the denouncement been accompanied by precise evidence. Therefore I would myself recall certain faults, and offer some constructive criticisms of the Service as I knew it in West Africa.

At the outset a critic of the Colonial Medical Service should bear in mind its history and constitution and its character—which is somewhat military. Uncritical and unquestioning obedience is expected. enterprise or initiative is not required. Until recent years medical officers entered the Service to treat only the officials and their families. Against this imperial background an officer of conservative mind might express gratification with the rate of progress and with the transition to a medical service for the whole community. But to a modern and democratic medical mind much fault is still to be found. The observations made hereunder represent the opinions expressed by many medical officers in the course of years.

(i) The medical service is subordinate to, rather than complementary to, the political administration (which is itself subordinate to trading interests—as all may perceive). It has not, and never has had, a comprehensive health plan or policy for the colony as a whole, and there has been neither purpose nor goal to inspire M.O.s; merely dull routine (although an officer may engage in research on his own initiative). (ii) It is mainly because of this that the sole official record of work done is the scrappy annual report furnished by the director, together with that unsatisfactory compilation of figures, Medical Form 1. (iii) The personal relationship between the director and the medical officers has usually been a poor one. His office, that of an administrator, removes him from professional contact and from interest and sympathy in the work of the medical officers. A keen professional interest, I believe, there never has been. The following personal experiences may illustrate these points:

(i) In 1933 I worked keenly and became fairly expert in the problems of sleeping sickness and tsetse-fly distribution in South Mampassa in the Northern Territories. By the end of the year I had drawn up and submitted a programme of bush clearing to cover a wide area. Thereupon I was removed and replaced by an

M.O. who had never been in an out-station before; a *tired* officer who had asked for a rest from a busy hospital! (I would not suggest that such ineptitude is usual, but it happened.)

(ii) In 1936, from Oda in the Ashanti forest, I submitted a lengthy report to the director on the incidence and course of a fatal childhood pellagra syndrome prevalent in that region. About a month later I succeeded in having the report returned to me. It was unacknowledged. Some two years later I learned that in that year—1936—not thirty miles away from me, Clarke, a keen biochemist, was investigating (at his own expense) the experimental pathology of a similar condition in rats. Had we known of each other's work useful collaboration might have been arranged. This experience gave me much food for thought on the need for official interest in medical research on the Gold Coast.

(iii) In 1939 I was seconded to conduct a diet and nutrition survey of natives in selected areas of the Gold Coast. In April, 1941, I submitted a 200-page report covering two years' investigations. This report, although approved by the Nutrition Committee in Accra, was not sent home. Inquiry at the Colonial Office during leave left me in no doubt that this action was in accordance with their wishes. Therefore I resigned from the Service.

I would now, with the detachment which maturity brings, on behalf of my silent serving colleagues, make certain constructive criticisms.

1. The role of Director of Medical Services should be to direct clinical medicine and research. Therefore the officer appointed to that post should have a positive record of achievement in the clinical field. The financial and administrative duties to which he normally gives so much time should be undertaken by administrative officers. (In a general way it is true that science is rated secondary to its financial costs, which receive an inordinate amount of official attention.)

2. The Director must needs be appointed by Government; yet the appointment might be made subject to a majority approval vote by all medical officers confirmed in rank. I am conscious of the revolutionary nature of this proposal; yet any courageous doctor may earnestly inquire, "If the Service is to develop on truly democratic lines why should *not* the responsible doctors be consulted?" (The need for such a change step is to be found in the appointments that have been made hitherto.)

3. The greatest professional disadvantage of medical officers in West Africa is the lack of opportunity for exchange of views and ideas. In 1936 many senior M.O.s wrote a proposal to the then D.M.S. requesting that clinical meetings be held once or twice yearly at regional centres—Accra, Sekondi, Kumasi, Tamale. The political officers held yearly conferences. The request was ignored.

4. A medical service with some 50 medical officers serving some three million people should have at least one highly qualified medical registrar at headquarters, assisted by a special clerical staff, whose duties would be to aid the director in guiding research, to collate clinical records, to criticize, and to advise M.O.s. This expert staff could edit a local medical journal. (*The West African Medical Journal* died in 1927 because there was no staff available to run it.)

5. A medical library of books and periodicals should be provided. This could be suitably controlled by the officers above mentioned with additional clerical library staff. (Hitherto medical officers have been able to obtain the loan of some books from Accra by courtesy of the pathologist.) It would seem in the official view that medical journals and a library can be conducted by officers in their spare time; or, it might be truer to state that such institutions do not interest Government at all.

6. Publication of, and verbal expression of, professional views and opinions should be *free*. (It should be of the keenest interest to doctors at home that similar repression, or suppression, is contemplated in the State Medical Service which Government proposes to form in England.)

In conclusion, if the Colonial Medical Service were permitted to develop on democratic lines it would render an excellent account of itself.—I am, etc.,

F. M. PURCELL, M.D., F.R.C.P.I., D.T.M.&H.

### Council of the R.C.S.

SIR,—Latterly the Council of the Royal College of Surgeons of England has shown its desire to make itself more representative of the many facets of British surgery, and many Fellows and Members of the College appreciate its recent action in co-opting one of the Members to be present at its deliberations (*B.M.J. Supplement*, Aug. 5, p. 31). As opposed to its liberal action, however, it is unfortunate that, previous to its recent election, the Council circulated to the Fellows (who are the electors) a note to the effect that it deprecated canvassing for the election "whether personally or by institutions or associations." Such a ban, if obeyed, is likely to have far-reaching effects on the constitution of the Council, for

although most Fellows regard personal canvass with distaste yet "group canvassing" for the purpose of securing adequate representation of the various specialties of surgery, as well as provincial and other types of geographical representation, essential if a widely scattered electorate of some 2,500 Fellows is to unite for the purpose of building up a Council representative of the many interests involved.

Formerly, the Council was representative almost solely of London surgery, with only an occasional representative of the Provinces; but under the influence of Moynihan provincial surgery received its due recognition, and this was reflected in the composition of the Council, which for some years has had about one-third of its members drawn from provincial schools. This has only been achieved, however, by the combined action of a group representing the provincial medical schools seeking to secure representation of these more or less isolated bodies. The standing of the great London medical schools, with the traditions and loyalties, places them in such a strong position in this election that to deny such a canvass to the smaller London schools and the provincial schools inflicts a real hardship and practically excludes them in future from the probability of adequate representation. Even under circumstances operative until recently, it is notable that, in 1942, while on London hospital had four surgeons on the Council at that time three provincial schools were unrepresented.

The Council has no power to enforce such a ban, and by its imposition places itself in an invidious position by seeking to withhold from its scattered electorate one of the means by which the various interests involved may come to a decision as to their representation. If, as I believe it does, the Council wishes to make itself representative of British surgery in the widest possible sense, it should welcome among its Fellows all reasonable activities to promote this end and not seek to guide them too zealously.—I am, etc.,

Birmingham.

SEYMOUR BARLING.

### Wet Babies

SIR,—An obvious fallacy under the heading "The Crying Baby" in Dr. Doyne Bell's lecture printed in your issue of July 29 almost prevented my reading the text of an instructive article.

Surely the treatment for a hot baby and a wet pillow is a dry pillow and a less hot baby—and incidentally the consoling presence and touch of the baby's mother. Is it not the exception to find any abnormality on examination when the mother complains of her baby crying? Seldom has she troubled to find out whether the baby is thirsty, hungry, too hot or too cold, or only frightened.

May I suggest that a common cause of "momentary discomfort" is a full bladder? Some time ago a midwife said to me that a baby never passes water in his sleep. The assertion surprised me at the time, but I have since demonstrated its truth in the case of one baby. The very young baby wakes and cries at the discomfort, and can often be picked up before passing water, with the early establishment of some degree of control. More important, the baby is reassured, comfortable, and will settle happily to sleep until the time of the next feed. The use of sedatives can only inhibit this natural phenomenon. Six months is an early age at which to take drugs for non-pathological conditions and as a substitute for human contact.—I am, etc.,

Zennor, Cornwall.

S. M. HALLIDAY.

### Tie the Cord

SIR,—I have been interested in the recent correspondence under the heading of "Why Tie the Cord?" in the *Journal*, and a recent tragic experience has convinced me more than ever of the necessity for tying the cord.

Within the past six weeks I delivered a patient spontaneously of a living child at 11 p.m. When delivering the child I remarked on the extreme thickness and gelatinous nature of the cord, and, as a result, tied the cord in three places, using triple reef-knots firmly tied. Just over one hour later I examined the child and all was well, and I left the nursing home. One and a half hours later I was called back urgently to the home because the child had had a very severe haemorrhage from the cord, from which it died some three hours after delivery and before transfusion could be instituted. Examination

tion showed that the cord had contracted down considerably, and that haemorrhage had occurred through the umbilical vessels. Not one of the ligatures had cut through the vessels, and the haemorrhage appeared to be due entirely to the fact that the ligatures became relatively loose due to the contraction within the cord.

While undoubtedly it may be unnecessary to tie the cord in some cases, I think a case such as this demonstrates the fact that not only should the cord be tied in every case but that it should be tied very securely indeed, and, most important, that it should be watched carefully for some hours afterwards.—I am, etc.,

London, W.1.

CHARLES D. READ.

### W.C. Equipment

SIR.—Is it not time that lavatories be fitted with adequate facilities for washing oneself after defaecating, following the example of the French bidet? The use of toilet paper is insufficient for scrupulous cleanliness, and it probably has a local irritant action on the delicate muco-cutaneous junction of the anus. Tiny excoriations and fissures produced in this way are liable to infection. It would be an advantage if some soft and absorbent material could be used instead of toilet paper.—I am, etc.,

G. A. POWELL-TUCK.

### The Young Married Doctor

SIR.—I think I am speaking for a large section of the younger members of the profession, who, owing to war service, have already been separated for a considerable time from their wives, when I say that there are many of us who, although desirous of continuing an interrupted hospital career when we return, feel we will be forced to deny ourselves this owing to the anomalous situation that still obtains, which makes it impossible for junior hospital appointments to be held by married men who wish to continue to live with their families.

It seems that the hospitals will be deprived of the services of many who aspire to specialist work, who, on the above account, have been forced to forgo their ambition. Would it not be fair to these men if some consideration were given to this problem; that, if married quarters cannot be provided, at least permission might be extended to facilitate their lodging in the close neighbourhood of the hospital with telephone communication?—I am, etc.,

TOM BARNES.

### Early Days at Johns Hopkins

SIR.—I have read with interest your leading article in review of the *Chronicles of the Johns Hopkins Hospital*, and in reading I missed the name of one brilliant son. Early in 1901, when on my first visit to the United States, I had the delightful privilege of dining with Prof. Osler and meeting at his table his distinguished colleagues, Halsted, Welch, and Howard Kelly. Among those present was a young surgical resident, Harvey Cushing, whose star in course of time was to give added lustre to the university and to the brilliant constellation of the "Big Four" of Sargent's portrait.—I am, etc.,

London, W.1.

C. GORDON-WATSON.

The annual report for 1942 of the Palestine Department of Health states that the birth rate was the lowest yet recorded. The infant mortality rate was higher, especially in the towns, than that of the previous year; but the general death rate was lower. There were five cases of plague—three of them infected in Haifa, in Northern Palestine, and fifteen in Jaffa and Tel Aviv, the first outbreak in this area since 1924. A few cases of smallpox were attributable to infection brought in from Syria and Lebanon, where the disease was prevalent; and a sharp outbreak occurred in the Tulkarm district, caused by returning pilgrims from Mecca. Land quarantine was imposed, and 270,000 persons were revaccinated within four months. The year 1942 showed the highest incidence of enteric fever since the British occupation: 4,065 cases were notified with 373 deaths. It is suggested that two factors played a leading part in the spread of the disease: military requirements caused unusual movements of labour; and, as a result of the high cost of living, much food was eaten which in normal times would have been regarded as unfit for human consumption. In all, 178,000 persons received protective inoculations, and the authorities hope to extend this measure.

## Obituary

### JOHN DODDS PRICE, M.R.C.S.

Dr. John Dodds Price died at Ferring, Sussex, after a painful illness, aged 79. He studied medicine at Guy's Hospital and qualified M.R.C.S., L.R.C.P. in 1889. A large part of his professional life was spent in India. After his return to England Dr. Dodds Price, who had joined the British Medical Association a year or two after qualifying, served on the Council in 1926 and 1927 and also for two years on the Dominions Committee and two of its subcommittees.

Sir LEONARD ROGERS, F.R.S., writes:

May I pay a brief tribute to my old friend Dr. John Dodds Price, who died on Sept. 1. Very soon after qualifying he went out to work on tea estates in the Bengal Duars and a little later took up similar work in the Nowgong District of Assam, where he completed nearly 35 years' service in India before returning. He rendered me invaluable help during my investigation of kala-azar in Assam in 1896-7, and it was his earlier action in placing newly recruited coolies on badly infected tea gardens to newly constructed lines a short distance from infected ones that gave me the clue to the disease being a house or site infection. He also demonstrated the value of demolishing infected lines and moving the healthy coolies alone to new ones, in stamping out the disease from a number of tea estates in the Nowgong district and saving the industry in that district from ruin, as recorded in a joint paper of ours published in the *British Medical Journal* of Feb. 7, 1914. During the war of 1914-18 he acted as civil surgeon of the Nowgong District in addition to his other work, and so great was his professional reputation that he was awarded a Kaisar-i-Hind Medal of the first class.

In addition to being a much-beloved medical practitioner John Dodds Price was a great sportsman and rode in amateur steeplechases in his bachelor days, and later became captain of his district polo team. When a boy he sang in Westminster Abbey and was trained as a tenor, but felt a musical career too hazardous because his mother was dependent on him. He was thus an all-round man, but a most modest one, who will be greatly missed by his many friends. After his retirement he was much crippled by progressive osteo-arthritis of one hip-joint, but bore his troubles bravely. He leaves a widow, a son, and a daughter to mourn his loss.

HARVEY FRANCIS, M.D., died at his home in Woodthorpe, Nottingham, on Aug. 4, at the age of 75, after a lengthy illness, borne with the fortitude, courage, endurance, and selflessness which had been his character through life. His medical education was at Durham University and St. Mary's Hospital, where he held the posts of resident obstetric officer and house-surgeon. For 47 years he practised at Arnold, on the northern outskirts of Nottingham. His practice was an extensive and varied one, comprising miners, shopkeepers, business men, and landed gentry: with all alike he was deservedly popular. He possessed a most attractive personality, always cheery, always helpful when serious trouble came, so that his patients learned not only to love him but to put in him the most complete confidence. He was a keen and conscientious worker, and right up to the time of the onset of his illness he continued to carry on his work with the same energy and devotion which he had always given. In addition to his large private practice Dr. Francis held many appointments, including those of M.O.H. to the Arnold Urban District Council, which post he held for 40 years, and that of certifying factory surgeon. During the war of 1914-18 he was in medical charge of the Arnot Hill Hospital, Arnold, a hospital of fifty beds. His services to this hospital, so devotedly given, were recognized by the award of the O.B.E. His loss will be severely felt by his fellow practitioners in Nottingham and Notts, with all of whom he was deservedly popular. A keen cricketer in his early years, he frequently played for the local cricket club, and in his later years often attended the Notts County Cricket Club matches at Trent Bridge. He leaves a widow, three sons, and a daughter. Two of his sons were with him in partnership, the elder of whom is now carrying on the practice, the other serving as flight lieutenant in the R.A.F. in Italy. To them all we extend our sympathy.—W. R.

We regret to announce the death at his home in London on Aug. 8 of Dr. HENRY CARSON SMYTH. Qualifying in Dublin in 1911, his early professional life was spent in Ireland. He is still vividly remembered by old colleagues of Stevens's Hospital, where he was resident surgeon. He was liked by

all the students, and he displayed a lively interest in their work. In the mess he showed his wide general knowledge of the sciences, continually putting pointed and stimulating questions to his juniors. A colleague writes: Dr. Smyth's professional interests were wide, but he made a special study of venereal disease and dermatology. Some of his work is displayed in two papers on the use of salvarsan. In the last war he was civil surgeon at the Royal Military Infirmary and Portobello Military Hospital in Dublin. Later he served as captain, R.A.M.C., in Malta and Salonika, where he met Dr. Janet Park Walton, whom he married, and who has, especially in the final years of failing health, given him great assistance in his work. In 1918 Dr. Smyth settled down with his wife in general practice in Coldharbour Lane, London, where he soon became widely known and popular, and where he practised for twenty-six years. He was a member of the B.M.A. and a Fellow of the London Dermatological Society. All his spare time he devoted to the work of the St. John Ambulance Brigade, to which he was divisional surgeon, being lecturer and examiner for South London. He was an enthusiastic Freemason. Harry Smyth had a keen sense of humour, which helped to endear him to his patients, who often came to him for friendly advice as well as for medical attention. He was loved by children and animals, with whom there speedily sprang up mutual understanding and affection. Many of the people of Loughborough Junction and Herne Hill, to which he extended his practice in 1928, have cause to mourn the passing of a beloved physician and friend.

Dr. GUY FOSTER BARHAM, late medical superintendent of Claybury Mental Hospital, died on Aug. 30 at Gorran Haven, Cornwall. He began the study of medicine at Cambridge University, taking his B.A. in 1895, and went on to the London Hospital, qualifying M.R.C.S., L.R.C.P. in 1901. He graduated M.B. at Cambridge in 1903 and proceeded M.D. in 1912. He was for a time house-surgeon at the Poplar Hospital and started his career in psychiatry at the London County Mental Hospital, Long Grove, where he was serving as senior medical officer at the time when the L.C.C. appointed him to be chief of Claybury Hospital. Dr. Foster Barham was a member of the Royal Medico-Psychological Association; he joined the B.M.A. in 1918 and served for six years at headquarters on the committee appointed by the Council to consider lunacy law and mental disorders. He published papers in the *Journal of Mental Science* and in the *Archives of Neurology and Psychiatry*.

Dr. WILLIAM MARTIN FROBISHER, who had practised for over 50 years in Leeds, died in retirement at Headingley on Aug. 30. He was a descendant of Sir Martin Frobisher, the famous 16th century navigator. He studied medicine at Leeds and took the M.R.C.S. diploma in 1897; before settling in practice he held a house appointment at the General Infirmary at Leeds. His elder son, Dr. J. H. M. Frobisher of Forest Row, Sussex, served in the R.A.M.C. both in the last war and in this war, retiring with the rank of major.

Dr. WILFRID LOUIS REMI FLEMING, formerly chairman of the Guildford Division of the B.M.A., died at Pirbright, Surrey, where he had practised for a long time. The son of Andrew Fleming, of Kilmarnock, he studied medicine at Westminster Hospital and took a course in obstetrics at the Rotunda Hospital, Dublin, qualifying M.R.C.S., L.R.C.P. in 1895. Before settling in general practice Dr. Fleming was house-surgeon and resident obstetric assistant at the Westminster and house-physician at the Bethlem Royal Hospital. During the last war he served as medical officer at Henley Park Auxiliary Military Hospital; later he was for a time M.O. to the Bisley Farm School and Shaftesbury Home. A man with a strong sense of public duty, he was a justice of the peace for the county of Surrey and chairman of the managers of the Pirbright elementary schools. Dr. Fleming joined the B.M.A. in 1900 and was also a member of the Royal Medico-Psychological Association.

The death is announced of Dr. ALBERT PENARD LAYCOCK, who before settling in general practice in South-West London had spent ten years as a medical missionary. He was born at Versailles on Sept. 26, 1877, son of the Rev. J. M. Laycock, and had his early education at Plymouth College, Merchant Taylors School, and Monkton Combe School. Entering St. John's College, Cambridge, he took his B.A. (with first-class honours in the Natural Sciences Tripos) in 1898, and went on to the London Hospital, qualifying M.B., B.Ch. in 1902. He was then for a time superintendent of the St. Pancras Medical Mission until he joined the China Inland Mission, Changsha, Lanchowfu, in 1905. While working there he was for two years surgeon to the Chinese Imperial Maritime Customs. He died on Sept. 5 in Sherbrooke Road, Fulham.

## The Services.

Col. R. Hay, C.I.E., I.M.S., has been appointed an Honorary Physician to the King in succession to Col. H. E. Shortt, C.I.I. retired.

Major (Temp. Lieut.-Col.) J. A. Chapel, R.A.M.C., Reserve Officers, has been appointed M.B.E. (Military Division) in recognition of gallant and distinguished services in the field.

### CASUALTIES IN THE MEDICAL SERVICES

*Killed in action.*—Lieut. Robert Russell Waddell, R.A.M.C.

*Missing, presumed killed.*—Temp. Surg. Lieut. William Hamilton Cassels Donald, R.N.V.R., Surg. Lieut. Derek Napier McKenz R.A.N.V.R.

*Died on active service.*—Major Charles Peter Mann, R.A.M.C.

*Died.*—War Subs. Capt. Benjamin David Berger, R.A.M.C.

Wing Cmdr. WILLIAM MILLIGAN died on Sept. 3 while serving an R.A.F. headquarters over-seas. He was born in May, 1901, studied medicine at Leeds University, and qualified M.B., Ch.B. M.R.C.S., L.R.C.P. in 1927. He entered general practice, and on Dec. 28, 1937, was commissioned as flying officer in the Medical Branch of the R.A.F.V.R. After his embodiment for war service on Sept. 30, 1939, Wing Cmdr. Milligan served at various stations home, and in 1943 was posted to command a station hospital.

### DEATHS IN THE SERVICES

The death is reported of Major-Gen. Sir ERNEST ALEXANDER WALKER, I.M.S., K.C.I.E., C.B., at Duncan, British Columbia, the age of 63. Son of the Rev. A. Walker, senior Army Chaplain Church of Scotland, he was educated at the Forfar Academy at Edinburgh University and graduated M.B., Ch.B. with honours in 1901, took the M.D. in 1940 and the F.R.C.S.Ed. in 1912. He entered the Indian Medical Service in 1902, and during the war of 1914-18 he served in Iraq in 1915-16, was taken prisoner at Kut-el-Amara, and was twice mentioned in dispatches. In 1920-1 he was D.A.D.M.S. (Mobilization), was promoted to be Deputy Director of Medical Services in 1929, was appointed to the medical staff of the Eastern Command, India, in 1933, and succeeded to the Director-Generalship of Medical Services, India, in 1933, where he proved to be a capable administrator. He became Honorary Surgeon to the King in 1932, and a C.B. in 1934. He retired in 1935 and in the following year was made a K.C.I.E. for his long and distinguished service on the military side of the I.M.S. General Walker had published papers on various technical medico-military subjects. Among his recreations were shooting and fishing.

Dr. Ernest Jones writes: The death in India of Lieut.-Col. OWEN BERKELEY HILL, I.M.S., recently announced will cause grief to a wide circle of friends, to whom his kindly loyalty, exuberant companionship, characteristic drollery and wit, had endeared him. He will be remembered in India as the institutor of valuable reform during the eighteen years in which he directed the European Mental Hospital at Ranchi, and as a pioneer in introducing modern psychology into that country. His work in mental hygiene, in which field he represented India in several international congresses, was also noteworthy. A certain intolerance of officialdom, manifested by a stream of saucy—though never malicious—retorts, greatly diminished the influence his progressive outlook might otherwise have had among the powers that be. He published a volume of psychiatric essays, dealing especially with the ethnology of Indian peoples, and a racy autobiography.

## Universities and Colleges

### UNIVERSITY OF SHEFFIELD

At its meeting on Sept. 8 the University Council received the resignations by (1) A. Rupert Hallam, M.D., of his post of lecturer in dermatology; (2) P. E. H. Howarth, M.B., Ch.B., and R. Peasegood, M.B., Ch.B., of their posts of temporary demonstrators in anatomy. The Council accepted the resignations with regret, and accorded its thanks to Dr. Hallam, Mr. Howarth, and Mr. Peasegood for their services to the University.

### ROYAL COLLEGE OF SURGEONS OF ENGLAND

Two lectures, under the auspices of the Imperial Cancer Research Fund, will be delivered by Prof. W. E. Gye, M.D., F.R.S., at the College, Lincoln's Inn Fields, W.C., on Thursdays, Oct. 5 and 12, at 4 p.m. His subject is "The Part played by Viruses in Cancer Causation." The lectures are open to medical practitioners, scientists, and advanced students.



No 35

## INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital statistics in the British Isles during the week ended Sept 2

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year for: (a) England and Wales (London included) (b) London (administrative county) (c) Scotland (d) Eire (e) Northern Ireland. Figures of Births and Deaths as at 1st Deaths recorded in each infectious disease, for: (a) The 126 great towns in England and Wales (including London) (b) London (administrative county) (c) The 16 principal towns in Scotland (d) the 13 principal towns in Eire (e) The 10 principal towns in Northern Ireland. A dash — denotes no cases, a blank space denotes disease not notifiable or a return available

Disease	1944					1943 (Corresponding Week)				
	(a)	(b)	(c)	(d)	(e)	(a)	(b)	(c)	(d)	(e)
Cerebrospinal fever Deaths	27	—	22	—	—	43	5	20	1	2
Diphtheria Deaths	44	6	147	88	1	62	3	17	92	19
Dysentery Deaths	419	2	9	—	1	238	12	136	—	—
Encephalitis lethargica acute Deaths	1	—	—	—	—	4	1	—	—	—
Erysipelas Deaths	—	—	49	8	2	—	—	32	5	—
Infective enteritis or diarrhoea under 2 years Deaths	63	5	57	197	21	69	13	12	98	14
Measles* Deaths	1 669	2	65	59	16	674	37	31	8	3
Ophthalmia neonatorum Deaths	59	2	20	—	—	91	2	19	—	—
Paratyphoid fever Deaths	—	—	—	—	—	14	—	2	—	—
Pneumonia influenza* Deaths (from influenza)	297	13	5	—	2	304	18	5	2	—
Pneumonia, primary Deaths	—	13	150	15	4	—	17	148	10	6
Poliomyelitis, acute Deaths	7	1	—	—	—	1	—	—	—	—
Poliomyelitis, acute Deaths	2	—	22	1	1	16	1	1	2	—
Puerperal fever Deaths	—	1	6	—	—	—	3	14	—	—
Puerperal pyrexia† Deaths	132	2	10	3	—	171	8	14	1	4
Relapsing fever Deaths	—	—	—	—	—	—	—	—	—	—
Scarlet fever Deaths	1 137	2	204	21	4	2 206	221	331	48	75
Smallpox Deaths	—	—	—	—	—	—	—	—	—	—
Typhoid fever Deaths	—	—	—	—	—	11	1	5	10	3
Typhus fever Deaths	—	—	—	—	—	—	—	—	—	—
Whooping-cough* Deaths	1 359	44	61	82	11	1 925	108	266	59	26
Deaths (0-1 year) Infant mortality rate (per 1 000 live births)	302	23	109	39	25	293	33	54	37	35
Deaths (excluding still births) Annual death rate (per 1,000 persons living)	5 649	414	569	170	106	3 504	462	430	177	118
Live births Annual rate per 1 000 persons living	6 167	410	822	339	22	5 959	718	904	391	271
Stillbirths Rate per 1 000 total births (including stillborn)	216	12	2	—	—	191	22	26	—	—

\* Measles and whooping-cough are not notifiable in Scotland, and the returns are therefore an approximation only.

† Includes primary fever for England and Wales, London (administrative county), and Northern Ireland.

‡ Includes puerperal fever for England and Wales and Eire.

§ Owing to evacuation schemes and other movements of population, birth and death rates for Northern Ireland are no longer available.

## EPIDEMIOLOGICAL NOTES

## Discussion of Table

In England and Wales the incidence of dysentery, whooping-cough, scarlet fever and diphtheria rose by 120, 73, 66, and 35 respectively. There were 45 fewer cases of measles reported than last week.

The returns for whooping-cough in Gloucestershire rose by 39. Measles notifications decreased in most areas of the country, but Lancashire had 55 more cases than last week, and Northumberland 56.

A new wartime record for dysentery was set up during the week, when 419 cases were notified. The cases occurred over a wide area, and fifteen counties recorded 10 or more cases. The largest centres of infection were Surrey 46, Sussex 35, Buckinghamshire 31, London 27, Essex 27, Glamorganshire 25.

In Scotland there were 13 more cases of diphtheria than last week, making the third consecutive week for which an increase has been reported. Notifications of acute primary pneumonia went up by 42 and those of scarlet fever by 25. There were 22 fewer cases of dysentery, the largest returns being Glasgow 39 and Edinburgh 23. The number of deaths from gastro enteritis rose sharply during the week, and 53 of the total of 57 occurred in Glasgow. Deaths for the corresponding week last year numbered 12. The source of the infection is unknown, but as a precaution the M.O.H. has advised the use of dried milk for infant feeding.

In Eire the high level of notifications for diarrhoea and enteritis was still further increased, 151 of the 197 cases were notified in Dublin C.B. The rise of 52 cases in whooping-cough was due mainly to an outbreak in Clare, Tulla R.D. 30.

In Northern Ireland a small rise of 18 occurred in the notifications of scarlet fever.

## Week Ending September 9

The notifications of infectious diseases in England and Wales during the week included: scarlet fever 1 251, whooping-cough 1 223, diphtheria 481, measles, 1 138, acute pneumonia 303, cerebrospinal fever 41, acute poliomyelitis 24, dysentery 622, paratyphoid 3, typhoid 7.

## Correction

In last week's table the dysentery notifications for Scotland were given as 15. The figure should have been 115.

## Medical News

It has been decided that the programme for the 1944 annual meeting of the Faculty of Radiologists must be curtailed owing to prevailing conditions. The meeting will be held at the Royal College of Surgeons, Lincoln's Inn Fields, on Friday, Sept 29, beginning at 10 a.m. There will be a discussion on the Government White Paper on a National Health Service at 2.30 p.m.

The 236th meeting of the Biochemical Society will be held in the Department of Biochemistry, University, Western Bank, Sheffield, on Friday, Sept 29, at 11 a.m.

A meeting of the Association of Clinical Pathologists will be held on Saturday, Sept 30, at the London School of Hygiene and Tropical Medicine, Keppel Street, W.C. Programme 11 a.m., Prof A. A. Miles and Dr. Nancy Hayward, the specificity of the Nagler reaction and the general problem of wound bacteriology, 12 noon, Air Cdre T. C. C. Morton, investigation of a case of cosmophilia from the Tropics (with demonstrations), 2 p.m., Sir Alexander Fleming, the laboratory control of penicillin therapy (with demonstrations), 3 p.m., (a) Lieut-Col. Yale Kneeland, U.S.A.M.C., experiences with penicillin in infectious diseases, (b) Col. D. M. Pilsbury, U.S.A.M.C., penicillin in the treatment of venereal disease, 3.50 p.m., Lieut. Col. J. S. Jeffrey, R.A.M.C., commentary on Sir H. W. Florey's film on the treatment of war wounds with penicillin. Demonstration (on view 10 a.m. to 5 p.m.), Major J. Edwards, U.S.A.M.C., a case of coccidioidomycosis immutis.

The first lecture in the autumn programme of the 32nd annual series of Chadwick Public Lectures is to be delivered on Tuesday, Oct 3, at 2.30 p.m., at the Royal Society of Tropical Medicine and Hygiene, 26, Portland Place, W., when Lord Amulree, M.D., will lecture on "Water Supplies in Peace and War". Admission to all the Chadwick lectures is free, tickets are not required.

The following medical films will be shown at the Solanum, Grange Road, Bermondsey, S.E.1, at 8.30 p.m. on Tuesday, Oct 3, "Highland Doctor," "Blood Transfusion," and "Scabies." Any doctors wishing to attend will be welcome. No. 1 bus to Grange Road.



The North-West London Branch of the English New Education Fellowship will hold a meeting on Tuesday, Oct 3, at 7.45 p.m., when Drs S W Jeger and R W Cockshut will discuss schools and the State Medical Service. The meeting is open to the public without charge, and will take place in the School Hall, Hendon County School, Golders Rise, Hendon.

The National Council for Mental Hygiene has arranged a course of ten lectures on "The Psychology of Frustration and Fulfilment in Adult Life," to be held in London and repeated in Birmingham. The London series will be given at Caxton Hall, S.W.1, on Tuesdays at 5.30 p.m. from Oct 3 to Dec 5. The Birmingham series will be given at Friends' Meeting House, Bull Street, on Wednesdays at 5.30 p.m. from Oct 4 to Dec 6. The fee for a complete course is £1, single tickets, so far as accommodation permits, 3s 6d, obtainable at the hall before each lecture. Application for tickets for a course should be sent to the Secretary, National Council for Mental Hygiene, 39, Queen Anne Street, London, W.1, or to Messrs Dale, Forty and Co Ltd, 80, New Street, Birmingham, 2, who are acting as agents for the Birmingham course.

The annual general meeting of the Association of Industrial Medical Officers will take place at the London School of Hygiene, Keppel Street, W.C., on Saturday, Oct 14, at 11 a.m. Morning session, 11 to 1, private business. Afternoon session, commencing 2.30 p.m., an address by Prof John A Ryle, M.D., "Social Medicine as a Discipline."

At a sessional meeting of the Royal Sanitary Institute to be held in the Peirymount Cinema, Haywards Heath, on Saturday, Oct 14, at 10.30 a.m. a discussion on "Diphtheria Immunization" will be opened by Dr W B Stott, M.O.H., Cuckfield Rural District Council.

At the Odeon Cinema, Plymouth, on Sunday, Oct 15, at 11 a.m., a British Council medical film, "Surgery of Chest Diseases," will be shown. All medical practitioners, including British and Allied Services, are welcome. Address by Surg Rear-Admiral G Gordon-Taylor.

Chevrons for war service and wound stripes are to be awarded to volunteer stretcher bearers enrolled at hospitals in the E.M.S.

## Letters, Notes, and Answers

All communications with regard to editorial business should be addressed to THE EDITOR BRITISH MEDICAL JOURNAL, B.M.A. HOUSE, TAVISTOCK SQUARE, LONDON, W.C.1. TELEPHONE EUSTON 2111. TELEGRAMS *Articulate Westcent London*. ORIGINAL ARTICLES AND LETTERS forwarded for publication are understood to be offered to the *British Medical Journal* alone, unless the contrary be stated.

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## ANY QUESTIONS?

### Chinosol

**Q.**—What are the present opinions on and uses of "chinosol" now known as hydroxyquinoline sulphate? When I was in practice I used it continuously for all minor surgical cases and found it very satisfactory. Primary union of stitched wounds I looked upon as a certainty. It is quite non-irritating in any strength. Its disadvantage is that it attacks instruments. Is chinosol out of favour now? If so, why?

**A.**—Chinosol has a strong antiseptic but little rapid germicidal action, which is exerted mainly against Gram-positive cocci, Gram-negative organisms are much less susceptible. Solutions are acid, and it has therefore some local irritant action, but is certainly less toxic than many other commonly used antiseptics. So far as this country is concerned chinosol cannot be said to have fallen out of favour, for the simple reason that it has never come into use to a sufficient extent for the reverse process to be noticeable. There is no evidence in the literature of diminished popularity in the country of its origin. German papers in comparatively recent times describe its use for the treatment of wounds, infections of the skin, eye, and female genital tract, for throat carriers of *C. diphtheriae*, and for a variety of purposes in veterinary medicine. Without practical experience of its use no precise judgment of its merits or comparison with other antiseptics is perhaps justifiable. It may nevertheless be pointed out that chinosol has now some very formidable rivals. The newer acridine compounds are more powerful antiseptics,

sulphonamides applied locally have a well attested antiseptic action and are almost completely non-toxic, while penicillin combines its virtues in the highest degree.

### Dangers of Screening and Radiography

**Q.**—How frequently can a patient have ordinary straight x-rays of the chest with a full-size x-ray machine assuming the ordinary exposures are used—i.e., weekly, fortnightly, monthly, what? My interest lies in the management of artificial pneumothoraces, where treatment and control may go on for five years or more. What are the short- and long-term ill effects due to one exposure to these x-rays? Is regular screening likely to be cumulative than regular x-raying?

**A.**—Under normal working conditions the use of radiology for the control of the management of artificial pneumothorax does not give rise to any anxiety about either local or general effects of radiation on the patient. The initial period may require several examinations within a few days, but after this the intervals gradually increase. If radiography or screening is employed to direct the cutting of adhesions, or tomography used for the visualization of location of cavities, then due allowance must be made for the additional exposure. While it is difficult to imagine a case in which a weekly radiograph may be necessary over a period of years, it is too many to be carried out without anxiety should real necessity arise. Screen examinations are a different proposition. Presuming an interesting case, much more time may be spent screening than in being realized, and the quantity of radiation received by the patient may be considerable and uncertain. However, an experienced observer, knowing his cases, may secure the information he desires in a few seconds. Otherwise the patient would probably receive more radiation during average screening than in one exposure for a radiograph.

The ill effects from one dose over-exposure are local inflammation, alopecia (temporary or permanent), vesication, ulceration, and ultimately, possibly local malignancy—in that order and depending upon the degree of overdose. If the area is large there will be sepsis, toxæmia, and much pain. The ulceration may not be healed and skin grafts may be necessary to repair. The lesser degrees of damage may result later in skin and glandular atrophy, telangiectasias and late ulceration. The cumulative effect of long-continued small doses locally gives rise to skin and glandular atrophy, telangiectasias, fissures, and warty growths that may go on to malignancy and metastasis.

General body irradiation such as may be received by those practising radiology under unfavourable conditions, or carelessly under favourable conditions, may give rise to leucopenia, which unchecked may lead to sterility and a fatal anaemia. Some people are more susceptible than others, and there is also reason to believe that, in some, minimal body irradiation under similar conditions gives rise to an increase in the red cell count before the white blood count is recognizably altered.

The difference in the quality of the radiation (wave length) used in radiography and screening of the chest is such that it is an important factor in the question under consideration, but radiographic dose can be calculated precisely. The screening dose may be of a very varying magnitude under different conditions: in different hands.

With regard to protection, reference should be made to the report under the heading "Protection against X Rays" in the *Journal of the Royal Society of Medicine*, April 1, 1944 (p. 480), and to the recommendations of the British X-ray and Radium Protection Committee, which may be obtained free on application to the General Secretary, British Institute of Radiology, 32, Welbeck Street, London, W.1. See also the article "Effects of Radiation on Workers," by Ralston Patterson, *British Journal of Radiology*, January, 1943, p. 3.

### Blood-pressure Readings

**Q.**—What is now generally accepted as being the correct method of ascertaining the diastolic blood pressure? Should the reading be taken when the character of the sound changes from snapping to a softer, more prolonged note, or when finally no sound at all is heard? Is it now generally accepted that the diastolic pressure is of greater significance than the systolic in cases of suspected arteriosclerosis? Does the diastolic pressure tend to vary as greatly as does the systolic at different times in the same individual? If it may be taken as the normal range of diastolic pressures in aged from 20 to 60?

**A.**—The following recommendations for determining the diastolic blood pressure are contained in the joint report of the Canadian Society for Great Britain and Ireland and the American Heart Association (*Brit Heart J*, 1939, 1, 261). "The patient should be allowed time to recover from any recent exercise or excitement. Auscultation should be conducted during slow deflation. The point where the loud clear sounds change abruptly to the dull murmur sounds should be taken as the diastolic pressure." It is impossible to be dogmatic about whether the systolic or the diastolic pressure

has the greatest significance in arteriosclerosis. Severe arteriosclerosis of the aorta tends to lower the diastolic pressure, whereas in early essential hypertension the rise in blood pressure may be evident only in the diastolic reading. The percentage fluctuation of the diastolic pressure is as great as that of the systolic in hypertensive patients, but in health a specific stimulus may have a different effect on the systolic and diastolic pressures. For instance, vigorous exercise often causes a rise in the systolic pressure while the diastolic pressure remains the same, or falls. The best statistics for the blood pressure in healthy individuals are those given by Symonds (*J Amer med Ass*, 1923, 80, 232). According to him the range of the diastolic pressure at 20 years is 76 to 85 mm Hg, and at 60 years 82 to 90 mm Hg.

#### Acne

**Q.**—What is a simple and practical form of treatment for acne where large numbers of not very intelligent young people are concerned?

**A.**—Acne has two complementary and essential factors—an endocrine imbalance and a seborrhoeic skin. A 2% sulphur and salicylic acid ointment modifies the seborrhoeic fraction. It can be applied at night. Treatment on these lines is eventually successful by modifying one of the essential components.

#### Headache of Acromegaly

**Q.**—Can anyone suggest something to relieve the headache of acromegaly or of a pituitary tumour causing the symptoms? I have tried most of the usual analgesics without any effect. The condition of the patient is distressing to behold, and one feels so helpless.

**A.**—If a pituitary tumour is present, as might be indicated by optic atrophy or an enlarged sella turcica, operation should be considered, or, alternatively, radiotherapy. If there is no tumour, symptoms might be relieved by testosterone or stilboestrol, both acting by inhibiting the activity of the pituitary and possibly diminishing its turgescence or size. In an attempt to get a decisive response, large doses should be used—e.g., 50 mg intramuscularly daily of testosterone or 5 mg of stilboestrol. Later on methyl testosterone by mouth or stilboestrol by mouth could be tried.

#### Home-made Penicillin

**Q.**—Although *Penicillium notatum* is supposed to be a common mould I cannot find out where to obtain a pure culture. What is the composition of the best culture medium obtainable by purchase and where can it be bought? I have failed to get any from three laboratories. I wish to use a home-made culture of *Penicillium notatum* as a local application in gonorrhoea in a girl of 6 who is sulphathiazole sensitive (granulocytopenic) who has been benefited but not cured by sulphathiazole and whose mother is 7 months pregnant. I propose to inject the liquid culture into the vagina instead of using pot permanganate lotion. Why should not this culture in liquid be used as a local application until the supply of penicillin is abundant? I have an incubator.

**A.**—*Penicillium notatum* is obtainable from the National Collection of Type Cultures, Lister Institute, Elstree, Herts. For methods of preparing crude culture filtrate for local treatment the questioner is referred to a recent article by J. M. Alston in this *Journal* (May 13, 1944, p. 654). We know of no commercial source from which the necessary culture medium can be bought. An ordinary incubator will not serve for this purpose; the temperature required is 24° C. A good deal of other equipment and considerable knowledge are necessary for the production of a filtrate of known and adequate potency, and despite recent claims which have been made for the possibilities of home-made penicillin, the pitfalls involved are so numerous that it cannot be recommended for any serious therapeutic undertaking such as in the case described.

#### Clicking Mandible

**Q.**—My commanding officer has recently developed a very audible clicking of the mandible in the left temporomandibular joint. It occurs only when he is eating, and he can demonstrate it by "clenching the cud" as he puts it. It is becoming an increasing source of embarrassment to him; far his fellow officers imagine he has a loose denture. He has dentures but they fit perfectly and are not the cause of the noise. He is aged 50, full faced and rat-tail. Could you advise me on the best treatment for such a condition?

**A.**—Clicking in the temporomandibular joint may be either bony or cartilaginous. In the former instance the cause is usually an arthritis of the joint, in the latter an abnormal or loose interarticular fibrocartilage. The treatment of the arthritic variety is along the usual lines which are adopted for arthritis elsewhere, but on the whole the results are disappointing. Sometimes the dentist can help by building up the "bite" posteriorly, so preventing too close closure of the jaws and thus relieving the joint surfaces. In cases

such as the present one, where a denture is worn, it is particularly important to see that the "bite" is correct, as an incorrect "bite" may not only be a causative factor in the production of the arthritis but may perpetuate the trouble. The use of a raised bite is of course only temporary. If the click is a cartilaginous one the same dental measures can be adopted, but in some instances a good result may follow surgical removal of the cartilage—an operation which is not as easy of performance as it may sound and which involves a definite risk of damage to the uppermost fibres of the facial nerve.

#### Desensitization to Foods

**Q.**—Could you let me know (in view of letters that have recently appeared in the *Journal* on desensitizing patients suffering from pernicious anaemia to extracts of liver) (1) Whether it is possible to desensitize patients suffering from allergy to other food proteins by injection of extracts of such foods and if not why it should be possible only to desensitize against liver extracts and not other foods? (2) Whether it is possible to desensitize them by other means? (3) What is the method employed in the procedure? (4) If it is possible to desensitize them why do the textbooks all say it is not possible to desensitize them? (5) Why do allergic specialists also say it is impossible? (6) If it is possible to desensitize them do they remain desensitized for life? If not how long does the effect last? (7) Can desensitization do any harm? After undergoing a course may the patient become more sensitive in future to the substance than he was before?

**A.**—(1) There is some confusion of thought here. The patients with pernicious anaemia under discussion were sensitive to the injection of liver extract but not to the ingestion of whole liver by mouth. Their symptoms were not those of food allergy. Analogous is the fact that such people as bakers, who get asthma from the inhalation of dust containing wheat flour, may be successfully desensitized by injection of wheat extracts, whereas a similar procedure is usually disappointing in patients who are sensitive to wheat foods taken by mouth. Why it is so rarely possible to desensitize patients to foods by hypodermic injection is not known, but it may depend on the disparity between the dose which can be given by injection and the amount which is normally taken by mouth. In any event, desensitization to foods by the parenteral injection of extracts is only rarely successful.

(2), (3), (4) (5) Oral desensitization in which increasing doses of the food or an extract of it are given by mouth is perhaps a little more successful than hypodermic desensitization but it does not often succeed.

(6) Children often pass through a phase of sensitivity to a particular food and then grow out of it, but in the rare cases where active desensitization to food is successful in the adult, one would certainly not expect it to last for life. Sensitivity might well return within a month of omitting treatment. A more passive type of desensitization occurs when the offending food is eliminated from the diet for some weeks or months. In these circumstances patients may have no symptoms the first time they ingest the food again, but will probably have them if ingestion is repeated in 24 or 48 hours.

(7) There is no evidence that desensitization can do any harm, apart from the accidents of desensitization itself. On the contrary, experience with pollen therapy, which is the best known of all forms of desensitization, suggests that desensitization tends to produce some permanent lowering in sensitivity.

#### Phenobarbitone Poisoning

**Q.**—What is the treatment of acute phenobarbitone poisoning? Picrotoxin is usually advised but I have never been able to find the correct dosage.

**A.**—Picrotoxin is probably superior to most of the antidotes to barbiturate poisoning but it is more toxic. Large doses are tolerated in phenobarbitone poisoning. Thus whereas the BPC maximum dose is 1/25 gr. in barbiturate poisoning it is recommended to give doses of 1/6 gr. intramuscularly half hourly until muscular twitching occurs. Intravenous nikethamide is usually very efficacious and far less dangerous.

#### Local Anaesthesia and Dental Extraction

**Q.**—Is there any contraindication, and if so what, to the administration of a local anaesthetic—e.g. novocain—in dental extractions? Is prolonged nerve irritation ever likely to supervene?

**A.**—A local anaesthetic for the extraction of a tooth should not be given when there is an acute abscess, and it is unwise to inject into or through an inflamed area. When the outer plate of alveolus is dense it may be impossible to obtain a satisfactory anaesthesia by a local infiltration, especially in the lower jaw. In these cases a regional injection is better. Many patients have a definite dislike to any form of local anaesthesia and may feel faint and ill after the injection. Some seem to be hypersensitive to the adrenaline which is contained in most of the solutions. Local anaesthesia should not be used with patients who are in a low state of health. Arterio-

sclerosis and organic heart disease are also contraindications. Prolonged nerve irritation when it occurs is more likely to be due to trauma or sepsis than to the injection.

#### Endocrine Types and Measurements

**Q.**—Certain anthropomorphic measurements—e.g., span, vertex to pubis, pubis to heel, total height, circumference of head, chest, etc.—have been described by endocrinologists for the differentiation of endocrine types. Are these measurements, and the types which are distinguished from them, of recognized significance?

**A.**—The exact significance of the endocrine types is not yet generally recognized, though most authorities would agree that they have significance. The subject is one for research, and not for dogmatic statement. The same or similar measurements are also used for distinguishing quantitatively the races of mankind—white, black, yellow, etc.—and subdivisions—Alpine, Mediterranean, Nordic, etc.—and even in the major racial subdivisions there are overlappings. Attempts have also been made, notably by Kretschmer and more recently by Sheldon, to use similar measurements to distinguish temperamental types. Here also the whole subject is fluid. All the work on endocrine types is on rather a small scale, and much further work is required, though it is pretty certain that valuable data will be derived in the end. At present we have certain knowledge only in the case of the frankly pathological—e.g., Frohlich's syndrome.

#### The Diseases named "Pick"

**Q.**—What is Pick's disease? And what is polyserositis, and what are its signs and symptoms? Pick's disease is described in Beaumont's "Medicine" (1939) as "a diffuse proliferative peritonitis often associated with similar proliferative changes in the mediastinum, pericardium, and pleura." In Beattie and Dickson's "Pathology" (1943) Pick's disease is "a comparatively circumscribed progressive degeneration and atrophy affecting the cortical nerve cells of the brain."

**A.**—The use of eponyms is much to be deplored. They are responsible for great confusion and they tend to perpetuate out-moded conceptions. At least four men named Pick have had diseases called after them. Arnold Pick gave his name to a form of circumscribed atrophy of the brain, characterized by dementia, progressive degeneration of the higher faculties, and the development of aphasia. Alzheimer's disease and Arnold Pick's disease are two distinct subgroups of the condition known as pre-senile psychosis or sclerosis. The *Standard Nomenclature of Disease* unfortunately omits this form of Pick's disease in its list of eponyms, and the correct designation of the condition would presumably be "pre-senile sclerosis (Pick)."

Filipp Josef Pick gave his name to erythromelalgia, the initial stage of progressive idiopathic atrophy of the skin.

Ludwig Pick gave his name to the Pick's cell in Niemann-Pick disease, which the *Standard Nomenclature* calls "xanthomatosis (Niemann-Pick)," and which English writers would prefer to call "linoid reticulosis (cholesterol)."

Friedel Pick gave his name to polyserositis and more particularly to the syndrome now known as constrictive pericarditis—recurrent ascites, enlargement of the liver, and oedema of the lower extremities, with a heart of normal size and without orthopnoea. It is believed that in these cases the ascites is mechanical in origin, the heart is unable to expand and fill with blood in diastole and the venous pressure therefore rises. When proliferative changes occur in the pleura and peritoneum in association with adhesive pericarditis the term Concato's disease is sometimes used, this syndrome is very rare. It is impossible to draw hard-and-fast distinctions, as all the different varieties of chronic pericarditis and polyserositis are usually tuberculous in origin. It is, however, vitally important to pick out cases of constrictive pericarditis, in which the constriction of the heart is preventing diastolic filling, as the patient can be strikingly relieved by surgical operation.

#### Asymmetry of Labia

**Q.**—A girl aged 19 years is worried about her left labium being larger than the right since the age of 12 years. Examination findings confirm the patient's observations but there is no other abnormality. What treatment or advice should be given?

**A.**—Unequal development of bilateral organs is common, and, so far as the vulva is concerned, the asymmetry is mostly seen in connexion with the labia minora. It is presumed that such is the case here, and that the labia majora are not involved. Unilateral hypertrophy, unlike bilateral hypertrophy, of the nymphae is not likely to be caused by masturbation, and is to be regarded as a developmental anomaly. Any difference in size, if present, would hardly be noticed before puberty, since until that time the labia are undeveloped. This condition is not rare and has no special clinical significance. The patient should be reassured accordingly. No treatment is indicated unless the labium is so prominent as to get chafed by the thighs in that case partial or total removal may be required.

#### Oral Vaccines for "Colds"

**Q.**—Would you give me an authoritative opinion on the value of oral vaccines, with special reference to their use in the prevention of "colds and bronchitis"?

**A.**—There are two formidable objections in theory to regarding this proceeding as even possibly beneficial. One applies to cold vaccines however administered: it is simply that they do not contain the causative organism, which is a filterable virus. Granting that some colds are due to bacterial infection, or that virus colds are increased in severity or prolonged by secondary bacterial infection, then the ordinary type of cold vaccine has some semblance of applicability; but so many species are concerned, some of which include many distinct antigenic types, that such a vaccine cannot contain every organism likely to be encountered, and the more does contain the less, presumably, will be the degree of immunity produced to each. The second difficulty is in accepting the idea that a vaccine administered by the alimentary tract is going to immunize the respiratory tract. This is going further than Besredka, who introduced oral vaccine for enteric fever on the assumption that the tissue involved in the disease itself could be locally immunized. The efficiency even of this proceeding is by no means generally accepted, but it is asking much more of a swallowed vaccine than it shall enhance the resistance of another tissue altogether.

The theoretical improbabilities involved are therefore extreme, but perhaps we do not know enough about immunity to catarrhal infections to condemn such a proceeding out of hand. There is some clinical evidence which, so far as it goes, appears to be favourable to the method. G. E. Rockwell *et al.* (*J. Lab. Clin. Med.*, 1937, 22, 912) claim to have reduced the incidence of colds greatly, as compared with untreated controls, by frequently repeated oral doses of a dried preparation containing many billions of four species of bacteria. The dosage employed by these authors was greater than that afforded by some commercially available preparations.

## LETTERS, NOTES, ETC.

#### Wasp and Bee Stings

Dr O. H. BROWN (Guildford) writes: In the "Any Questions" section of Aug. 26 (p. 295) there was a reply under the above heading. On Aug. 20, 1919, the *Times* published a letter from Edward R. Speyer, M.A. (Oxon), F.R.S. Since reading that letter I have never had a moment's anxiety in dealing with wasp stings. There was an interesting correspondence on the same subject 19 years later to which I contributed two letters (published in the *Times* of Aug. 23, 1938, and Aug. 30, 1938). The *Lancet* (Oct. 11, 1941) also has a letter of mine on the subject. The gist of the matter may be summed up in the mnemonic—"A B, V W". alkalis for bee stings, vinegar for wasp stings.

#### Tug-of-war for Girls

Dr K. A. GRANT (Corsham, Wilts) writes: I read with interest your answer under the above heading in the *Journal* of Aug. 1 (p. 230). When in labour, a girl or woman is forced to undergo "comparatively long periods of stasis with contracted muscles and fixed thorax," so what harm will a tug-of-war, which lasts only a short time, do?

#### Wooden Bullets

Major H. B. C. POLLARD writes: The German "wooden bullet" so painstakingly radiographed by Dr Norman P. Henderson (*B.M.J.*, Sept. 9, p. 356) is incapable of producing injury at five yards, let alone 100! These are simply wooden "bulleted blanks" used in machine-guns where back pressure is needed to function the mechanism. They are in use in most Continental armies, and recent experiment at Woolwich Arsenal has shown that all German and Italian wooden bullets break up at the muzzle of a rifle and will not penetrate a cardboard screen at six feet. The whole business of wooden bullets is a soldier's story, but it is quite true that "the scattered fragments are not likely to be localized by radiological methods."

#### War Damage Contributions

H. S. owns a house which is mortgaged to a building society. It is used partly for professional purposes but "primarily as private residence." Is he liable to the whole or only to a part of the war damage contribution?

\*\* The whole—and this would be the case if the property was used entirely for residential purposes. (The building society may be liable to recoup H. S. for part of his payment; whether and to what extent depends on the origin and relative amount of the mortgage.)

#### Correction

The third journal cited in footnote 3 to the leading article on problems of arboflavinosis (July 29, p. 153) referring to the work of Fitzgerald Moore should read *J. trop. Med. Hyg.*, 1937, 42, 109.

LONDON SATURDAY SEPTEMBER 30 1944

## INFANTILE DIARRHOEA AND VOMITING

BY

M. B. ALEXANDER, M.R.C.S.

Grove Hospital, L.C.C.

AND

Y. EISER, M.D. Prague

Late North-Western Hospital, L.C.C.

This series comprises 140 cases of infantile diarrhoea and vomiting treated at the North-Western Hospital between June, 1943, and February, 1944, inclusive.

### Summary of Cases

**Age.**—The infants were all under 15 months of age. Older children were excluded, since the disease is less common and invariably milder after the age of 15 months. When divided into five age groups, of 3 months each, 115—i.e., 82.1%—of the infants were in the first three age groups (0 to 9 months), the incidence falling sharply after 9 months. The severity, as judged by dehydration, was also greatest in the first 9 months of life, with 56.5% of dehydrated infants as compared with 16% in the age groups IV-V (9 to 15 months). This incidence corresponds with that found by Campbell and Cunningham (1941). There were no deaths among the infants over 6 months of age (Tables I and II).

1 died. Seventeen were admitted from other hospitals, of whom 12 were dehydrated and required intravenous therapy, and 1 died. The remaining 103 infants were admitted from home; of these, 43 were dehydrated and 6 died. We are unable to say what proportion of this last group were attending day nurseries.

**Breast-feeding.**—In this series 17 babies were breast-fed—8 wholly and 9 partially. This rather high incidence (12.1%) may be partly accounted for by the fact that cases were admitted from a maternity unit. Ages ranged from 1 week to 5 months in the case of the fully breast-fed infants, and from 3 to 10 months in the partially breast-fed babies. One fully and 4 partially breast-fed infants were dehydrated and required intravenous therapy. Breast-feeding was continued wherever possible. There were no deaths in this group. The illness was seldom so severe as in the artificially fed babies, and recovery was quicker and usually uncomplicated.

**Dehydration and Severity.**—Forty-nine infants were dehydrated on or soon after admission, and a further 20 became dehydrated more than forty-eight hours after admission—i.e., 69 cases in all, or 49.3% of the total. Of these, 26 showed evidence of extreme fluid loss, and 11 of them were collapsed on admission, exhibiting unmistakable signs of shock—cold, clammy skin; subnormal temperature; thin, thready, or imperceptible pulse; cyanosis of lips and extremities; shallow or sighing respiration—in addition to the usually severe dehydration. None of these 11 died. In 6 cases "orange" stools—an unfavourable prognostic sign—appeared for more than twenty-four hours during the course of the illness; 5 of these patients recovered and 1 died.

**Duration.**—The average stay in hospital was 30.2 days. No deductions can be drawn from this figure as many infants were, for administrative reasons, kept in hospital after recovery.

**Mortality and Cause of Death.**—There were 8 deaths in this series, giving a case fatality of 5.7% for all cases, or 11.6% of dehydrated cases. All these 8 infants were under 6 months of age, and 6 of the 8 deaths followed relapses. Post-mortem examinations were performed in 7 cases, and the causes of death found were: suppurative pericarditis (*Staph. aureus*), 1; circulatory failure due to excessive parenteral fluids, 2. The remainder of the deaths were classified as due to gastro-enteritis, complicated by otitis media in 1 case and by whooping-cough and secondary pneumonia in another.

### Parenteral Infection

An attempt was made to investigate the presence and type of parenteral infection in these cases, based on the following criteria: (1) A history of parenteral infection preceding or concurrent with the onset of diarrhoea and vomiting. (2) Clinical signs of parenteral infection on admission—i.e., rhinitis, tonsillitis, otitis media, bronchitis, furunculosis, etc. (3) Bacteriological confirmation: nose, throat, and post-nasal swabs, and faeces and rectal swabs were taken from all infants on admission, and at intervals throughout the course of the illness, for bacteriological examination. In addition, swabs were taken from any discharge—e.g., pustules, otorrhoea. The urine was investigated in a few cases only, owing to the difficulty in collecting sterile samples of urine from babies with diarrhoea. All infants showing bacteriological evidence of intestinal infections such as bacillary dysentery and giardiasis were excluded from this series.

TABLE I.—Distribution in Age Groups: Death and Dehydration Rate in Each Age Group

Age Groups	No. of Cases	Deaths		Dehydration		Deaths among Dehydrated
		No.	Case Fatality %	No.	%	
I—0-3 months	33	4	10.5	23	60.5	17.3
II—3-6 "	49	4	8.1	27	55.1	14.3
III—6-9 "	25	0	0	15	53.5	0
IV—9-12 "	13	0	0	3	23.6	0
V—12-15 "	12	0	0	1	8.3	0
Total	140	8	5.7	69	49.3	11.6

TABLE II.—Incidence, Dehydration, and Mortality in Infants Under and Over 9 Months

Age in Months	No. of Cases	Dehydration		Deaths	Case Fatality %	Deaths among Dehydrated
		No.	%			
0-9	115	65	56.5	8	6.9	12.3
9-15	25	4	16	0	0	0
Total	140	69	49.3	8	5.7	11.6

**Prematurity.**—There were 8 premature infants in this series, all under 7 weeks old on admission. All 8 were dehydrated, and 7 required intravenous therapy. There were 3 deaths. The illness in all these cases was very severe, and convalescence slow. It is of interest to note that 3 of these babies had severe anaemia requiring blood transfusions, and that slow-drip transfusions of 200 to 250 c.c.m. of blood were well tolerated after initial correction of fluid loss.

**Sex.**—Males predominated in the ratio of 3:2.

**Season.**—No deductions can be drawn from the number of admissions per month, as these were governed by external factors. Severity, as judged by dehydration, appeared to be highest in the winter months; but, again, no deductions can be made, as this series does not include the spring quarter.

**Environment.**—Twenty infants were admitted from institutions; of these, 14 were dehydrated, 8 required intravenous therapy, and

1. In 36 cases there was a history of parenteral infection immediately before the onset of diarrhoea and vomiting, and in 58 cases accompanying this—a total of 94 cases, or 67.1% of all. In many instances upper respiratory infections had been present in other members of the family before the infant's illness.

2. In 124 cases (88.6%) there was definite clinical evidence of parenteral infection on admission, mainly of the respiratory tract. There were 60 cases of otitis media. Only those cases in which a purulent otorrhoea occurred spontaneously or was found at myringotomy were included under the heading of otitis media. In 49 of these otorrhoea was present on, or within forty-eight hours of, admission. In the remaining 11 cases the otorrhoea appeared in 5 to 20 days; in all these 11 there had been evidence of upper respiratory infection on admission. Myringotomy was performed in 38 cases, and bilateral mastoidectomy in 11. Table III shows

TABLE III.—Incidence and Type of Parenteral Infection present in 140 Cases

Parenteral Infection	No.
Upper respiratory infection	29
Tonsillitis	12
Otitis media	20
Otitis media + other infections	40
Bronchitis	11
Pneumonia	2
Skin infections	8
Stomatitis	1
Conjunctivitis	1
Total	124

Note. Upper respiratory infection = rhinitis and pharyngitis.

the type and incidence of parenteral infection present in the whole series. In 88 cases (62.8%) pyrexia (temperature above 99° F.) occurred within twenty-four hours of admission. In 80 of these the pyrexia was associated with other evidence of parenteral infection, and in 8 no signs of parenteral infection could be found. Subnormal temperatures were observed in the 11 infants admitted in a state of shock. Temperatures of 101° to 103° F. sometimes appeared after the parenteral administration of plasma; we have tried to separate these from the initial pyrexia, which seemed to be due to the parenteral infection. It is noteworthy that 19 of 27 relapses (70.4%) were preceded by signs of parenteral infection and a rise of temperature above 99° F. Very often there was only a slight pyrexia of less than twenty-four hours' duration, which was followed in 24 to 72 hours by a relapse of the diarrhoea and vomiting, in some cases surprisingly severe, and with no further rise of temperature until the final agonal peak in the cases ending fatally.

3. Table IV shows the incidence and type of pathogenic organisms cultured from the upper respiratory tract on admission. The presence of *Staph. aureus* in the nose only was not regarded as significant, and these results are omitted from this table. The mere presence of

TABLE IV.—Incidence and Type of Pathogenic Organisms Cultured from the Upper Respiratory Tract

Organism	N	T	P.N.	P N	$\left\{ \begin{matrix} N \\ \text{or} \\ T \end{matrix} \right.$	Ears	Ears + $\left\{ \begin{matrix} N \\ \text{or} \\ T \\ \text{or} \\ P N \end{matrix} \right.$	Skins	Total
Haem. strep.	2	6	4	11	0	2	0	25	
Pneumo	2	1	4	5	7	3	0	22	
Staph. aureus	3	3	7	7	8	10	2	33	
Total	4	10	11	23	15	15	2	80	

Note. N - Nose T - Throat. P.N. = Post-nasal.

these organisms in the nasopharynx does not necessarily imply an infection with them, but we feel that they are of significance if taken in conjunction with the clinical findings.

The discrepancy between the positive bacteriological findings in the ear discharges—30—and the actual number of otorrhoeas—60—may be partly explained by the difficulty of obtaining sterile cotton-wool swabs small enough to be passed through the infant's narrow meatus to reach the perforation or myringotomy wound. In the remaining cases only saprophytic organisms such as *Staph. albus*, diphtheroids, etc., were recovered on culture. Among the 11 mastoidectomies, swabs from the bone at operation were sterile in 7 cases. In the remaining 4, pneumococci, haemolytic streptococci, *Staph. aureus*, and *B. coli* were found each in one case. But although the incidence of bacteriologically proved mastoiditis may be no higher in diarrhoea and vomiting than that following otitis media in older children, mastoidectomy should always be considered in those cases of diarrhoea and vomiting in which pyrexia persists and the child fails to respond to sulphonamide and intravenous plasma therapy, provided the ear has shown some signs of inflammation and no other focus of infection has been demonstrated. The

operation carries very little risk in experienced hands after careful pre-operative correction of dehydration and anaemia.

"Parenteral diarrhoea" is given a definite place in the classification of infantile diarrhoea and vomiting in all paediatric textbooks, where it is usually stated that the gastro-intestinal symptoms are secondary to systemic or localized infection, and that they tend to clear up as soon as the parenteral cause is removed. The primary infection may be of virus, bacterial, or perhaps combined origin, and may be of surprisingly trivial nature. It is, however, well known that not all babies react thus to minor infections; and therefore, while accepting the role of the parenteral infection as an inciting agent in most of our cases, we feel that a greater tendency to respond to such stimuli by severe gastro-intestinal symptoms must be postulated in individual babies. Quite often the whole clinical picture is most suggestive of an upset caused by some "trigger" mechanism setting up the disproportionately violent reaction of diarrhoea and vomiting which eventually marches on its own way to a fatal outcome, regardless of the triviality of the first provoking factor. Here, certainly, death is due, not to infection, but to profound irreversible changes in the body chemistry.

### Dehydration

The assessment of dehydration and degree of fluid loss is still based on subjective criteria and is often very difficult, especially in chubby, well-covered infants, in whom skin signs are absent or misleading. The need for a reliable laboratory or bedside test is great. Much excellent work has been done on the changes in body chemistry occurring in dehydration, in both adults and babies (Hoag and Marples, 1931; Aldridge, 1941). Most observers agree that the level of plasma chlorides and proteins in no way indicates the amount of fluid lost. The haematocrit and alkali-reserve determinations are considered more useful. In a few severely dehydrated infants in this series, all over 2 months of age, the haematocrit readings on admission ranged from 27 to 41 (average 36), obviously not confirming the clinical picture of severe fluid loss. When water balance had been restored, most of these infants were found to have a considerable degree of anaemia, which would account for the apparent absence of haemoconcentration. The accepted normal figure for the haematocrit in babies is 42, but Aldridge states that in infants of 2 to 8 months the normal reading is less than 38.

The low alkali reserve, ranging from 40 to 61.5 c.cm. (average 50.4 c.cm.), was more in keeping with the clinical condition of these infants. Unfortunately, the estimation of alkali reserve is time-consuming, and cannot easily be performed in small laboratories.

A raised blood urea was the most constant finding in our cases, the figures ranging from 50 to 112 mg. per 100 c.cm. (average 76 mg.), and corresponding fairly closely with the clinical assessment of dehydration in the individual cases.

### PLASMA PROTEINS

The normal figures for plasma proteins in babies given in the literature vary widely. Hickmans, Finch, and Tonks (1943) give readings of 6 to 7.4 g. per 100 c.cm. for normal infants over 10 weeks of age. They quote Kylin (1932) for figures ranging from 4.6 to 6.5 g. for babies under 2 years of age, and Rennie (1935) from 6.04 to 8.0 g. per 100 c.cm. for babies of 3 to 23 months. The plasma protein levels found on admission in 7 of our severely dehydrated infants ranged from 5.06 to 6.44 g. (average 5.7 g.). The ages of these infants ranged from 2 to 8 months; and the average duration of diarrhoea before admission was 5 days, and of vomiting 3.9 days. Plasma protein levels were estimated in 4 other babies, 3 of them premature infants who, 1 to 2 days after intravenous therapy had been stopped, developed oedema while still apparently insufficiently hydrated. These values were: 4.7, 5.85, 5.7, and 4.3 g. per 100 c.cm., or an average of 5.14 g. Marked improvement and disappearance of the oedema followed the intravenous transfusion of half-strength serum in 2 cases, and of blood and half-strength serum in the other 2.

It is not unreasonable to assume that there exists in these infants some degree of protein deficiency, due mainly to restricted intake in their diluted feeds, and impeded digestion

and absorption of feeds, there may also be loss of proteins through the damaged capillaries of the intestinal wall. Recent work has shown that premature infants usually have a lower plasma protein level than full-term babies. Hickmans, Finch, and Tonks (1943) found readings of 3.7 to 5.4 g per 100 ccm in premature babies in the first four weeks of life. The deficiency may therefore be expected to be still more marked in premature infants with diarrhoea and vomiting, who probably also have a smaller store of proteins in their bodies.

Formerly, we had found the correction of fluid loss by crystalloid solutions very difficult in some cases, prematures, especially often became oedematous before being fully hydrated. The early administration of diluted serum or plasma has been of real assistance in overcoming this difficulty, and also in restoring and maintaining the circulation in badly shocked cases. We noted one other effect of the injected plasma—namely, an early reduction in the size and frequency of large watery stools.

#### DANGERS OF SERUM THERAPY

We wish to draw attention to the dangers of too enthusiastic serum therapy. During the course of intravenous therapy it was our custom to follow each vacoliter bottle of half strength serum or plasma by a bottle of half-strength Hartmann's (Ringer-lactate) solution—5% glucose. In 4 consecutive cases half-strength serum was infused continuously. Although the quantity of fluid given did not exceed the requirements for body weight (2½ oz per lb per day plus an allowance of 3 to 6% of body weight for dehydration), in less than 24 hours the children showed signs of respiratory embarrassment, marked cyanosis, rapid thready pulse, and anuria. No oedema was found. Two of these babies died of cardiac failure and 2 recovered after the administration of diuretics and continuous oxygen the intravenous drip being discontinued. It seemed that in these small infants the continuous infusion of proteins caused the tissue fluids to be drawn into the blood stream in order to lower the raised osmotic pressure of the circulating blood, and there to be retained, thus causing circulatory embarrassment.

Hevl and Janeway (1942) state that 1 g of albumin, which is osmotically equivalent to 1.25 g of plasma protein, attracts, on an average, 18 ccm of fluid into the circulation in one hour. Thus the danger of giving large quantities of undiluted plasma intravenously to dehydrated infants is obvious. Normally, the total quantity of protein which we gave intravenously in the first 48 hours of treatment to a baby weighing 10 lb was approximately 15 g; the serum or plasma being diluted with Hartmann's solution. We are unable to say how much of this injected protein was actually metabolized by the body, but it is our impression that the plasma helped to restore the water balance more quickly and with greater safety and to maintain it until the infant was able to take full feeds.

#### LIVER CHANGES

We would like to make a plea for further research into the origin of the fatty liver so often found at necropsy on cases of protracted diarrhoea and vomiting. Macro and microscopic evidence of liver damage was found in 6 of our babies on whom post mortems were performed, in extreme degree in 2 of them. Lately, a good deal of work has been done on diets producing and preventing liver damage (Raydin *et al.* 1943; Himsforth and Giln 1944). Although various other factors probably cause the initial toxic changes in the livers of babies suffering from diarrhoea and vomiting (e.g. infection) it seems to us that the extreme fatty infiltration often found after death may be at least partly due to protein starvation, especially lack of some of the important amino acids. These children often live for weeks on diluted milk formulas, the digestion of which is further impeded by diarrhoea and persistent vomiting. We have often witnessed in these babies what in an adult case would have been called a death from liver insufficiency. This according to personal communication has also been the impression of other workers. Some of these infants did not appear at all cachectic even at necropsy, and yet the condition of their livers was clearly incompatible with life.

This applies equally to the plump, apparently slowly recovering babies, who when stricken down with a new infection very often have an alarmingly severe relapse, frequently fatal. The severity of the second attack is usually ascribed to a reinfection with a more virulent form of gastro enteritis. We feel that due attention should be paid to the possibility that these children, although outwardly in good condition, may not yet have repaired the liver damage caused by the first attack and possibly accentuated by weeks of careful but very deficient feeding. The inability of patients with damaged livers to stand up to even minor infections is well known, and this should be borne in mind before postulating increased virulence of the second attack.

#### Relapse

As has been said above there were 27 relapses in this series (19.3% of all cases) and 6 of these patients died. The relapses were commonly more severe than the primary attack. In 19 cases (70.4%) the relapse was preceded by pyrexia and clinical signs of parenteral infection.

Approximately half the infants (73) were nursed in cell wards, among these there were 6 relapses, or 8.2%, and 1 died. The remaining 67 infants were nursed in a 20-bedded "barrier" ward, with the same routine of management and treatment, here there were 21 relapses (31%), with 5 deaths. The highest relapse rate occurred during a period when the number of bottle babies in the barrier ward reached 16. Nursing in barrier wards, therefore however strictly the rules of bed isolation are observed, does not appear to be as effective as cell or single-bedded-ward nursing in the prevention of cross infection.

#### Haematology

In a number of cases, especially those in which a mastoiditis was suspected, total and differential white cell counts were made, but the results were inconclusive, this was possibly partly due to intensive sulphonamide therapy.

Haemoglobin estimations in some of the severely dehydrated infants were made on admission. Here again the findings were not helpful in the assessment of dehydration. Haemoglobin values (Sahli) ranged from 70 to 90% (average 80%), and did not confirm the clinical evidence of severe fluid loss and shock. In several of these cases an underlying, often severe anaemia became apparent when fluid loss had been corrected. Haemoglobin estimations in 30 infants who, though no longer dehydrated, were not making satisfactory progress showed values of 100%, in only 2 cases. In the remaining 28, investigated between 5 and 37 days after admission, haemoglobin values ranged from 42 to 88% (average 60%). These low haemoglobin levels appeared to be due to a multiplicity of causes, singly or in combination: (1) Previous microcytic anaemia especially in the premature babies. (2) Effect of intensive sulphonamide therapy although this was usually well tolerated. (3) Insufficient intake of food during the illness and convalescence. (4) Insufficient absorption of food, vitamins, and administered iron due to changes in the intestinal mucosa even after cessation of diarrhoea. (5) Parenteral infection.

We found that the routine administration of iron in the form of a ferrous sulphate mixture combined with liberal allowances of vitamins did much to accelerate convalescence and recovery. Infants showing haemoglobin values below 60% were given transfusions of 200 to 300 ccm of blood often with dramatic improvement.

#### Treatment

This as previously described (Alexander and Eiser 1943), was based on the following principles:

1. The search for and elimination of, foci of parenteral infection. Sulphonamides chiefly sulphathiazole, were given in large doses (3 to 4½ g daily for 7 to 10 days), and operative measures undertaken as required.

2. The adequate administration of fluids and food to meet the infant's daily requirements and to prevent the onset of dehydration, and as early a return to full strength feeds as the infant would tolerate. On admission they were given half strength Hartmann's solution by mouth for 12 to 24 hours. If vomiting had ceased, dilute milk feeds 1:8 or 1:6 were then begun, and the strength of the feeds was gradually increased until the infant was taking a full strength milk feed usually in 4 to 7 days. If vomiting persisted all feeds were stopped and fluids were given parenterally. It



days. This period was decreased if doses of 25 to 50 mg. were given (Birnberg, Kurzrok, and Klor, 1940). Siegler and Silverstein (1940) inhibited lactation by giving total doses of 25 to 125 mg. of testosterone dipropionate in divided doses every 12 hours, with a total of three to five injections. Lass (1942) states that methyl testosterone in repeated doses of 25 mg. inhibits lactation in 48 hours; total dosage was from 250 to 350 mg. In 7 out of 25 cases methyl testosterone was effective on the first day.

A new synthetic oestrogen—octofollin or 2:4-di-(*p*-hydroxyphenyl)-3-ethyl hexane—has recently been used for the inhibition of lactation (Murphy, 1943). This, given over a period of four days in doses of 5 m.g. t.i.d., yields results similar to those obtained with stilboestrol.

From this discussion it is clear that hexoestrol dipropionate given parenterally is more effective for the inhibition of lactation than the other synthetic oestrogens and testosterone or its derivatives. With the possible exception of methyl testosterone none of these is effective in inhibiting lactation on the first day of treatment. The use of synthetic androgens in high dosage is ruled out on the grounds of expense.

### Summary

A single intramuscular injection of 12.5 mg. of hexoestrol dipropionate inhibited lactation in 66% of a series of 44 mothers shortly after childbirth. When given within the first three days of delivery lactation did not occur, and there were no signs of breast engorgement or discomfort. Of the remaining 34% all but 2% ultimately responded to repeated injections. Only 18% required treatment for more than three days.

A further course of injections, given to suppress "secondary filling," was necessary in only 7% of the cases. This compares well with the figure of 25 to 45% for stilboestrol.

Hexoestrol dipropionate, given intramuscularly in one or two doses, was effective in suppressing lactation in five cases in which it had already been established.

Hexoestrol dipropionate given by mouth is not so satisfactory as when given by injection.

Literature on the inhibition of lactation by oestrogens and androgens is reviewed.

Thanks are due to the members of the resident medical staff of the Mothers' Hospital, Clapton, for their assistance and care in keeping records of the cases.

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The 208th session of the Royal Medical Society of Edinburgh will open on Friday, Oct. 13, with an inaugural address by Lord Moran, P.R.C.P., on "The Anatomy of Courage." Other addresses will be given on Oct. 27, by Sir Joseph Barcroft, on "Problems in Foetal Life"; on Nov. 10, by Sir Alexander Fleming, on "Penicillin"; on Nov. 24, by Prof. J. H. Gaddum, on "The Discovery of New Remedies"; on Jan. 12, by Sir John Boyd Orr, on "The Future of Medicine"; on Jan. 26, by Lieut.-Gen. Sir Alexander Hood, on "The Army Medical Services in Peace and War"; on Feb. 2, by the Right Hon. Walter Elliot, on "Medicine and the State"; and on Feb. 16, by Col. J. C. Kimbrough, U.S. Army Medical Corps, on "Wounds of the Genito-urinary Tract in Modern Warfare."

## FACTORS INFLUENCING DERMATITIS IN COAL-MINERS

BY

R. B. KNOWLES, M.D.

Many of the dermatoses to which miners are subject may occur in any person, whatever his trade, but some are directly or indirectly associated with the conditions under which these men work. The latter forms may be divided into two main groups: (I) those due, in the main, to trauma and infection, which might be called "the stigmata of miners"; (II) cases of dermatitis in the usually accepted sense, including occupational dermatitis.

### Group I

The blue-black scar present on the skins of most miners is due to the fine particles of coal-dust which enter a wound at the time of injury. Callosities on the hands are common, and are to be seen across the heads of the metacarpals and on the inner side of the thumb, where the tools set up constant friction. The boots cause thickenings of the skin on the front and back of the ankle.

Bursae, true and false, play a part in the infections and injuries to which coal-miners are liable. False bursae may occur along the heads of the metacarpals, producing, when infected, the "beat-hand" of the miner. Bursae at the patella and olecranon may become the "beat-knee" and the "beat-elbow." Foreign bodies between the knee-pads and the skin sometimes help in the production of "beat-knee."

These infections are not likely to occur without some abrasion of the skin, which allows the entry of bacteria and provides a medium suitable for their growth. Various kinds of pyoderma may thus be produced either by staphylococci (boils, pustules, folliculitis, subcutaneous abscesses, and ulcers) or by streptococci (vesicles, bullae, impetigo, ecthyma, with lymphangitis and cellulitis, onychia, and whitlow). "Infected abrasions" are a very common condition among miners. Acid burns at the buttock, caused by the leakage of sulphuric acid from the lamp-battery, are also seen.

### Group II

Clinically, acute cases are often eczematous, and chronic cases as a result of constant irritation and scratching, may become lichenified. Starting with erythema, the dermatitis may become vesicular, weeping, scaly, papular, pustular, and follicular. Occasionally there is fissuring of the palm. The chief symptoms are itching, soreness, and pain.

Most of these cases of dermatitis involve chiefly the hand and forearms, the feet and legs; but some begin on the trunk and others attack the trunk after starting elsewhere. Sometimes an intertrigo occurs in the axillae or groins, or between the toes. Encouraged by moisture, heat, and friction, streptococci produce this intertrigo of the skin; or it may be due to monilial infection and occur in the gluteal folds. In coal miners, intertrigo may also be found on the outside of the forearm and the inner part of the thigh, as the result of constant friction of the arm against the thigh when using pick and shovel.

An eczematous eruption in the external auditory meatus may be caused by particles of stone and coal falling into the ear which is uppermost when a collier is in the reclining position.

There are few miners who do not wear a belt, and friction between this and the skin may determine the onset of a dermatitis around the lower abdomen. Fungous infection of the feet has recently become prevalent, and its spread appears to be facilitated by pit-head baths. It is more common in the summer months, and occurs in three principal types: (a) Sudden wheal skin between and underneath the toes, especially in the four interdigital cleft. The infection may spread and produce pustules on the soles of the feet. (b) Superficial scaling of part of the hands or feet. (c) An eruption of deeply set vesicles on the soles of the feet: this is the most common type. The infection may also spread to the groins, to produce *unea cruris*; the axillae, perineum, natal cleft, and thighs may be involved.

Improper treatment of wounds or skin lesions—e.g., by sulphur ointment, iodine, or antiseptics—may produce dermatitis.

Cleansing agents which are used to remove dirt and dust may be irritant to the skins of some miners, and a dermatitis may ensue, excessive use of soap may be the cause. Oil employed on coal cutting and boring machines may set up a dermatitis or paraffin used to remove oil may act similarly. Prolonged or repeated contact with oil may produce oil acne. Creosote dermatitis has been found among coal miners from handling creosoted props, the hands, wrists face, and neck are affected with a pustular eczema.

During the last few months I have visited nine pits in order to obtain information about the factors involved in the causation of dermatitis in coal miners. The conclusions reached are the result of personal observations and discussions with colliery officials and workmen, of experience in general practice in a mining community and of attending the skin department of the Chesterfield and North Derbyshire Royal Hospital.

These pits employ 7,700 men and the number of cases of dermatitis certified over a period of two years was 56, a percentage of 0.70—the incidence in the separate pits varying from 0 to 1.8%. The accompanying table gives various details of

Table showing Details of 9 Pits including Incidence of Dermatitis

Pit	Depth (yards)	Month	Dry bulb Temp (°F)	Wet bulb Temp (°F)	Relative Humidity	% Dermatitis in 2 Years	Height of Coal Face	No. of Men Employed	Distance Coal Face from Shaft (in feet)	Pit head Baths	Incidence of Itch Reported
CHORWOOD	145	Dec	60	58	92	0.6	5.0	300	1	Yes	Yes
	265		70	69	92	0.8	4.3	700	1	Yes	Yes
	310		63	60	95	0.3	4.3	1,600	1	Yes	Yes
CHORWOOD	170	Jan	58	47	91	0.17	3.3	600	1	Yes	Yes
	720		51	71	96	1.8	4.3	100	1	Yes	Yes
CHORWOOD	700	May	71	65	92	0	4.6	650	1	Yes	Yes
	640		62	57	72	0.83	4.6	1,200	1	Yes	Yes
	800		74	70	79	0.11	4.6	850	1	Yes	Yes

the pits visited. The hygrometer readings are those in the return airway after the air has circulated along the coal face.

The pits vary in depth and in working conditions. D and E are very wet, the others are on the whole dry pits, water being found only in certain districts in C and H. F is a hot deep pit, and the coal face is two miles from the shaft. All except three have pit head baths, and the incidence of dermatitis in these three is not high. An outstanding point is that in F the incidence of dermatitis is more than twice as high as that in any of the other pits—it is significant that it is the hottest pit.

#### Aetiology

The chief factors influencing the nature and cause of dermatitis in coal miners are:

1 *Factors due to Pit Conditions*—(a) The vent lat on of the pit temperature, humidity, height of coal face, distance of coal face from shaft. (b) The presence of water and the substances dissolved in it. (c) The quantity, quality, and state of subdivision of dusts and the effect of machinery on these.

2 *Factors due to the Mental and Physical Constitution of the Workmen*—(a) Behaviour in relation to trauma and infection. (b) The presence of skin conditions—seborrhoea, hyperidrosis, ichthyosis—which may predispose to dermatitis.

3 *Friction between skin surfaces or between clothes and the skin.*

4 *The use and abuse of cleansing agents and popular skin applications in general.*

#### Pit Conditions

*Ventilation*—Of paramount importance is the ventilation of the pit on this depend the temperature and the amount of sweating. Dermatitis appears to be more common in deep hot pits where sweating is profuse and the air current does not evaporate the sweat from the body.

*Humidity*—The factor next in importance is the humidity of the atmosphere. The amount of sweating depends to some extent on this, for at a given temperature, the higher the relative humidity of the atmosphere the less will be the evaporation of sweat. A man's capacity for work is greatly impaired when

the wet bulb temperature exceeds 82° F, and even at a wet-bulb temperature of 72° F inconvenience is felt unless only light clothing is worn. It may be possible to do a fair amount of work at wet bulb temperatures above 82° F if air at a good velocity is kept blowing over the exposed surface of the miner but the limit is 85° F. It seems that the dry-bulb temperature is of secondary importance, as a case is recorded in which the man—working devoid of clothing—experienced little inconvenience in a temperature of 95° F dry bulb and 74° F wet bulb (Penman and Penman, 1927).

*Height and Distance of Coal Face*—Two other factors are the height of the coal face and the roof in general, and the distance of the coal face from the shaft. A shallow coal face makes the working conditions more difficult, walking in a pit the roof of which is low produces more sweating and increases the amount of friction on the body surface. The temperature at the coal face depends to some extent on the distance of the latter from the shaft.

*Presence of Water*—Pit water, and mineral salts and organic matter dissolved in it, play a part in the production of some cases of dermatitis. Pits D and E are very wet, but have a low incidence of dermatitis and a high one of fibrositis and myositis in these pits the men are exposed to water under foot and from the roof. But the pits are shallow, and the water is mainly from the surface and has not percolated through much depth of soil and rock. On the other hand, water in a deep pit has a higher concentration of salts and seems to be more irritant. In pit H men had more irritation and smarting of the skin when working in a wet part.

*Dusts*—Dust is produced in large quantities in coal mines—probably more so since the introduction of machinery. Limestone dust is also strewn in the roadways. In the mines, dust collects on the face, trunk, hands, knees, ankles, and between the toes. Friction between skin surfaces or between clothes and the skin rubs dust in—it is not usual for dermatitis in miners to begin on the trunk above the line of the belt. More often it begins on the hands and forearms, or legs and feet and particularly at the boot top level, or, if on the trunk, in the region where the trousers or shorts are held in contact with the skin. In these places there is friction. During the exit from the pit all these factors—sweating dust, and friction—are in operation. The quantity of dust can be reduced by having a fine spray of water operating where dust is produced in large quantities (coal-cutting machines, borers, and at the loader end).

#### The Constitutional Factor

Since the majority of coal-miners are not prone to occupational dermatitis, some other causal factor must be inherent in the sufferers themselves. Intelligence, behaviour, general health, and the texture and natural qualities of the skin may determine whether a dermatitis occurs, and, if it does, may modify the type of dermatitis produced. Men with thick, dark oily skins are, as a rule, less susceptible than those with fair, thin dry skins. Those with relatively hairless skins are less liable to folliculitis from oils and grease than those with hairy arms and legs. Ichthyosis predisposes to dermatitis. A seborrhoeic skin is greatly affected by sweating and seborrhoeic dermatitis is not uncommon among miners. Hyperidrosis may be a potent factor in the causation of dermatitis.

In other cases dermatitis is caused by cleansing agents or applications of ointments or antiseptics to some existing skin lesion.

#### Conclusion

Dermatitis in coal miners then is not due to any single cause—it is the summative effect of many factors some of which are provided by the conditions of work and others by the constitutional make up of the men. The prophylaxis of dermatitis in coal miners depends on avoiding the causes so far as is possible. The chief points in prophylaxis are:

- 1 Adequate ventilation of the pit is essential.
- 2 The quantity of dust must be reduced to a minimum.
- 3 Water, if possible, ought to be pumped away.
- 4 Education of the miner by

(a) Notices posted at the pit telling him to report any suspected dermatitis at its onset, (b) instruction of ambulance attendants on how to treat such cases—e.g., application of protective lotion,

(c) warnings of the possible effects of unsuitable cleansing agents and home remedies (good soaps, vegetable oils, and liquid paraffin allowed); (d) emphasis on the advantages of cleanliness.

5. Selection of suitable personnel for work in the pit.

6. Application of protective substances to the skin.

7. Warnings of the increased risks of working when ill or insufficiently recovered from illness.

8. Prevention of fungus infection of the feet—a difficult matter:

(a) New workers should be examined before they are admitted to the baths. (b) To prevent contact between the feet and the bath floors, slippers should be worn and sterilization of these be periodically carried out. (c) Infected men should have separate baths.

My thanks are due to the University of Sheffield for permission to publish this article, which is an abstract of a thesis; to the management of the collieries I visited; and to Dr. Rupert Hallam, dermatologist to the Chesterfield and North Derbyshire Royal Hospital, for his helpful suggestions.

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## INTRAVENOUS ANAESTHESIA

### CONTINUOUS POSITIVE-PRESSURE DRIP SALINE WITH INTERMITTENT PENTOTHAL

BY

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Major, R.A.M.C.

Many articles have recently appeared on pentothal anaesthesia with drip-feed continuous saline, and each of the various methods has its advantages and disadvantages.

#### Criticisms of Previously Described Methods

Drs. Roberts and Sellick (1944) have answered Mr. O'Connor (1944) satisfactorily, by stressing the fact that the metal stand used in the gravity technique is both cumbersome and often in the way of the surgeon or assistant. A further disadvantage of this method is seen when the operating table has to be moved during the operation—as, for example, during a meniscectomy, when the surgeon, having been operating with the leg bent over the end of the table and the light shining over his shoulder into the joint, starts to sew up with the leg straight and the light directly overhead. This entails moving the whole table some distance, so that the drip has to be moved also. Care has to be taken not to dislodge the needle or connexions as the tubing sways, the container has to be steadied in case it becomes unhooked or is broken, and at the same time the anaesthetic machine, if in use, has to be moved also.

Dr. Griffin (1944) overcomes this difficulty to a certain extent by affixing the drip-container to a bar on the Boyle's table model. This type of machine is, however, by no means universal, and I for one would hesitate to make such an alteration to a McKesson machine or to my own portable apparatus.

Mr. O'Connor had criticized the apparatus described by Drs. Roberts and Sellick (1943) by suggesting that leakage of blood may occur back from the vein during intervals of injection or if the pressure in the saline bottle should drop. Drs. Roberts and Sellick counter this criticism by saying that a clip can be fixed distal to the bellows to prevent leakage of blood back. They point out that the ideal method is to use a flow of oxygen to produce the necessary pressure. Besides being wasteful, I cannot quite see why a minor explosion does not occur in the saline bottle when the tubing is pinched to admit the pentothal, unless the oxygen supply is turned off during this procedure, thus adding an extra manipulation. This could, of course, be avoided by fitting an automatic mercury manometer or blow-off valve; but this only adds further complications and, to my mind, disadvantages. It is my intention to describe a simple method that will obviate these difficulties, still employing the bellows method of producing pressure for the drip.

Having used the gravity method for a considerable time, I decided to try the positive-pressure method, when I was

confronted with the difficulty of having no stand on which to hang my saline reservoir, and by the fact that I had been anaesthetizing for a fairly large series of meniscectomies (sometimes 6 in a morning) and becoming more and more tired of lugging a heavy metal stand to different positions. Also people in the theatre frequently tripped over the metal base. I had a mental picture of the surgeon one day stepping back and losing both his balance and his dignity.

There are a number of disadvantages in using the technique described by Drs. Roberts and Sellick.

1. Constant pricking of the tubing raises the question of sterilizing the puncture site at every injection, with consequent delay at a time when the patient requires a further dose immediately.

2. The need to pinch the tubing to avoid backwash, thereby possibly obscuring the drip chamber, means that the anaesthetist's hand is taken from the patient's jaw and his attention from the general condition.

3. Towels that may be in the vicinity of the operation have to be touched, and are perhaps disarranged, which may interfere with the surgeon or assistant.

4. The question where to place the syringe during intervals between injecting and the question of the sterility of the needle.

5. The eventual destruction of the rubber tubing (it is better to have thin-walled tubing, as it is lighter on the needle), with consequent leakage, which seems to occur most often at the start of a new case, thus not setting out with a 100% efficient system.

The aspiration indicator described by Drs. Roberts and Sellick is a most useful adjunct after induction of the patient in his bed or on a stretcher; with it we can be quite sure the needle is in the vein when making the puncture on the operating table. I have, however, made it a rule to avoid all extra glass tubes, indicators, adapters, and wire bindings which perish the tubing, so as to minimize leakages from the system.

Regarding Dr. J. L. Griffin's method, the main disadvantages seem to be:

1. The apparatus is cumbersome to sterilize.

2. The risk of breakage opens up the question of expense and possible difficulty in replacing the containers immediately.

3. The length of tubing necessary.

4. The U-tube method, with two containers and one drip chamber, makes it difficult to estimate the exact dose that is required immediately. There must be some delay while the saline in the tube distal to the drip is run through, and the surgeon does not wait before exciting any strong stimulus, which may not have been adequately anticipated. Again, the patient, having been placed at a required depth, will proceed to become a certain degree deeper when the saline is readmitted, from the pentothal still remaining in the tubing. This allows an error to occur in the estimation of dosage. I note, however, that Dr. Griffin uses 2½% solution and analeptics, and tubing of very narrow bore; but the margin of error still remains, and can be entirely overcome by the method described below.

#### An Effective and Simple Method

To overcome the above disadvantages I now use a three-way tap, which is situated close to a needle of medium length to facilitate removal of the syringe. One hand turns the tap, which is easily found even if covered with towels, and the same hand injects the pentothal, which is therefore admitted almost at the site of venepuncture, thus entirely overcoming all question of dead space. At the same time the flow of saline automatically ceases, and there can be no backwash or leakage up any tubes. The third arm of the tap runs to a reserve supply of pentothal in a gallipot slung in a ring on a metal stand. This stand is clamped to the arm-rest or a table, if the leg is being used, and consists of an upright metal bar about 6 in. high, on top of which is a platform holding the metal clip from the box in which all Record syringes are supplied. The 20-c.cm. syringe rests in this, and is quite secure and out of the surgeon's way. The syringe here comes easily to the hand of the anaesthetist, who remains seated at the head. About 6 in. of narrow-bore thin-walled tubing runs from an adapter on the syringe to one arm of the three-way tap. Another arm carries the tubing from the drip bulb and bottle; a metal sinker holds the tubing in the reserve pentothal supply.

There is one slight theoretical disadvantage when using the positive-pressure technique—namely, on turning the tap to inject pentothal the drip saline continues unless the clip proximal

to the drip is turned off. This, however, requires an extra movement of the hand, with consequent delay. In practice I have never seen the drip chamber fill up during this procedure—in fact, I keep the meniscus of saline right at the bottom of the drip chamber all the time, and see no use for the employment of a side-tube and clip. Here I must admit that the turning of the three-way tap does in one motion cut off the drip in the gravity method. I insert an air filter similar to those found on the Bristol blood sets, fitted between the bellows and the saline bottle. This may hold up certain bacteria which might otherwise reach the saline.

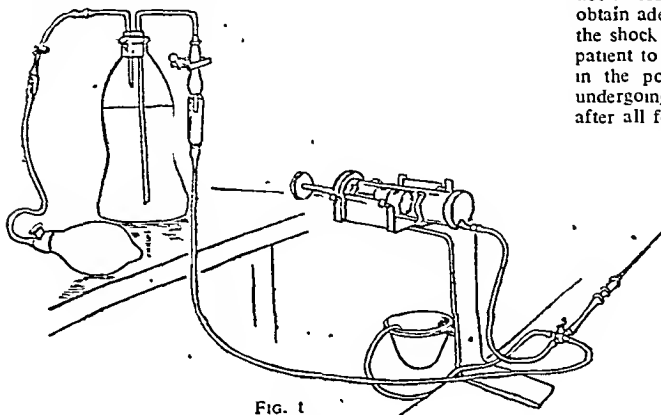


FIG. 1

The great advantage of this method is that it is only necessary to sterilize the metal rods which pierce the rubber bung (which is encased in sterilized "cellophane"), the drip chamber, and tubing. I have these autoclaved after every operation session in which they have been used. All I need to change between cases is the needle. Bottles containing sterile normal saline are stored ready.

With this technique an accurate dose can be administered immediately with the least amount of effort or movement by the anaesthetist, and if the operating table has to be moved, all that he need move is the table on which the bottle stands, which may also be the anaesthetic machine in the case of Boyle's table model. It is important to ensure that the rubber bung, the rods piercing it, and all joints are airtight.

**Strength of Solutions Used.**—I see no advantage in inducing with one strength—say, 5%—and continuing with 2½%, which, as Drs. Robert and Sellick point out, only confuses the estimation of dosage. I use 5% all the time for fit cases, and 2½% all the time for weaker or shocked patients, or for longer cases with a minimum of trauma—as, for example, in the application of a plaster-of-Paris spica.

**Use of Analeptics.**—I consider the use of analeptics during the operation, besides predisposing towards post-operative vomiting, an admission of lack of faith in the technique: the maintenance of blood pressure, amplitude of respiration, and oxygenation must be ensured by an adequate airway and the use of oxygen and/or supplementary nitrous oxide (see below).

**Technique.**—In practice, pressure is raised, the bellows clip tightened, and saline run through to the three-way tap; the flow is then stopped, pentothal is run through from the syringe to the three-way tap, and the syringe is refilled from the reservoir. In the Army it has been my practice to induce all patients on the operating table with their arm outstretched and bandaged down in position on a pillow on the arm-rest. Ill patients or those with severe painful fractures are induced in their beds, the syringe being removed and a fresh puncture made when they are in position. Here the aspiration indicator would be useful, but without proper adapters I found that glass tubing with two rubber joints very quickly became leaky. As soon as induction is complete and the patient is at a depth suitable for the proposed operation the syringe is removed, the three-way adapter connected to the needle, and the saline drip begun. Pentothal is added at fairly frequent intervals at the start, in 1 to 2 c.cm. doses and, later on, at much longer intervals.

### Uses and Limitations of Intermittent Pentothal and Importance of Supplementary Anaesthesia

Concerning the use of oxygen and supplementary anaesthesia, oxygen alone, except as a resuscitative measure, is not satisfactory, as very much larger doses of pentothal are required, and I aim at keeping the total dosage of that drug below 2 g. If the operation is likely to be long I always use  $N_2O + O_2$  to supplement and cut down the dosage of pentothal. I do not start supplementary anaesthesia until the operation is well under way—say, 15 minutes—and the patient is well settled; then I add  $N_2O + O_2$ , preferably with partial rebreathing and not closed-circuit technique, and add just enough pentothal to obtain adequate relaxation and quiet breathing, and to cut out the shock stimuli from the surgical trauma. This enables the patient to move his "bases" adequately, and is of great benefit in the post-operative condition, especially of Army patients undergoing herniorrhaphy, in which "chests" are so common after all forms of anaesthesia.

I consider operations of longer duration than 1½ hours generally to be unsuitable for pentothal, as are also those in which there is considerable surgical trauma and strong stimuli are evoked which would necessitate larger doses of the drug, causing it to produce its cumulative effects and give it the status of the long-acting barbiturates with their marked post-operative depression. I noticed this particularly in three cases recently—viz., nephrectomy (heavy stimuli and degree of relaxation required for exposure and delivery); colporrhaphy (duration of operation and surgical stimuli); colostomy (weakened condition of patient).

In my experience this form of anaesthesia is also unsuitable for abdominal explorations and for appendicectomies in robust individuals. Here a spinal block, regional block, or cyclopropane is the best method of achieving the relaxation required. It is highly suitable for all orthopaedic cases of less than 1½ hours' duration—kno grafts, nerve explorations, and tendon suture operations, herniorrhaphies, Trendelenburg's operation for varicose veins, traumatic surgery, lacerations of scalp, and possibly for women and young adult "abdominals."

I have used intermittent pentothal with a saline or glucose drip for very long operations such as cholecystectomy, gastrectomy, oesostomotic operations, and Gallie's herniorrhaphies performed under spinal analgesia. This may stimulate reprisals, but I would stress the fact that in these cases it is used in absolutely minimal doses simply to keep the patient asleep where control by  $N_2O + O_2$  may be difficult, or where premedication is wearing off and cyclopropane is contraindicated owing to its depressant respiratory action. For craniotomies also it may be useful when avertin is wearing off and lipid-soluble supplements to  $N_2O + O_2$  are inadvisable.

Figs. 1 and 2 are diagrams of this apparatus, which has proved efficient and simple, and for which I claim no originality, since it has been culled from the numerous and varied ideas of other authors writing on the subject.

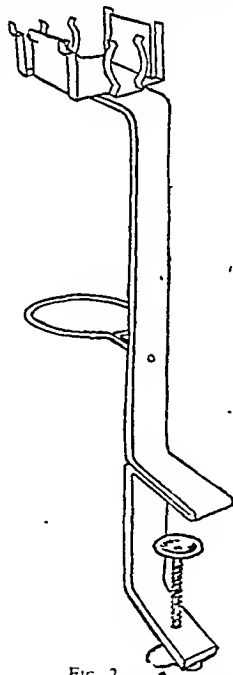


FIG. 2

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## SYMPATHETIC BLOCK

## PROPOSED THERAPY IN TRAUMATIC SHOCK

BY

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The purpose of this paper is to draw practical conclusions from recent experiments (Engel and Forrai, 1943; Engel, 1943) and to propose regional sympathetic block as a preventive and curative method in cases of extensive crush injuries. Though my proposal is based on animal experiments there is enough clinical evidence to support my views.

The result of the experimental work can briefly be summarized as follows: In "traumatic shock" the rate of filtration through the capillaries in tissue adjacent to trauma, and probably also in the traumatized tissue itself, is greatly increased in the first 1 to 5 hours following trauma, and reduced afterwards. The increased rate of filtration, suggesting increased capillary permeability, is thus restricted to the traumatized area and is not generalized over the whole body. It was further shown that by regional sympathectomy it is possible to reduce considerably the increased rate of filtration caused by trauma.

These results were obtained by a new method consisting of a constant intravenous infusion of a dye and a simultaneous perfusion of the two knee-joints with Ringer solution under various conditions. The dye appearing in the perfusate passes through the "articular barrier"—i.e., the capillary endothelium, the synovial membrane, and the thin layer of tissue or space between the two.

The practical significance of these experiments is that if it is true that capillary permeability is one of the most important initiating factors in the development of "shock," then every procedure that is capable of reducing capillary permeability is bound to have a beneficial effect.

## Technique

The simplest and most practical way of paralysing sympathetic action and thus reducing capillary permeability in the traumatized area without damaging the patient is the paravertebral infiltration of the regional ganglia with novocain. This should be carried out as soon as possible—in any case, within the first 1 to 3 hours after trauma. We have seen that the period of increased capillary permeability lasts only 1 to 5 hours, to be followed by a period of decreased permeability. No effect can therefore be expected after 5 hours. These results were obtained in the cat; it is therefore possible that the time limits mentioned do not apply exactly to human beings.

An anæsthetic of short effect, preferably novocain, should be used, because the second period of decreased permeability does not develop in the sympathectomized limb, and it is very likely that a prolonged sympathetic block may have a similar effect to that of sympathectomy and fail its purpose. If the lower extremity is crushed the first to fourth lumbar and the first sacral ganglia, if the upper extremity is involved then the stellate and the first and second thoracic ganglia, have to be injected. About the technique of the sympathetic block nothing more need be said; it is standard method.

## Observations in the Literature

I have no personal experience of sympathetic block as a prophylactic or curative method against shock. There are, however, numerous clinical observations which support the usefulness of this method.

Several authors (Philipowicz, 1942, and others) reported on the excellent results obtained by sympathectomy in cases of frostbite. The inflammatory exudate and odour diminish immediately after operation, the moist gangrene becomes dry, and the demarcation is accelerated.

It is also a well-known fact that abdominal operations performed under lumbar or splanchnic anaesthesia cause much less shock than those under general anaesthesia, in spite of the falling blood pressure, which would be expected to favour the development of shock. The fact that shock does not develop so readily under lumbar and splanchnic anaesthesia is possibly due to the reduced capillary permeability in the abdominal tissues, temporarily excluded from sympathetic innervation.

The idea that the sympathetic has an influence on the development of traumatic shock is not new. The literature on the subject has been reviewed up to 1941 by Harkins (1941). We shall therefore consider here only the most important papers which have some bearing on capillary permeability. It was Cannon (1923) who first suggested that the hyperactivity of the sympathico-adrenal system, excited by sensory-nerve impulses, is an important factor in traumatic shock. This theory was based partly on clinical observation, partly on experiments showing that continuous sympathetic stimulation or hyperadrenalinaemia led to a decreased blood volume and low blood pressure. It was assumed that a prolonged arteriolar constriction resulted in a capillary anoxaemia with consequently increased permeability, fluid loss, and final shock.

The effect of adrenalin in various concentrations on blood pressure, blood volume, haemoglobin concentration, etc., was examined by several authors. Freeman and co-workers (1936, 1941) produced a prolonged hyperactivity of the sympathetic nervous system by injecting adrenalin in physiological doses or by spontaneous emotional activity of the pseudoaffective state. Both procedures resulted in a decreased circulating blood volume. This decrease did not occur when the vasoconstrictor action of the sympathetic was inhibited by ergotoxine, or when the emotional hyperactivity of the pseudoaffective state was produced in a totally sympathectomized cat. Freedman and Kabat (1940) could not confirm all the results and conclusions of Freeman; they did not, however, rule out the possibility that sympathetic hyperactivity may play a part in shock following haemorrhage and fluid loss.

The experiments of Slome and O'Shaughnessy (1938), as well as those of Lorber *et al.*, emphasize the importance of the nervous factor in the development of traumatic shock. Either they severed the limb from its nervous connexions (nerve section, spinal section, spinal-cord destruction, spinal anaesthesia) or they severed the limb from everything except its peripheral nerves. The significance of the nervous "factor" became evident from both these series of experiments, but neither has taken the fact into consideration that the three spinal nerves of the lower limb—the femoral, sciatic, and obturator nerves—carry the bulk of its sympathetic nerve supply. It is therefore not clear from these experiments how much of the recorded effect was due to sympathetic action or inaction.

Lena Stern (1942) recently reported good results by stimulating the sympathetic centres and lowering the parasympathetic tone. She injected potassium phosphate direct into the cerebro-spinal canal in all those cases in which a fall of blood pressure, a lowering of cardiac activity and respiration, etc., were manifest. Stern saw all these signs disappear, in men and in experimental animals, by her method. Her treatment is based on the view that "the sympathetic and parasympathetic nervous centres play the most important part in the production of shock." She warns against the use of potassium phosphate "in cases in which there is increased excitability of the sympathetic nervous centres, such as sometimes occurs in the first stage of shock"; potassium phosphate should be given only in the second stage.

It is not possible fully to co-ordinate the experimental and clinical results of Stern with my own; the following suggestion seems, however, to be justified. The first period of sympathetic stimulation of Stern is very probably identical with my first period of increased permeability, and her second period of sympathetic depression identical with my second period of decreased permeability. Should this assumption be correct our two ways of therapeutic approach would prove to be complementary: the sympathetic block would be indicated during the first period, so as to prevent plasmorrhoea through the capillaries and thus the development of the second phase. Should the second phase develop in spite of the sympathetic block, or should the patient come under treatment at this late stage, a intrathecal injection of potassium phosphate may be indicated provided that further observations should confirm Stern's report.

Another explanation for the apparent discrepancy between Stern's results and mine might be the interesting fact described in earlier papers of Stern, that there is an "antagonism between the central and peripheral parts of the central nervous system as regards their reaction to the same substance." It is therefore possible that a central, intraventricular stimulation of the

sympathetic is equivalent in its physiological effect to a peripheral inhibition. Further experiments will be required to solve this question.

### Conclusion

This short review of the literature and my own experiments should suffice to indicate the significance of the sympathetic nervous system in shock. It is the purpose of this article to lay down principles which, if put into practice, may prove to be of value. It is not advocated that other methods which have proved, so far, to be indispensable (blood transfusion, etc.) should be neglected. The combination of both should be tried in suitable cases. They are certainly harmless, and may be of great advantage to the patient. Only clinical experience will enable us to accept or reject these recommendations.

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## Medical Memoranda

### Suppurative Pylephlebitis

This case is reported for its clinical rather than its pathological interest.

#### CASE HISTORY

A woman aged 60 was admitted after the gradual onset of vague lumbar pain and nausea. She had no urinary or bowel symptoms, no shoulder pain or vomiting. She was obese and had always had a diffuse brown pigmentation, especially on the arms and legs. Her temperature was 99° and pulse 70. Her abdomen was soft nowhere tender and her liver was only just palpable. Within a few hours she lost both pain and nausea, but the next morning had a rigor. From then on she had a total of 31 rigors at intervals of 1 to 12 days. The temperature with a rigor varied from 100.4° to 105°, between rigors it swung between 97° and 101°. There was no rhythm or regularity either in the frequency of the rigors or in the daily temperature variation.

Apart from the rigors she had no other symptoms or signs. In fact, at the seventh week, after her longest interval free from rigors, she seemed so well that she was sent home, but she soon had another rigor and came back. After ten weeks she had a slight pain low in the left posterior axillary line, and we heard a pleural rub. This was replaced by a patch of dullness to percussion, but paracentesis yielded nothing and we thought that the dullness gradually disappeared. There followed another long period in which she felt perfectly well and, as a result, this was the perceptive part of the picture. Then one evening in her eighteenth week she had a sudden attack of violent coughing produced some foul green brown mucus, became rapidly very ill and died.

**Investigations.**—Blood.—1st week. Hb 33%, leucocytes, 17,000—polys 83%, lymphs 13%, monos 3%, plasma chloride 608 mg per 100 ccm, culture sterile agglutination negative for typhoid, Salmonella, dysentery groups, and abortus. 2nd week. Culture—no pathogen. 4th week. Hb 85%, leucocytes, 12,000—polys 74%, lymphs 22%, monos 3%, culture sterile, agglutination negative for typhoid group and abortus, staphylococcal antileucocidin index, 0.16 K (upper limit of normal). 6th week. Leucocytes, 18,000. 9th week. Leucocytes 54,000—polys 93%, lymphs 4%, monos 3%, culture sterile, W.R. negative, Kahn negative, urea 70 mg/100 ccm. Urine.—1st week. N.A.D., drastic index 5. 2nd week. N.A.D. Faeces.—1st week. Culture—no pathogen. 9th week. Culture—no pathogen. Sputum.—3rd week. Atypical haemolytic streptococci. 18th week. Offensive brown fluid mixed with bacteria, mostly *Staph. aureus*. X-ray.—Gall bladder. No opaque calculi. Graham's test suggestive of pathological change. Chest. 2nd week—N.A.D. 6th week—N.A.D. 11th week—left basal pleural effusion, left diaphragmatic outline not seen, right diaphragm normal.

**Post mortem Examination.**—Pus in lower half of left pleural cavity, localized by light adhesions communicating at one place, through lung with bronchi. Multiple small abscesses in liver, pus in terminal section of portal vein. Microscopy showed suppurative pylephlebitis with pus in portal veins, in many systems replacing wall and tissue round veins. All other organs including appendix, healthy, except the gall bladder, which was fibrosed and contained stones. We could not see how infection reached the left pleura—probably directly through lymphatic channels, but it is curious that the right side was unaffected. No local track was detectable. It seemed unlikely to be blood borne for it was the sole distant focus.

#### COMMENT

A case of irregular pyrexia with frequent rigors and a mild leucocytosis throughout. The pigmentation reminded us of

Addison's disease, but this was quickly dismissed. Typhoid, abortion, and glandular fevers were not seriously considered because of the leucocytic activity, the first two were, in any case, eliminated by agglutination. A kidney abscess was eliminated, so far as was possible, by investigations. Eventually there remained the possibility of a chronic septicaemia. Three blood cultures were sterile, this however, did not rule out a portal pyaemia. Mr Henry Thompson was consulted, and the possibility of this and of a Charcot's biliary fever was discussed. Then when pus burst into the left bronchi, we thought we might have missed a latent pulmonary or subphrenic abscess. Yet we were not greatly surprised at necropsy to find pylephlebitis, this insidious disease, whose nature remains cryptic for so long, could at the best have only been guessed at, and was.

Unusual features of this case were the large number of rigors, the fact that, throughout, these were the sole clinical manifestation (the only localizing signs were those of the pleural complication), the uncommon primary focus and the unique termination.

I wish to thank Dr Julius Burnford for his help and for permission to publish this.

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### Broad Ligament Cyst in a Strangulated Hernia

Past records have shown that an inguinal hernia may contain a variety of different organs, both normal and pathological, but I think that this case is unusual enough to merit publication.

#### CASE RECORD

The patient, a widow aged 43, was first seen on May 5 1944. She said that she had had a hernia for twelve months, but this had always been reducible and symptomless. At 5 p.m. on that day, while chopping wood she had a sudden severe abdominal pain and repeated vomiting, and the hernia became irreducible. On admission her temperature was 101.2° and pulse 112, and she had a right irreducible inguinal hernia, but a cough impulse was present. A cystic abdominal tumour was noticed, arising from the pelvis and extending about two inches above the umbilicus. There were no signs of pregnancy, and her periods were normal. The passage of a catheter did not reduce the swelling. The patient stated that this swelling appeared to fluctuate in size from time to time.

At 10 p.m. operation was performed, and a sac of an inguinal hernia was dissected out. On opening the sac a fibrous mass the size of a pigeon's egg was delivered, attached to a cystic swelling which was not bowel or bladder. This in turn was opened, and a large quantity of clear yellow fluid escaped. Five pints of fluid were aspirated, and the abdominal swelling dramatically diminished. The cyst was closed by a purse string suture, and the fibrous mass, presumed to be necrotic ovary, was sent for section. (On microscopy, this later proved to consist of lymphoid tissue, with numerous foreign body giant cells and granulation tissue, but no evidence of ovarian tissue.) The patient's condition did not justify laparotomy at this stage so the hernia was repaired in the usual way.

On May 8 the temperature rose to 103° and thereafter was swinging there was also some inflammation of the wound. Sulphathiazole (23 g) was given. On May 14 she developed diarrhoea, which was presumed to be due to infection of the cyst.

On May 16 laparotomy was performed through a right paramedian incision. Intestines were packed off, and a large cyst was partly delivered into the wound, a purse string suture was applied, and a French's needle was inserted. Four pints of thick pus were aspirated. The hole in the cyst was then closed. The cyst was then dissected out with difficulty owing to dense adhesions, and was found to be retroperitoneal and to extend from the loin to the pelvis. The upper pole was in relation to the kidney, but not adherent to it. The lower pole was within the right broad ligament. The uterus and both Fallopian tubes and ovaries were normal. The cyst was removed and a drainage tube was inserted through a stab wound in the loin and another through the lower end of the incision draining the pouch of Douglas. During the operation one pint of blood was given intravenously, and, on account of the possibility of general peritonitis and paralytic ileus, intravenous glucose-saline was given post-operatively for 48 hours, and fluids by mouth restricted to sips. Sulphathiazole (27 g) was given prophylactically. The tube in the loin was removed after 48 hours, and that draining the pouch of Douglas on the fourth day. Slight pyrexia persisted for 18 days, but the patient made an uninterrupted recovery.

#### COMMENT

It was concluded that this was a cyst of the broad ligament, a lobule of which had become strangulated in the inguinal hernia. Section of the cyst wall showed it to be composed of acute inflammatory tissue, lymphoid and fibrous tissue; the epithelial lining had been destroyed by the acute inflammatory changes.

My thanks are due to Dr C. H. Laver for his permission to record this case, and for his helpful criticism of the account.

Redhill.

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## Reviews

### MEDICAL SERVICES IN EIRE

*The State of Medicine in Ireland.* By W. R. F. Collis, M.D., F.R.C.P., F.R.C.P.I., D.P.H. Carmichael Prize Essay. (Pp. 70. 2s. 6d.) Dublin: The Parkside Press, Ltd. 1943.

Prize essays are often of academic interest only and, soon forgotten, but this one deserves a happier fate. It calls for the serious attention of the Government and medical profession of Eire. It is a restrained but severe criticism of the lay-out of the services of that country. Dr. Collis sadly confesses that the medical reforms which were hoped for when Eire became a sovereign State have not materialized. In his preface the author emphasizes two premisses upon which the work is built. The first is that a point has been reached in the general conception of health policy which insists on a new stocktaking. He deals with the present situation in Great Britain, and says, "If medicine in England needs reorganization, medicine in Ireland needs it more." And this is amply borne out by his facts. Secondly, there is an "atmosphere of mutual distrust between the profession and the Department of Local Government and Public Health which, if allowed to develop further, will gravely compromise the health of the people of Eire." We think that this also is fully substantiated.

National Health Insurance in Eire provides no medical benefit. The insured population has to depend on the Dispensary system, which is still on "the pauper basis." The faults of this system have been exposed over and over again, and never more trenchantly than by Surg.-Gen. Evatt, who, as a special commissioner of the B.M.J., visited Ireland in 1902. "Any treatment an insured sick person obtains is on the pauper basis through the dispensary doctor or by charity in a voluntary hospital. The idea that this is degrading to the honest citizen . . . has not yet penetrated the mass mind of society here."

Dublin has more small general and special hospitals than any other city of its size, with the inevitable out-patient abuse. There are State county hospitals which, in essence, are workhouse hospitals, though separated from the workhouse itself. The staffing of many has been improved. The windfall that the voluntary hospitals got from the Hospital Sweepstakes has been a doubtful advantage from the national point of view, because it gave an excuse for delay in dealing with the national problem. Dr. Collis describes the struggle among the hospitals for the millions of pounds which accumulated, and of which a large amount still remains undistributed. A Hospital Commission was appointed, but its function being only advisory, the onus of implementing its recommendations was on the Ministry, whose attitude is apparently still governed by the Poor Law conception. Recommendations in favour of setting aside a large sum for the greatly neglected subject of research were ignored. The sweepstakes came to an end with the outbreak of war without any attempt to tackle national medical reconstruction. Dr. Collis believes that the profession has lost faith in the power or the will of the Department to plan a real medical service for the country, and says it "has no interest in preventive or social medicine."

Proposals are made for the future, and he hopes that the profession will itself put up a plan for co-ordination of the medical services, though he is very doubtful whether, without a considerable stirring of public opinion, the Department will take any action. He suggests a National Board of Health, with the Minister of Health and Social Welfare as president, having representatives of every kind of practitioner, assisted by whole-time advisers. The Minister could tell the Board how far its proposals were likely to be supported by himself and implemented by the Dail. The author is particularly severe on the lack of antituberculosis measures, to which he would give priority in any scheme for an improved medical service. He points out that the death rate for tuberculosis has declined in most other countries, "whereas Eire has actually allowed the disease to gain on us."

We cordially recommend this essay to the attention of our colleagues in Eire and to the Department whose obvious duty it is to try to remedy the state of things shown in its pages.

A. C.

### MENTAL HEALTH AND THE WAR

*The War and Mental Health in England.* By James M. Mackintosh, M.D. (Pp. 91.) New York: The Commonwealth Fund; London: Oxford University Press. 1944.

This small book, comprising lectures by Prof. James Mackintosh for American audiences, is so full of material that a summary cannot do more than hint at the principal points of practical interest, especially those connected with preparing for the peace which we all hope may not be far distant.

The earlier part of the book is principally of historical interest, and is devoted to a masterly summary of the many problems of adaptation that beset different sections of the community—for example, the new soldier, the industrial worker, the housewife, the child, the aged, the hospital patient, and the student. While emphasizing how magnificently people have stood up to their ordeals, he asks whether many of the painful experiences may not have left their effects which may one day appear on the surface. Certainly we must expect that much chronic illness in the future will be attributed to the war. The separation of children from their parents for long periods for example, is expected to be a major source of problem later; not only on the return to the home, but in more subtle ways afterwards.

The need to have an organization ready to take care of the manifold problems of resettlement is one that should be recognized officially in a comprehensive way. The Tomlinson report left something to be desired in this respect. It recognizes the existence of neuroses and psychoses, but not of the mental aspect of ailments diagnosed as physical—a much more extensive problem. It contemplated also the readjustment of the patient in industry; but the problem is a human one of much wider scope than that.

It is clear that much education, not only of the public but of official bodies, is still required. It is to the Provisional National Council for Mental Health that Prof. Mackintosh looks to "make the mental health movement in England to learn to stand on its own feet" as an organization supported by the people. He feels that whole-time salaried officials are essential for bringing this about. Voluntary workers alone cannot do it—for want of time, and very often from lack of technique. To meet the greatly increased demand for trained workers that is bound to result from a social security programme Prof. Mackintosh has in view a common two-year training, with a third year for those who wish to specialize in medical social work, psychiatric social work, industrial welfare, etc.

These are samples of the activities that he sees as part of a systematic education of the community in mental health; but he does not forget that a national ideal of some sort is necessary too. He does not, however, attempt to prescribe what the nature of the national ideal shall be beyond a capacity for enjoying work and making good use of leisure.

### REGIONAL ANALGESIA

*Regional Analgesia.* By H. W. L. Molesworth, F.R.C.S. (Pp. 90; illustrated. 8s. 6d.) London: H. K. Lewis and Co. 1944.

The need for a new book on the subject of regional analgesia might appear doubtful, seeing that there are already several very capable treatises to be obtained, but Mr. Molesworth's has at least the merit of concentrating the main principles into some ninety pages, and, as stated in the preface, it represents personal experiences, which are always of value to the reader. It seems that interest in local, regional, and spinal analgesia is increasing in this country; there can be no doubt that in many circumstances there is much to be gained by the employment of one or other of these methods.

In this book there is nothing novel in the methods described, but the matter is presented in a succinct way which avoids all ambiguity. After a consideration of general principles and of certain details of technique, the various applications of regional analgesia are dealt with, as is appropriate, on a regional basis. It is to be noted that the author's preference is for the well-tried novocain and percaïne solutions in suitable strengths. The use of the older term "novocain" in place of the official "procaine" throughout the book is a wise precaution against any tendency to muddle "procaine" and "percaïne," especially as the text does not refer to the latter substance under its newer designation "nupercaine."

The final chapter gives a very brief summary of the methods of spinal analgesia in common use. There are numerous illustrations—clear line drawings for the most part—showing the distribution of the nerves and the exact points at which the injections are made. The book will be a useful and handy guide to those who propose to employ regional analgesia more extensively in their practice and who need a short introduction to the subject.

### Notes on Books

*Modern Treatment Year Book, 1944*, is the tenth in the series of collected papers written for the *Medical Press and Circular* under the editorship of Surg. Rear-Adm. CECIL P. G. WAKELEY and republished by Baillière, Tindall and Cox at 16s. As in recent years, the contents are grouped into those on miscellaneous topics and those on war medicine and surgery—twenty-one of each. There is no unifying thread, but almost every article is mainly concerned with treatment, and some of them have bibliographies.

*Casualty Work for Advanced First-Aid Students*, by A. W. MACQUARRIE, M.B., Ch.B., is published by E. and S. Livingstone at 4s. 6d. Still the making of these books has no end, but the end of the war is in sight. Still road accidents abound, and the facts within the covers of this pocket-book are needful for street and other first-aid work. The volume contains but little new, and some of its old is very antiquated. "Fractures have been," and still are, "reclassified" as simple, compound, etc., so it is not so "simple" as it appears. Here "open" and "closed" are used for wounds, but not for fractures. It is perhaps questionable to state that "any injury is a wound." Fifty-five pages on transport, out of 223 pages in all, might be thought to be a high proportion in a manual of this type. As a "refresher" book and one readily carried in the pocket, this recent production may even now be of use.

## Preparations and Appliances

### APPARATUS FOR CONTINUOUS INTRAVENOUS ANAESTHESIA

Major WALLACE M. DENNISON, F.R.C.S.Ed., R.A.M.C., writes:

Continuous drip anaesthesia is becoming increasingly popular and has already proved its value in battle surgery. Many types of apparatus have been described, but essential parts of most of them are not available in Service hospitals. After many experiments the following apparatus was assembled from parts available in all military hospitals. It is at present in use in our hospital, and in the hands of Capt. W. G. Taaffe, R.A.M.C., has proved to be foolproof.

A three-legged douche-stand on wheels forms a secure and mobile base for the apparatus (Fig. 1). To one of the four

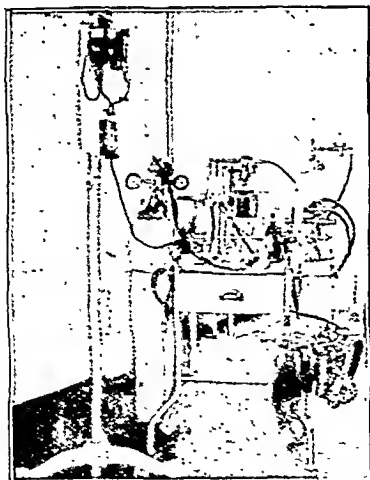


Fig. 1

uprights a wooden-panel is clamped. This panel carries the saline and pentothal containers, fine-adjustment screws, and a double-drip bulb. The saline container is the standard 500-c.cm. glucose-saline-giving bottle, held in position by a shoulder

collar and a strong spring clip (Fig. 2). The anaesthetic solution is carried in the barrel of a 20-c.cm. syringe fitted with a rubber stopper perforated to carry a glass tube with filter wool. The double drip is formed from the filter from a Horrocks infusion

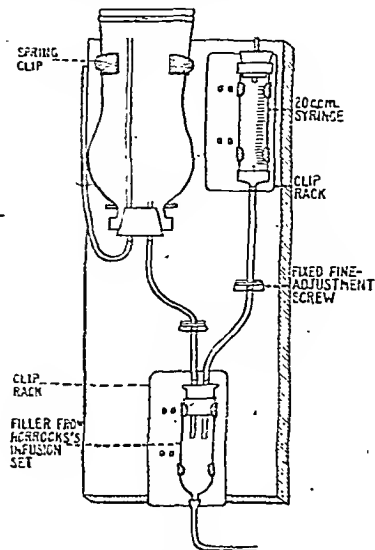


Fig. 2

set, the doubly perforated flanged bung from a transfusion set, and two short pieces of glass tubing drawn to a fine point. The anaesthetic container and the drip bulb are held in position by the clips on the clip rack from a 20-c.cm. Record syringe case. Both clip racks are permanently fixed to the base-board. Fine-bore rubber tubing is used throughout, and the needle (Wassermann size) is attached to a glass vein-seeker.

After filling the pentothal container (using either its own plunger or one from another syringe) it can be temporarily laid aside, if desired, by affixing the sealed hub of a hypodermic needle to prevent the contents running out. It is the practice here to add 1 c.cm. of nikethamide (coramine) to 20 c.cm. of pentothal solution. Before inserting the needle both fine-adjustment screws are tested and all air is expelled from the tubing. The arm is splinted in the usual fashion and a sphygmomanometer cuff is employed to render the veins prominent. The saline flows continuously at 40 to 60 drops a minute, and the anaesthetist need only give a light touch with two fingers to turn off the pentothal. The intravenous anaesthesia is combined with light gas-and-oxygen when required. Incidentally, the anaesthetic is never started until the oxygen is in the theatre and turned on.

The holes in the fine-adjustment screws were countersunk and the apparatus rapidly assembled by Pte. Chanter, R.A.M.C., operating-room assistant.

### A HISTAMINE-PROTEIN COMPLEX

Messrs. Parke, Davis and Co. have prepared a histamine-protein complex, "Lertigon," which is intended for use in the treatment of allergic conditions. The assumption underlying Lertigon is that allergic manifestations are due to the release of histamine when the reaction between some antigen and its antibody takes place within the cells of the tissues and out in the extracellular spaces or in the blood stream. Lertigon is a histamine-protein complex which, when injected, produces antibodies which not only neutralize the histamine-protein complex, but it is hoped, also neutralize the histamine, following Landsteiner's work. The protein which is used to unite with histamine is horse serum globulin, treated, presumably with alkali, to remove its antigenic properties. It is thus said to be "despeciated." It is then combined with histamine as an azoprotein combination. Clinical results are said to show that the injected complex produces in patients a precipitin so that the patient's serum neutralizes histamine *in vitro*. In the patients themselves there is said to be a reduction in the threshold for a skin test with histamine; presumably a larger dose is needed to produce the usual capillary dilatation and wheal formation.

Lertigon is recommended for the treatment of allergic forms of bronchial asthma, vasomotor rhinitis, eczema, urticaria, and contact dermatitis, in which either the allergen is not discoverable or complete avoidance of the allergen cannot be obtained. It is given by intradermal injection in doses of 0.01 to 1.02 c.cm.

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## HYPOGLYCAEMIA

It is still common to regard hypoglycaemia as a dramatic condition due either to a tumour of the islet cells of the pancreas or to some other obscure endocrine condition or to overdosage with insulin. The first cause is certainly, as Lawrence<sup>1</sup> pointed out in a recent letter to this *Journal*, of considerable rarity and the last unlikely to be missed; and it may well be that spontaneous hypoglycaemia has recently been cited too often as the explanation of obscure symptoms. Hypoglycaemia should be diagnosed only when the symptoms are associated with a blood-sugar level low for the individual in question; when they can be reproduced by a reduction of the blood sugar to this level by fasting, exercise, or the injection of insulin; and when they can be relieved by the raising of the blood sugar by means of glucose. Even when these criteria are borne in mind, opinion is gaining ground that many cardiac and neurological symptoms may be due to a blood sugar which, though not necessarily below the limits of the usual, has fallen too rapidly or to a level uncomfortably low for the individual concerned. The level of blood sugar at which symptoms may occur varies from one individual to another. Hill, Sargant, and Heppenstall<sup>2</sup> have stated that people with cerebral dysrhythmia are particularly susceptible to lowering of the blood sugar and may have symptoms at what are usually regarded as normal levels. They described<sup>3</sup> one patient in whom abnormal behaviour developed together with an unstable electro-encephalogram when the blood sugar sank to 100 mg. per 100 c.cm.: in one such incident he murdered his mother. A patient described by Romano and Coon,<sup>4</sup> whose behaviour was usually correct, suffered from episodes of uninhibited emotional behaviour due to an islet cell tumour and was cured by its removal. Parfitt,<sup>5</sup> in reviewing the neurological and psychological effects of hypoglycaemia, quotes references to manic, confusional, paranoid, catatonic, and hallucinatory states, hysteria, automatism, amnesia, stupor, depression, and narcolepsy. Happily most of us just feel tired.

Cardiac symptoms in hypoglycaemia have been described by several authors in recent years. In 1931 Waters<sup>6</sup> described a patient whose paroxysms of tachycardia were associated with a low blood sugar, and two years later Sippe and Bostock<sup>7</sup> pointed out that angina might be precipitated by hypoglycaemia. In 1935 Harris<sup>8</sup> described the concurrence of hypoglycaemia with tachycardia, palpitations, extrasystoles, a sense of suffocation, and precordial

pain. Messenger<sup>9</sup> in 1938 observed various signs of overacting heart in patients receiving insulin shock treatment for mental disorder. Recently Harrison, Finks, and Winston-Salem<sup>10</sup> in America and Raymond Greene<sup>11</sup> in this country have independently drawn attention to the similarity in symptoms between some cases of hypoglycaemia and some cases of effort syndrome. Harrison and his colleagues described 31 patients who suffered from symptoms identical with those of effort syndrome two or more hours after meals. Their trouble was reproducible by injections of insulin and relieved by sugar. They confirmed the important observation of previous workers that the usual glucose-tolerance test is almost valueless in diagnosis. Only 3 of their 31 patients had low fasting blood-sugar levels, and two of them had lag storage curves. The test had to be carried on for 2 to 4 hours to disclose the low sugar value in many patients. Even so the values were sometimes low only for the individual patient and not in comparison with the normal. Some patients have symptoms of hypoglycaemia at a level of 70 mg. per 100 c.cm., whereas others fail to have symptoms at much lower values. The body appears to accustom itself to such low levels, and patients with Simmonds's disease, Addison's disease, anorexia nervosa, and idiopathic steatorrhoea often remain comfortable at levels at which diabetics would go into hypoglycaemic coma. Of the 31 patients described by Harrison and his colleagues, 14 had previously been said to be suffering from "cardiac neurosis." Of Greene's 5 patients all had been labelled "effort syndrome." That the label may fit is suggested by the fact that 7 of Harrison's 14 and 2 of Greene's 5 continued to be neurotic individuals after their cardiac symptoms had been relieved. Greene points out that the similarity of symptoms is only to be expected. The symptoms of effort syndrome are the somatic accompaniments of fear, and are due to excessive secretion by the adrenal medulla. In hypoglycaemia the early symptoms are due to the same cause, evoked not by fear but by a natural physiological reaction designed to increase the mobilization of liver glycogen. The hypoglycaemia of these patients may itself be due to psychological conditions, but whether or not this is so it can be relieved by dietetic treatment.

This treatment for many years consisted of a high intake of carbohydrate, and it is true that symptoms of hypoglycaemia may be relieved by eating sugar. In 1943 Thorn, Quinby, and Clinton<sup>12</sup> published a comparison of the metabolic effects of isocaloric meals of varying composition. The results supported Conn's<sup>13</sup> opinion, which had long been gaining ground, that better results would be obtained by a high-protein diet. A high-carbohydrate breakfast of 400 calories (containing only small quantities of fat and protein) results in an immediate rise in the blood sugar, followed an hour or so later by a fall, which, two to three hours after breakfast, reaches a level well below the fasting value. There is then a gradual climb to fasting levels which are not reached till some five hours after breakfast. A high-fat breakfast (containing only small quantities of

<sup>1</sup> *British Medical Journal*, 1943, 2, 760.<sup>2</sup> *Ibid.*, 1944, 1, 162.<sup>3</sup> *Lancet*, 1943, 1, 526.<sup>4</sup> *Psychosomat. Med.*, 1942, 8, 283.<sup>5</sup> *Proc. roy. Soc. Med.*, 1937, 31, 137.<sup>6</sup> *Southern med. J.*, 1931, 24, 249.<sup>7</sup> *Med. J. Austral.*, 1933, 1, 207.<sup>8</sup> *Southern med. J.*, 1935, 28, 959.<sup>9</sup> *Ann. intern. Med.*, 1938, 12, 853.<sup>10</sup> *Amer. Heart J.*, 1943, 26, 147.<sup>11</sup> *Lancet*, 1944, 2, 307.<sup>12</sup> *Ann. intern. Med.*, 1943, 18, 913.<sup>13</sup> *J. Amer. med. Ass.*, 1940, 115, 1669.

carbohydrate and protein) likewise produces an immediate rise in the blood sugar, followed by a more gradual fall to a trough at five hours, just when the carbohydrate has risen again to fasting levels. On the other hand, a high-protein breakfast (containing only small quantities of carbohydrates and fat) gradually raises the blood sugar, which reaches its maximum after only two hours and thereafter remains almost level for another three. The value of a "good mixed diet" is beautifully shown. The blood sugar at first rises rapidly by reason of the carbohydrate and fat. The level is maintained by the protein. As the old wives say, "Bread-and-butter doesn't stay by you, it's the cut off the joint which does that, not the two veg." Those of us who find ourselves unduly tired as remembrance of the last meal grows dim may comfort ourselves. We haven't got tumours of the pancreas, and we shall be all right again when we can throw that roll at the waiter's head and order a *tournedos Rossini*.

### INFANTILE GASTRO-ENTERITIS

"Infective enteritis or diarrhoea" among children under 2 years of age, with a death roll of 2,000 to 3,000 every year, ranks second to pneumonia as a killing infection in infancy. The majority of deaths occur in the first year of life, and are to be attributed mostly to the diarrhoea and vomiting of dubious and possibly diverse aetiology which masquerades under a variety of names from summer diarrhoea to cholera infantum. In this country dysentery and salmonella infections are rare, and rarely fatal, in the first year of life. The incidence of non-specific enteritis, on the other hand, is difficult to gauge because it is not generally notifiable, but the extent of the problem may be guessed from data from LCC hospitals in pre-war years. Thus in 1936 1,692 children (under 2) with enteritis were treated in these hospitals and 535 died; in 1937 the corresponding figures were 1,759 cases with 438 deaths.<sup>1</sup> It has long been recognized that gastro enteritis is predominantly a disease of artificially fed infants living in urban poor-class districts, and Gairdner<sup>2</sup> has lately made an interesting analysis of its ravages in town and country communities. Thus for the years 1935-8 the diarrhoeal mortality rate was 5.6 and the infant mortality 56.4 for England and Wales, 2.4 and 49.6 for rural districts, 5.9 and 63.3 for county boroughs, and 12.1 and 60.3 for metropolitan London. This high diarrhoeal mortality in the London area did not affect infants in the first month of life as it did in the industrial North, but in the succeeding months of the first year infective enteritis was the chief cause of deaths among infants in Greater London. Comparisons with other cities showed that for the same period (1935-8) Birmingham had a diarrhoeal mortality of 6.9, Manchester 5.8, and only Newcastle, with an excessive infant mortality of 83, had a higher diarrhoeal death rate (13.8) than metropolitan London. Statistical analysis also showed that, until 1929, London shared in the general downward trend of diarrhoeal mortality, whereas in the ten years since then the rate for London has been rising, while those for the county boroughs

have continued to fall. An explanation of this disturbing feature is hard to find. Differences in ascertainment and certification may be partly responsible, but an important contributory factor may be a greater tendency in the London area to send young children into hospital (The figures relate to pre-war years, so that wartime nurseries are not involved). It is now generally agreed that children under 1 year of age should not be admitted to hospital for minor ailments unless they can be nursed in isolation, yet many infants with mild dyspepsias are notified as cases of infective enteritis and cannot be refused admission to municipal hospitals. Owing to shortage of isolation accommodation a fair proportion of these infants have to be nursed in open wards by the barrier or bed-isolation technique, which is not effective enough to prevent re-infection and relapses. Thus in the careful study reported by Drs. Alexander and Eiser in our present issue the relapse rate was 31% among 67 infants nursed in the barrier ward and only 8% among 73 babies nursed in cell wards. When it is added that 6 of the 8 deaths in their series followed a relapse, the importance of proper isolation for babies admitted to hospital becomes obvious. With the isolation technique evolved by Gladys Dick for the Cradle at Evans-town no instance of cross-infection with enteritis occurred among 1,650 homeless babies nursed for an aggregate of 66,000 days.<sup>3</sup> By contrast the diarrhoeal death rate among London's illegitimate infants is so high that such an infant has a 1 in 40 chance of dying of this disease before reaching its first birthday.

Apart from isolation, the care and treatment which the infant with diarrhoea and vomiting receives may play a major part in the outcome. Case mortalities in hospital have varied from 30 to 60%, and where a division is made into the severe dehydrated cases and mild infections the fatality rate in the former group has rarely been less than 50%.<sup>4</sup> A case mortality of 11.6% among 69 dehydrated infants in Drs. Alexander and Eiser's series of 140 cases is therefore an achievement which must attract attention. Their plan of campaign was to search for and treat any forms of parenteral infection, to correct fluid loss by intravenous Hartmann's solution supplemented by half-strength serum or plasma, to return as quickly as possible to a diet sufficient to satisfy the patient's requirements, and to combat shock in collapsed and dehydrated infants. Secondary anaemia, a common feature, was corrected by iron and whole blood transfusions. This regime may not seem very different from the treatment advocated by other workers, except perhaps in the early and more frequent use of plasma or serum. Probably what matters most is the intelligence, skill, and enthusiasm with which treatment is applied, and the results obtained in this series reflect credit on both the medical and nursing staffs who carried it out.

Drs. Alexander and Eiser stress the aetiological role of parenteral, particularly upper respiratory, infection in gastro enteritis, and obviously it may be an important factor both causally and as a secondary focus which aggravates the condition. However, many infants with diarrhoea and vomiting have no parenteral infection, and other infants with respiratory disease do not develop diarrhoea.

<sup>1</sup> Mitman, M. *Control of Comm. on Fevers*, p. 262, London, 1943.  
<sup>2</sup> *Proc. roy. Soc. Med.* July, 1944, p. 480.

<sup>3</sup> Sauer, L. W., *J. Pediat.* 1935, 6, 753.

<sup>4</sup> Campbell, R. M., and Cunningham, A. A., *Ann. Dis. Child.*, 1941, 16, 211.

and vomiting. A causal virus, gaining entry by the oropharynx like the virus of poliomyelitis and spread from both the respiratory and alimentary tracts, could be postulated to explain these anomalies. Meanwhile controlled tests might be made of the newer sulphonamides (e.g., succinyl sulphathiazole) for the treatment of intestinal symptoms. Liver damage is often an outstanding feature in fatal cases, suggesting either absorption of toxic substances from the gut or a deficiency in some essential amino acid. This aspect of the problem deserves study, and the use of protein hydrolysates either orally or intravenously seems worth a trial in gastro-enteritis. But in this as in other infections prevention is better than cure, and there is urgent need for a publicity campaign to persuade both doctors and the public that breast-feeding for 6 months is the best antidote for this serious drain on infant life.<sup>5</sup>

## CHOLINESTERASE AND MYASTHENIA GRAVIS

The search for an explanation of the mechanism responsible for the causation of myasthenia gravis has been greatly stimulated in recent years by the development of knowledge of neuro-muscular transmission processes. Theoretically, myasthenia gravis might be due to inadequate release of transmitter substance at the neuro-muscular junction; to an unduly high threshold of excitability of the motor end-plate to the chemical transmitter; or to an excessively rapid destruction of the transmitter substance. Acetylcholine appears to be the chemical transmitter at the neuro-muscular junction. The existence of an enzyme capable of hydrolysing acetylcholine and acetic acid was established by Loewi and Navratil<sup>6</sup> in 1926. Recently Mendel and Rudney<sup>7</sup> have shown that the "cholinesterase" present in blood serum and certain tissues is a non-specific enzyme capable of hydrolysing not only choline esters but non-choline esters as well. Apart from this "pseudo-cholinesterase" a specific cholinesterase hydrolysing exclusively choline esters was demonstrated in brain tissue and the red blood corpuscles of some species. Mendel and Rudney concluded that measurements of cholinesterase activity in which acetylcholine is used as substrate give an inaccurate picture of "true" and "pseudo" cholinesterase in any mixture of the two enzymes. It is probable that some controversy in the literature with regard to cholinesterase levels in serum in certain pathological conditions might be resolved if this recent distinction between specific and non-specific acetylcholine-splitting enzymes were taken into consideration.

Various observers tried to find evidence for the conception of a faulty neuro-muscular chemical transmission in cases of myasthenia gravis in terms of a pathologically high cholinesterase concentration in the blood. However, this was not found to be the case, for low serum enzyme levels are claimed by Stedman and Russell,<sup>8</sup> and no significant differences from normal were found by Jones and Stadie<sup>9</sup>; most recently Wilson and Stoner<sup>10</sup> found the serum cholinesterase activity within normal range in 12 out of 14 patients suffering from myasthenia gravis, and 2 subjects showed low enzyme levels. With regard to the myasthenia gravis problem, serum enzyme estimations might not necessarily give a relevant picture of the situation, and it is

perhaps somewhat surprising that, so far, only two reports have been published of enzyme determinations in myasthenic muscle itself (Jones and Stadie<sup>9</sup>; Goodman, Carlson, and Gilman.<sup>11</sup>) There was no evidence of any material increase in cholinesterase activity of myasthenic as compared with normal muscle, and at present there is no experimental support for the initial working hypothesis that the muscular weakness in myasthenic patients is due to an excessively rapid destruction of the chemical transmitter, acetylcholine, by high concentrations of cholinesterase at the neuro-muscular junction or in the blood. And myasthenic patients are not known to suffer from any derangement of autonomic functions which depend on cholinergic transmission of nerve impulses. On the whole, evidence suggests that the basic disturbance of the myasthenic is an elevation of the motor-end-plate threshold to the effects of motor-nerve impulses (Gammon, Harvey, and Masland<sup>12</sup>); this conception is supported by the recent work of Wilson and Stoner,<sup>10</sup> who demonstrated in the serum of myasthenic patients not under prostigmin treatment a substance, partially soluble in alcohol, which interfered with neuro-muscular transmission and produced a curare-like paralysis on the isolated nerve-muscle preparation of the frog.

The results of cholinesterase determination during exercise and during circulatory stasis are difficult to interpret. Stoner and Wilson<sup>13</sup> found no change in the serum enzyme activity during exercise under ischaemic conditions in normal and myasthenic subjects (without and with prostigmin treatment). However, Croft and Richter<sup>14</sup> observed a shift of the enzyme from the red cells into the serum during muscular exercise. The significance of these findings is not clear. Recent work has shown that definite changes in cholinesterase activity can be produced by certain hypnotics. Prolonged administration of phenobarbitone soluble or phenyl-methyl barbituric acid reduces the amount of cholinesterase in serum by approximately 22% of the average amount of enzyme present in untreated subjects (Schütz<sup>15</sup>); the serum enzyme concentration remained unaffected by administration of a single large dose of these drugs. These findings were confirmed in guinea-pigs (Schütz<sup>16</sup>), where, in addition, a diminution of the enzyme content was observed in skeletal muscle and in the spinal cord. It is possible that the low enzyme levels reported in epileptics by Stedman and Russell<sup>8</sup> and Tod and Jones<sup>17</sup> are due to the chronic use of barbiturates in this condition.

## OPHTHALMOLOGY IN THE FIELD

The ophthalmic surgeon in the Forces has an exacting task. A civilian ophthalmologist is more a physician than a surgeon, and more of a judge than a physician. It may be no mere coincidence, therefore, that Major H. B. Stallard in two illuminating articles<sup>18</sup> on ophthalmic war surgery can record that in four years of service he acted on occasion as a general surgeon and as P.T. and games officer for sixteen months to the exclusion of any clinical work except for frequent "free from infestation" inspections of several hundred troops. That he should command a rifle company in defence of a hospital against possible attacks from parachutists, fifth columnists, and such-like is almost an anticlimax. And on top of this there is a record of solid ophthalmic work carried out under trying condi-

<sup>5</sup> See *British Medical Journal*, 1944, 1, 155.

<sup>6</sup> *Pflügers Arch.*, 1926, 214, 678.

<sup>7</sup> *Biochem. J.*, 1943, 37, 59, 64, 473.

<sup>8</sup> *Ibid.*, 1937, 31, 1987.

<sup>9</sup> *Quart. J. exp. Physiol.*, 1939, 29, 63.

<sup>10</sup> *Quart. J. Med.*, 1944, 13, 1.

<sup>11</sup> *J. Pharmacol.*, 1939, 66, 15.

<sup>12</sup> *Biol. Symposia*, 1941, 3, 291.

<sup>13</sup> *J. Physiol.*, 1943, 102, 1.

<sup>14</sup> *Ibid.*, p. 155.

<sup>15</sup> *Ibid.*, p. 259.

<sup>16</sup> *Ibid.*, p. 269.

<sup>17</sup> *Quart. J. Med.*, 1937, 6, 1.

<sup>18</sup> *Brit. J. Ophthalmol.*, 1944, 28, 105, 261.

tions. A daily routine which begins, in military terminology, at 06.15 and ends at 22.30, and treatment of casualties produced by battle, accident, and stupidity caused by those "fools who despite warning orders allow their curiosity full reign in the inept dismantling of hand grenades, fuses, and mines, or in boisterous play throw hand grenades near each other," gave ample opportunity for a variety of experience. Stallard's articles show that experience under difficult conditions can add substantially to our knowledge. New plastic operations for the reconstruction of colobomata and much loss in the eyelids have been developed, and, what is of particular interest, a technique for the extraction of intraocular foreign bodies by the posterior route. Intraocular foreign bodies seen in the present war are generally feebly magnetic, and their removal is a technical problem of first magnitude. The general aspects of this problem were defined by Mr. L. H. Savin last year in a Hunterian Lecture at the Royal College of Surgeons, when he showed from human and experimental material that aluminium alloys, as these foreign bodies generally are, are far from innocuous to the eye, while their removal involves great difficulties in accurate location and new techniques. The work recorded by Stallard shows that the problem may not be so insuperable as is generally believed. The two outstanding ophthalmic difficulties the present war has brought out are the non-magnetic intraocular foreign body and the multiple injuries, including bilateral eye injuries, produced by land mines. The advent of the sulphonamides and of penicillin have, however, contributed largely to successful treatment. The perusal of the statistical data supplied by Stallard is far from depressing.

### PAREGORIC

We remember that the only cough mixtures which were appreciated by the mothers in the out-patient department were those which contained paregoric, or tinct. camph. co. as it used to be called. It was paregoric which stopped the children from coughing all night. We did not doubt that its virtue lay in the tinct. opii it contained, and that rationalization would one day sweep it away. It is therefore interesting to discover that a pharmacologist has thought it worth while to measure its expectorant action and to compare it with that of its several constituents, and has been rewarded by finding that the expectorant effect of paregoric is greater than the sum of the effects of the constituents, and, above all, that like good wine it improves with age. It is the old paregoric, brown with some years of storage, which is the best. Eldon Boyd and Marion MacLachlan,<sup>1</sup> working at Kingston, Ontario, have delved into the history of paregoric. They conclude that it was the final form of many mixtures containing opium which go back as far as the Greeks, Romans, and Arabians. They are not prepared to regard paregoric as invented by Le Mort, who was professor of chemistry in Leyden from 1702 to 1718. He concocted a mixture containing honey, liquorice, flowers of Benjamin, opium, camphor, oil of aniseed, salt of tartar, and spirit of wine; this mixture became official under the name of Elixir Asthmaticum in the *London Pharmacopoeia* of 1721 and is commonly regarded as the original paregoric. But beside their historical research (which is only touched on here) Boyd and MacLachlan have used a method of measuring expectorant activity devised by Perry and Boyd<sup>2</sup> in 1941. They insert a tracheal cannula into the lightly anaesthetized animal and allow it to breathe warm moist air. Since the animal is tilted tail-upwards, the outflowing secretion from the

respiratory passages can be collected and measured. Cats, rabbits, rats, guinea-pigs, and even hens can all be used, and the administration of paregoric by mouth causes an increased output of secretion, which is most striking in the rat—three- to four-fold—and is due to a reflex from the stomach, as it does not occur when the gastric nerves (branches of the vagus) are cut. Boyd and MacLachlan have found that tinct. opii, camphor, and alcohol all play a part in this expectorant effect, alcohol being particularly potent. Benzoic acid and oil of anise, on the other hand, have no effect. The authors have some evidence that paregoric itself has a more prolonged expectorant action than the sum of its component parts, which if true argues extremely keen powers of observation in those who first compounded it. Finally, they state that old paregoric is much better than fresh; they regard their experiments as clearly demonstrating this, and suggest paregoric should stand for at least two or three years.

### CHEESE-BORNE OUTBREAK OF TYPHOID FEVER

In the *Journal* of June 12, 1943, we referred to an outbreak of typhoid fever in Manitoba traced to the consumption of immature cheddar cheese made from infected milk. Another outbreak, attributed to the same cause, has been described in Canada by Gauthier and Foley.<sup>1</sup> The cases occurred during September and the first week of October, 1941, among a group of adjacent villages in Champlain County, Quebec. Altogether 40 cases were notified, of which 6 proved fatal. Over 60% of the patients were in the age group 10-29 years, and the number of male patients was nearly double that of females. Such an age and sex distribution was suggestive more of an article of food as the vehicle of infection than of water or milk. Careful inquiry narrowed the source of infection down to a butter and cheese factory (R) in the neighbourhood. Since only 24 of the patients had eaten butter from this factory, suspicion became centred on the cheese. This was confirmed, partly by finding that every patient had partaken of the cheese, and partly by the occurrence of four cases (included in the 40) in a doctor's family in Montreal, to which cheese from the R factory had been brought back by the doctor himself after a visit to Champlain County. How did the cheese become infected? Investigation at the factory disclosed no history of typhoid fever among any of the employees, and repeated samples of faeces proved bacteriologically negative. The cheese itself had been made from raw milk and offered for sale within ten days of manufacture. The milk came from eighty farms, but on none of these did inquiry reveal the previous occurrence of typhoid fever, with the exception of one farm on which there was a known carrier, Mrs. C. A., who had received instructions about the limitations of her work. On another farm a child had had a mild fever in August, 1941, lasting for 2 to 3 days, and examination of his blood serum disclosed titres of 1/50, 1/75, and 1/25 for *Bact. typhosum* O, H, and Vi antigens respectively. He had never been inoculated against enteric fever, so that this result was highly suggestive of the carrier state. Eight specimens of his faeces, however, proved negative, and, rightly or wrongly, this boy was discounted as a probable source of infection. On the other hand, Mrs. C. A., the known typhoid carrier, admitted that she had disobeyed orders and had milked cows during the latter part of August. The milk had been sold to the R cheese factory. Cultures of the typhoid bacilli were isolated from each of the 40 patients.

<sup>1</sup> *Canad. med. Ass. J.*, 1944, 50, 338.

<sup>2</sup> *J. Pharmacol. exp. Therap.*, 1941, 73, 65.

<sup>1</sup> *Canad. publ. Hlth. J.*, 1943, 34, 543.



None of the cultures could be typed locally by the bacteriophage method, but 30 of them were sent, together with the strain from Mrs. C. A., to Dr. Craigie, who found them all to be imperfect Vi forms belonging to Group D1. The conclusion was therefore drawn that the cheese had been made from raw milk infected with typhoid bacilli derived from the typhoid carrier, Mrs. C. A. Since the cheese had been offered for sale ten days after its manufacture, typhoid bacilli had not died out completely.

This story illustrates once again the danger of eating immature cheese. Before the war British practice was to allow cheddar cheese to ripen for 5 to 9 months at a temperature of about 50 to 60° F. There is reason to believe that this time was sufficient to allow all pathogenic organisms, including tubercle bacilli, to perish. During the war, however, the period of ripening has been shortened. In addition, a considerable quantity of cheese is imported from the United States which has never been properly ripened at all; instead it has been stored in a refrigerator, brought over here, and sold often within a few weeks of its arrival. It is very doubtful whether such cheese can be regarded as safe for human consumption. Indeed, recent observations by Campbell and Gibbard<sup>2</sup> show that cheddar cheese made from milk artificially infected with typhoid bacilli and stored at 40 to 42° F. may still be infected after ten months. From the public health point of view it would be advisable to insist that cheese made from raw milk should be ripened for at least three months at 50 to 60° F., and for at least 9 months at 40° F. Otherwise the milk should be pasteurized before being run into the cheese vat.

### COLITIS AND X RAYS

In view of the sensitivity of the intestinal mucosa to penetrating radiation it is perhaps surprising that ulcerative colitis as a sequel to irradiation of the abdomen should have escaped recognition for so long. For in the last four years Engelbreth-Holm<sup>3</sup> has found, among 100 necropsies of carcinoma of the cervix in the Copenhagen Radium Centre, four in which death was due to ulcerative colitis developing after x-ray treatment. The lesions macroscopically and microscopically were identical with those seen in idiopathic ulcerative colitis, and since they involved the entire colon they could not be ascribed to overdosage or direct radiation injury; indeed, one case was given only palliative x-ray treatment with the relatively small tumour dose of 2,200 r in 36 days, and the other three had combined radium-x-ray therapy on standard lines. Diarrhoea and proctitis are often encountered towards the end of the radiotherapy course, but they are readily controlled by opium and usually subside within a week of stopping the irradiation. In the four cases reported here, however, the diarrhoea became purulent, the disease took a rapid course, and all four patients died after 9 to 30 days of illness. There was no "radiation ulcer" in the rectum, and no evidence of endarteritis in the microscopical picture<sup>4</sup>; and in any case the typical map-like ulcerations were as well marked in the transverse colon far away from the field irradiated as in the sigmoid loop. Engelbreth-Holm cites Chrom's observation that the intestinal mucosa, normally impermeable to the bacteria within the bowel, loses its efficiency as a barrier after x-irradiation, and suggests that the occurrence of extensive ulceration in only a few of the numerous patients submitted to a uniform treatment may be due to the presence of pyogenic bacteria

in those cases. To explain the ulceration in parts of the colon not directly irradiated he turns to the work of Lium and Porter<sup>5</sup>: they demonstrated that mucus normally protects the mucous membrane from ulceration, that spasm of the musculature emptied the goblet cells, and that ulceration then resulted from the slightest trauma or even from continued muscular spasm alone; hence the maximum distribution of the ulcers in the rectum, where the musculature is strongest, and next along the taeniae coli. Holm's observations thus afford support for Lium's view that muscular spasm plays a decisive part in the aetiology of idiopathic ulcerative colitis, for rectal tenesmus is often present in radiation proctitis; irradiation of the explants of colon in Lium's experiments should afford further information of value. It seems probable that ulcerative colitis has been overlooked as a cause of morbidity and mortality after radiotherapy of abdominal and pelvic neoplasms, and that when diarrhoea and rectal tenesmus fail to respond to opium, to starch or olive-oil enemata, or to mineral oil by mouth, the "dry powder" treatment for which Soper<sup>6</sup> claims success might protect the denuded mucosa and enable healing to proceed.

### HEALTH OF AMERICAN TROOPS IN THE PACIFIC

A little-publicized aspect of the work of the medical authorities of the United States War Department is the constant attention given to the health and sanitary conditions in the islands of the Pacific. Before the recent landing in Guam, for example, a complete survey had been undertaken by the Army Medical Department, and information on the water supply, sewage disposal, and especially on diseases common to the area, was available to every medical officer taking part. Health measures were, of course, in operation under the U.S. Navy before the Japanese captured the island in 1941, and there had been a great improvement in conditions generally during the Navy's forty years' administration. But the health of an army is constantly threatened in the climate and circumstances prevailing in the Pacific Islands, and in Guam the natives have been slow to adopt sanitary measures. The survey issues the obvious warning that all water, regardless of its sources, must be regarded as unsafe until proved otherwise; but of more interest, as reflecting continued occupation of the island, is the instruction to M.O.s to take steps as soon as they land to control flies, which are responsible for the spread of "enteric disease, yaws, and diseases of the skin." Twenty-five per cent. of Guam natives have hookworm, and it is therefore recommended that camps should be some distance from places frequented by natives and that no native should be allowed to enter a camp area. Men are advised also to wear shoes about the camp to guard against hookworm infection, and, to lessen the risks of their contracting dysentery and diarrhoea, are forbidden to eat in native houses. The U.S. Office of War Information states that similar surveys have been prepared for other enemy regions where American troops are likely to go.

The Royal College of Physicians announces that Sir Edmund Spriggs will deliver the Harveian Oration on Wednesday, Oct. 18, in the clinical lecture theatre of the Royal Infirmary, Manchester, at 3.45 p.m. Subject: "The Harveian Method in Literature."

<sup>2</sup> *Canad. publ. Hlth. J.*, 1944, 35, 158.

<sup>3</sup> *Acta. med. scand.*, 1944, 116, 308.

<sup>4</sup> *British Medical Journal*, 1943, 2, 459.

<sup>5</sup> *Arch. intern. Med.*, 1939, 63, 201; *Amer. J. Pathol.*, 1939, 15, 73.

<sup>6</sup> *Clinical Gastroenterology*, London, 1939, Henry Kimpton, p. 196.

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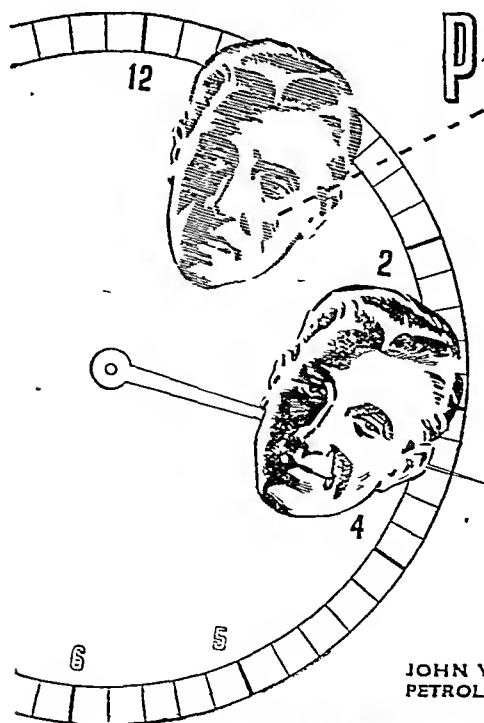
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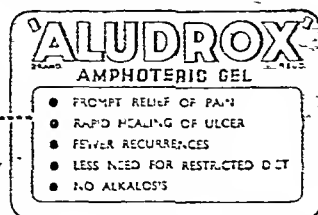


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## THE MIDDAY SCHOOL MEAL

## A STUDY OF ITS RELATION TO THE SCHOOL WEEKLY DIETARY OF A GROUP OF SCHOOLBOYS

BY

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We are investigating the clinical and nutritional status of a group of boys at a trades school in Dundee. This school undertakes the training of pupils for the six building trades. The boys are drawn substantially from the artisan class, and accordingly represent a uniform cross-section of a portion of the working-class community. The average family income is £4 10s. weekly.

This paper, which forms part of a more extended study, is presented to show the contribution of the midday school meal to the total dietary. A short account of some of our findings was given to the Biochemical Society (Cook, Davidson, Keay, and McIntosh, 1944). The relevant data are as follows: (i) Number of subjects, 39 (out of 100 invited to participate); (ii) ages, 14-15 years; (iii) period of study, January to March, 1944. The interest and co-operation of the boys were very striking. The midday meal, which is provided on each of the five school-days (Monday to Friday), is prepared in a central kitchen and distributed to the trades and other corporation schools. A typical meal consists of soup, meat, or fish, with potatoes and greens, and a sweet, usually a milk pudding. Second helpings are allowed. One-third of a pint of milk is given to each boy daily with his midday meal.

## Methods of Investigation

**Dietary Intake.**—Each boy was provided with a tabular sheet, on which he entered his food intake at each meal for one week. One of us personally instructed each pupil, who at the same time received an explanatory leaflet, to serve as an aid in the method of completing the form. The individual foodstuffs were divided into at least 20 categories, and the values of the constituents in each for one week were obtained by the use of: (a) the food-value calculator of Vitamins Ltd.; (b) food tables given by Davidson and Anderson (1940); (c) bread and potato analyses kindly supplied by the Ministry of Food through the courtesy of Sir Jack Drummond, F.R.S., and Dr. Magnus Pyke. The values obtained are for foodstuffs prepared for consumption. While the methods used are admittedly liable to inaccuracies, it is felt that, taking the results as a whole, reliable data have been obtained. That the dietary results are of the correct order is indicated by the fact that determinations of the total nitrogen in 24-hour samples of urine from the boys gave values of protein equivalent ( $N \times 6.25$ ) of 36 to 111 g. per day, mean  $68.2 \pm 15.4$  (cf. dietary protein intake, mean  $76.6 \pm 16.4$ , in the accompanying Table). The levels of vitamin A and of ascorbic acid in the plasma also bear a general relationship to the dietary intakes.

**Presentation of Results.**—These are shown in the Table. The range, mean, and standard deviation are given for each set of values. In calculating the standard deviation we have employed the method advocated by Bradford Hill (1942), and for valuable help in this connexion we are greatly indebted to Mr. Ames L. Imrie, C.A., Depute City Chamberlain, Dundee.

## Discussion and Summary

The Table has been made, so far as possible, self-explanatory. The following observations may be of interest:

(i) Considerable individual variations are a striking feature of the total dietary intakes, due probably to the factor of appetite.

(ii) The mean values per day may be compared with the following standards for boys of the same age group, adopted by: (a) the U.S.A. National Research Council (Orr, 1942); (b) the League of Nations Commission (Magee, 1943). Calories (a) 3,200; (b) 2,900;

protein (a) 85 g., (b) 95 g.; vitamin A (a) 5,000 i.u., (b) 3,000 i.u.; vitamin B<sub>1</sub> (a) 533 i.u., (b) 435 i.u.; ascorbic acid (a) 90 mg., (b) 30 mg.; calcium (a) 1.4 g., (b) 1.5 g.; available iron (a) 15 mg., (b) 16 mg. The intakes of ascorbic acid and of calcium fall considerably short of both standards, while the intake of vitamin A is well below the suggested American level.

(iii) The high consumption of national-flour bread is responsible largely for the optimum intake of vitamin B<sub>1</sub>, and to a less extent for the satisfactory level of protein recorded. Although not shown in the table, an interesting feature was that a large proportion of the admittedly low ascorbic acid intake was derived from potatoes, particularly "chips."

(iv) The school meal furnishes a valuable contribution to the total dietary of first-class protein, vitamin A, ascorbic acid, and calcium, the percentages being  $44.4 \pm 10.3$ ,  $67.8 \pm 12.2$ ,  $57.8 \pm 12.6$ ,  $42.3 \pm 10.9$  respectively. Values for a comparable group of pupils fed exclusively at home are not available, but from our knowledge of local food habits we feel that corresponding figures for a home midday meal would be most unlikely to equal, and would certainly not exceed, the figures given for the school meal.

Table showing Intake of Dietary Constituents for a Group of 39 Boys aged 14-15

		Total Amount Weekly	Total Amount provided by School Meals (i.e., 5 per week)	Per cent. from School Meals	Amount per Day
Calories	R	9,190-28,186	3,163-8,575	20.0-58.5	
	M	15,341 $\pm$ 3,375	5,347 $\pm$ 1,017	35.68 $\pm$ 7.0	2,191.6 $\pm$ 482.14
Total protein (g.)	R	375-1,032	126-301	23.4-46.0	
	M	516 $\pm$ 114.90	189 $\pm$ 37.24	35.92 $\pm$ 6.1	76.57 $\pm$ 16.41
First-class protein (g.)	R	151-331	65-145	25.7-67.3	
	M	234.2 $\pm$ 45.37	100.8 $\pm$ 17.52	44.10 $\pm$ 3.0	33.46 $\pm$ 6.48
Vitamin A (i.u.)	R	10,300-37,800	7,120-20,460	38.2-84.7	
	M	20,338 $\pm$ 5,334	13,430 $\pm$ 2,655	67.8 $\pm$ 12.2	2,912.4 $\pm$ 762.0
Vitamin B <sub>1</sub> (i.u.)	R	2,946-7,275	865-2,236	19.2-52.8	
	M	4,119 $\pm$ 841	1,493 $\pm$ 237	37.13 $\pm$ 7.1	588.4 $\pm$ 120.14
*Ascorbic acid (mg.)	R	98-199	51-107	32.3-81.6	
	M	133.7 $\pm$ 26.5	75.9 $\pm$ 14.1	57.8 $\pm$ 12.6	19.1 $\pm$ 3.79
Calcium (mg.)	R	3,770-10,050	1,340-3,850	25.3-61.0	
	M	5,779 $\pm$ 1,348	2,357 $\pm$ 507	42.3 $\pm$ 10.9	825.6 $\pm$ 192.57
Available iron (mg.)	R	47-166	18-48	19.4-53.2	
	M	84.4 $\pm$ 20.3	30.4 $\pm$ 5.3	37.17 $\pm$ 7.5	12.06 $\pm$ 2.90
Nat. flour bread (oz.)	R	32-112	—	—	
	M	74.8	—	—	10.7

R = Range M = Mean  $\pm$  = standard deviation

\* The results obtained from three boys during a distribution of oranges, giving values of 69, 58, and 67 mg. per day respectively, are omitted.

(v) The general health of the boys was good. The only lesions possibly attributable to dietary deficiencies were gingivitis (29%) and folliculosis (29%). The relationship of these conditions to the dietary findings is at present the subject of a therapeutic investigation, the results of which we hope to publish later.

Our thanks are due to Dr. W. L. Burgess, C.B.E., and Prof. R. C. Garry for their interest in this work. We are greatly indebted to Mr. Harry Keoch, Headmaster, Trades School, for his keen co-operation.

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## THE ORDER OF ST. JOHN

The report for 1943 of the Chapter-General, the Grand Priory in the British Realm of the Venerable Order of the Hospital of St. John of Jerusalem, records its gratitude to members of the medical profession who, despite wartime difficulties, continue to instruct and examine classes in first aid. The strength of the St. John Ambulance Brigade at home increased by 11,098 during the year. More than 24,000 members are serving with H.M. Forces, and more than 60,000 with Civil Defence Services. First aid was given to 489,709 persons during the year; and 285,393 patients, including the victims of 9,254 road accidents, were transported in the Brigade's motor ambulances—more than double the 1942 figure.

The St. John Ambulance Brigade over-seas shows a net increase of 204 new Divisions and of 94 Cadet Divisions. In the South Pacific the Queen of Tonga has become an Associate Dame of the Order in recognition of her great services to humanity.

**Ophthalmic Hospital, Jerusalem**

The report for 1943 of the Ophthalmic Hospital at Jerusalem of the Order of St. John tells of difficulties in administration on account of economic conditions in Palestine. "Owing to increased cost of living salaries and wages are constantly rising, and both nurses and domestics are almost unprocureable. As an example of local conditions nurses have left the Bethlehem Mental Hospital to look after their homes, while their parents look after pigs. A sow fetches an enormous price, and some fellahs who were penniless before the war are now reported to be making several thousands a year. Eggs have cost as much as a shilling each, chickens £1, and butter 10s. a pound. New out-patients show a slight decrease through difficulties of travel, and exceptionally cool weather diminished the number of sufferers from epidemic conjunctivitis. Fewer than usual of these cases were complicated by corneal ulceration. Forty of them were treated by instillations of penicillin, but it proved ineffective. Over 90% of out-patients had trachoma.

**SCHEMES FOR MEDICAL AND SOCIAL RESEARCH**

The Nuffield Provincial Hospitals Trust (16, King Edward Street, Oxford) has issued a memorandum concerning three schemes of social and medical research which are to be assisted financially by the Trust.

**Social Adaptation of Children brought up in Institutions**

The Provisional National Council for Mental Health is to receive a substantial grant to enable it to undertake this research, which is to be organized and directed by Dr. F. H. Bodman. The war has brought out very strongly the necessity for making provision in this country for homeless, abandoned, and handicapped children. In view of the acute demand, it seems of the utmost importance to ascertain how far and in what respects the institution child is handicapped in comparison with the child brought up in a normal home. There is a general impression among social workers, labour managements, and psychiatrists, who have to deal with children and young persons, that the child brought up in an institution compares unfavourably with the child who has had the benefit of normal home surroundings. But in this country this is so far an impression only and is not based on scientific inquiry; it is felt, therefore, that it would be extremely valuable to make a definite study of the social adaptation of a group of children and young persons who have been brought up in institutions.

**Cancer Research in Sheffield**

The Sheffield Municipal and Voluntary Hospital Joint Advisory Committee is the joint body "recognized" by the Trust in connexion with the making of grants for development of hospital and ancillary medical services in the area. On the recommendation of the Joint Committee, the Trust is making a grant which will enable the department of pathology to carry out research on the biological effects of ionizing radiation in association with a group of workers on the staff of the Sheffield Radium Centre. The preliminary work contemplated is to investigate the effect of measured therapeutic doses on the hormonal output of the endocrine glands. This is an attempt to prove or disprove the theory that small doses of radiation have a stimulating action on cell growth and function. The work is under the direction of Prof. H. N. Green, M.D., of the department of pathology and Mr. G. W. Blomfield, F.R.C.S., medical director of the radium centre. The preliminary work contemplated should have practical importance in revealing more about the origin and growth of cancer, and is likely to extend over a period of about one year in the first instance. At the end of the year the department of pathology will advise whether the research should be continued.

**Infant Dietetics: Research in Scotland**

In response to an application from the department of child life and health at the University of Edinburgh, and on the recommendation of its Scottish Advisory Committee, the Trust has undertaken to make, over a period of three years, grants towards further research in neonatal and infant problems, to be carried out at the Simpson Maternity Pavilion, Edinburgh. The research [as announced briefly on Sept. 16, p. 390] will be directed by Prof. Charles McNeil. The grant will cover the salary of a nurse, appointed by the department, to deal with the nutritional and dietetic problems of child life and health, and when trained she will become a teacher of medical students, pupil midwives, and pupil health visitors. The University of Edinburgh and the Royal Infirmary are to co-operate in this experiment, which, it is anticipated, will afford scope for more practical research within the university department in the subject of paediatrics, by providing an opportunity for closer study of the many physiological problems connected therewith, including the question of prematurity, which plays such a big part in the death rate during the first month.

# Correspondence

**Air-borne Infections**

SIR,—Your hospitable columns have latterly given space to discussions of air-borne infection, in particular to comment on the stimulating volume by Prof. O'Hara and to a status report of my own on that subject (1944, 1, 296; 2, 82). Although the desirability of ameliorating disease responsible for so considerable a wastage in time, money, and well-being would seem to be self-evident, this desirability is questioned, notably in the persuasive words of Dr. O'Hara:

"From a sufficiently detached and objective point of view it is possible to look upon the present prevalence of respiratory infection with some satisfaction and equanimity, for it is more responsible than any other factor for keeping the population ready and resistant to that greatest cold—pandemic influenza—which might otherwise be a much more frequent and deadly visitor. . . . The writer prefers to think of them [the costs] as a reasonable price paid for the preservation of some semblance of respiratory resistance, for an initial resistance to invasion may be cheaper to maintain than to dispense with, biologically as well as socially and politically. . . . Let us not be too impatient with our yearly colds: they keep us from becoming immunologically soft, as we assuredly do when we successfully isolate ourselves from them for any long period."

However, influenza virus of Types A and B are currently each being used successfully for active immunization against epidemic human influenza of corresponding type. Cross-protection is not demonstrable between Types A and B. The causal agent of pandemic influenza is unknown. The justification for assuming that the miscellaneous and miserable respiratory episodes of the winter months afford protection against pandemic influenza is therefore not apparent to the present writer. Certainly we would not do well to rely upon such haphazard means. It seems to the writer more likely, indeed, that the emergence of pandemic influenza is preceded by the appearance somewhere in the world of a mutant virus of peculiarly high communicability. In this case the prevailing conditions permitting universal dissemination of respiratory flora are less a safeguard than an invitation to disaster.

Against what, then, might we become "immunologically soft," lacking the banal respiratory infections? There is evidence that the virus or viruses of the common cold do afford some transient increase in resistance, but this does not last for most persons even through a single winter, and can hardly be regarded as of long-range value. Is it against the common bacterial secondary invaders, pneumococci, haemolytic streptococci, influenza bacilli, or staphylococci? Protection against invasion by each of these bacterial species is known to be specific for type, and fifty-odd types of pneumococci, forty-odd types of *Streptococcus pyogenes*, and at least two types of *Haemophilus influenzae* are now recognized. It is possible that a useful degree of resistance against the prevailing flora might be built up temporarily within an isolated population, such as that on a ship at sea, but in ordinary life, with innumerable opportunities for interchange of respiratory flora at work, on the way to and from work, and in homes and places of recreation, there seems to be little bacteriological or immunological basis for expecting benefit from infection. Moreover, the respiratory pathogens are not well adapted to propagation or even long persistence on normal mucous membranes. Reduction of the means of dissemination of pathogens would unquestionably entail reduction in morbidity and a corresponding reduction in carrier rate and in the prevailing prevalence of infectious agents.

Nor do relevant epidemiologic facts sustain the argument against suppression of the vehicles of respiratory infection. Rates of respiratory disease, as is well known, tend to show a lesser early winter and a greater late winter peak. The early winter peak doubtless reflects renewed exposure of a population with a diminished resistance against certain pathogens, but the peak in the late winter or early spring is characteristically higher with respect both to morbidity and to severity of complications, and this unquestionably reflects the widespread dissemination

during the winter of viral and bacterial pathogens. Finally, there is the actual record (Gafafer, W. M., "Sickness Absenteeism among Male and Female Industrial Workers, 1933-42, Inclusive," *Publ. Hlth Rep Wash.*, 1943, 58, 1250, "Sickness Absenteeism among Male and Female Industrial Workers during 1943, and among Males during the First and Second Quarters of 1944, with a Note on the Respiratory Epidemic of 1943-4," *ibid.*, in the press) showing a steady building up, in the United States at least, of rates of respiratory infection from 1938 through 1943, contrary to the long range trend. If an effective resistance were purchasable at the price of frequent infection, this should automatically check the rise in infection rates. Infection rates, on the contrary, have continued upward even at an accelerating pace under conditions in the war years. It seems unlikely, too, that abolition of water sanitation or pasteurization of milk would be advocated on the grounds that these measures make us "epidemiologically soft" with respect to intestinal infection, although T. E. Lawrence in his *Seven Pillars of Wisdom* does smile at the expense of newcomers to Arabia because they cannot drink with impunity from desert water-holes. Vaccination can keep the immunologic mechanisms in function, if necessary, more surely and more systematically than can haphazard natural infection.

"Sufficient unto the day is the evil thereof." The evils of respiratory infection are unequivocal, in my belief the means of dissemination of respiratory disease agents should be attacked wholeheartedly, uninhibited by concern over remote possibilities should we succeed beyond our hopes. In fact, what is done in the next decades to understand and control air borne infection may be taken as a significant index of how well we have learned one lesson of the war—that the broadest possible development of pure and applied science is fundamentally related to national security and well being—I am, etc.,

School of Medicine, University of Pennsylvania  
Philadelphia.

STUART MUDD

### Renal Osteodystrophy

SIR—Your annotation of Aug. 19 on renal osteodystrophy—the condition called renal rickets in this country—is very interesting, but omits any reference to recent work in this country. The article gives an excellent account of the condition mainly based on the important paper of Liu and Chu (1943). They found that vitamin D, although of great value in rickets and osteomalacia, was useless in the treatment of renal osteodystrophy, even when given in large doses. It has been stated by other observers that vitamin D is of no value, although Gyorgy (1928), Duker (1928), Schick (1929), Karelitz and Kolomozeff (1932) all reported that healing occurred in their cases. We showed in 1938 that the characteristic lesions in the epiphysis was completely healed in two patients. Since then we have treated two patients with success. Sheldon (1943) has also reported healing.

It is of importance to consider why we succeeded while Liu and Chu and others have failed. Our patients were young—8 and 15 years respectively—and both showed the characteristic changes in the epiphyses. Two of their patients, aged 8 and 20, had the epiphyseal changes whilst the other three, aged 20 and over, had fused the epiphyses and showed well marked osteoporosis, and were therefore rather different. The kidney lesion was severe in our cases and comparable with those reported by Liu and Chu. The dose of vitamin D they used was 12,000 units a day, but this was given only for 20 to 30 days, although in one case it was repeated and in two cases a single massive dose of 1,000,000 units was given without any demonstrable effect. The dose we gave was 3,000 units daily, together with 15,000 units of vitamin A in the case of the youth of 15, but this dose was maintained for 16 months. During this time he grew 6 in height and the x-ray appearances improved markedly. The dose was then doubled, partly because the amount of calcium retained was not large and partly because he was growing so rapidly; this dose was maintained until his death 14 months later. The rickets had completely healed by this time. The second patient was given 6,000 units of vitamin D with 30,000 units of vitamin A for a period of 14 months, and the x-ray appearances of the epiphyses improved greatly. For the last two months of his life he was given 9,000 units of D and 45,000 units

of A, and the ulna did not show any signs of rickets on section. The diets used were high in calcium, containing over 1,200 mg a day, and the inorganic phosphorus varied from 700 to 1,100 mg a day.

The essential difference between our treatment and that of Liu and Chu is the giving of sufficient alkali to maintain the alkali reserve within normal limits. A low alkali reserve is always present in these cases, as Liu and Chu also noted. We cannot find any evidence that they gave alkali at the same time as the vitamin D, and believe that this omission was responsible for the lack of response to vitamin D during their short experiments. We did not know whether the vitamin D or the alkali was responsible, as we gave both simultaneously, but since then we have treated one patient with alkali alone, with considerable improvement in the kidney function but with no apparent change in the epiphyses.

We do not think that the vitamin A plays any direct part, though it was given to maintain the general health, and Sheldon's (1943) patient healed his rickets without being given any vitamin A. We therefore believe that vitamin D can act only when the alkali reserve is within normal limits. Liu and Chu suggest that a specific inactivation of the vitamin D is conditioned by the renal insufficiency. If this be correct the alkali may act either by improving the kidney function or by keeping the intestinal contents more alkaline. This latter condition must occur as our patients were given the equivalent of 12.4 and 20 g of sodium bicarbonate daily. It is said that vitamin D increases the H-ion concentration of the gut and so enables the calcium to be absorbed, and if this is the case it would explain why we found it necessary to give such large doses of vitamin D.

The experiments which Liu and Chu made with dihydroxycholesterol (AT 10) are very interesting. They found that the absorption of calcium was much improved in two cases, although no alkali was given at the time. It would be most interesting to know whether the function of the kidney improved during this period and whether the giving of alkalis hindered or helped the absorption of the calcium.—We are, etc.,

GEORGE GRAHAM  
W. G. OAKLEY

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### Dentition and Diet

SIR—I was much interested in the article on the improved dentition of London school children by May McIlanby and Helen Coumoulos in the *Journal* of June 24. I note that no mention is made of the reduced carbohydrate intake in the form of sugar, sweets, cakes, etc., which to my mind is a most important factor. It appears to me that the improvement of the dentition of these children is due not so much to the changes in the feeding habits mentioned but rather to the decreased carbohydrate intake as a result of wartime rationing of sugar, sweets, cakes, etc. Many prominent dental research workers both in England and in America will, I think, agree with this view.

Extensive dental surveys of many thousands of children in South Africa have indicated that caries increases rapidly among both European and non-European children when the sugar, sweet, cake, etc., intake is increased. The difference between the caries experience rate of children in the north west Cape, where the staple diet is mutton and bread, and that of the children in the coastal area of Knysna, who eat sweet potatoes, bread, and very little meat, is outstanding. In the former case the caries-experience rate is 40%, and in the Knysna area it is 99%. Mention must also be made of the significant fact that the fluorine content of the drinking water in the north-west Cape is high, while in the Knysna area practically absent.

The report on the South African dental surveys has been published by the Union Health Department, and a copy is enclosed for your information—I am, etc.,

T. OCKERSE

Pretoria.

Dental Health Officer, Union Health Department.



### Bleeding Gums in R.A.F. Personnel: Value of Ascorbic Acid

SIR,—We are sorry that in our reference to the early descriptions of scurvy in our article (Aug. 19, p. 239) we did not make it clear that we were referring to uncomplicated scurvy. As Dr. Glazebrook points out (Sept. 9, p. 353), Lind states that "when a person has had a preceding fever or tedious fit of sickness" the gums may be first affected. These conditions, of course, did not apply to the healthy R.A.F. personnel examined by us. In the description of ordinary scurvy given by Lind, as well as more recently by Hess (*Scurvy Past and Present*, J. B. Lippincott, 1920, p. 176), the gums are specifically stated to become sore and to bleed after the onset of other signs and symptoms (change of complexion, listlessness, breathlessness, pains in joints). McMillan and Inglis, in their recent excellent description of fifty-three cases of scurvy (Aug. 19, p. 233), also say that "bleeding gums were noted on eight occasions, being present only in association with gross changes elsewhere," although these authors apparently did not apply friction to elicit this sign.

The "apparent success in treatment with ascorbic acid" often occurs in experiments with no adequate controls, and our explanation of this apparent success obviously could not apply to the experiment of Roff and Glazebrook, where controls were examined. The condition of bleeding gums with "sponginess," which we noted frequently, seemed, however, to be identical with these authors' "gingivo-stomatitis." We considered whether our results differed from theirs because of the different intake of ascorbic acid, but in some of our experiments the difference was small. (More recent surveys on R.A.F. personnel over-seas have shown no increased incidence even when the intake was as low as 9 to 16 mg. daily.) Because of the different results achieved in two apparently similar experiments we were careful to limit our conclusions to R.A.F. personnel and to state that "this does not exclude the possibility that other subjects living under different dietary conditions might benefit from treatment with ascorbic acid." Is this English sufficiently plain?

The objections raised to our article by Dr. E. P. Evans (Sept. 2, p. 321) can hardly be taken seriously. We and others have carried out numerous saturation tests in which ascorbic acid, administered by the method described in our article, has always produced "saturation" and then appeared in the urine. This could scarcely have happened if the ascorbic acid is destroyed in the mouth or is not absorbed from the alimentary tract, as postulated by Dr. Evans.

Dr. Malik (Sept. 2, p. 328) asks what we mean by "dummy" tablets. The tablets used were made of starch flavoured with tartaric acid, which so far as we know has no effect on any dental disease.—We are, etc.,

W. P. STAMM,  
T. F. MACRAE,  
S. YUDKIN.

### Fracture-dislocation of the Astragalus

SIR,—Squad. Ldr. James's paper (Sept. 16, p. 372) appears misleading in several important respects.

The injury described and illustrated is not a fracture-dislocation of the ankle; it is a fracture of the neck of the astragalus associated with a subastragaloid dislocation, and a complete posterior dislocation of the body of this bone. Nor can this accurately be described as "typical," in that it is only one of the various types of fracture-dislocations of the astragalus. (Ninety-seven such injuries were treated in R.A.F. orthopaedic centres during two years of war; of these only seventeen were of this particular type. R. Watson-Jones, *Fractures and Joint Injuries*, Livingstone, Edinburgh, 3rd ed., 1944, p. 825.)

Treatment of this injury is certainly "to be looked on as urgent." If unreduced, pressure by the displaced body produces necrosis of overlying skin within 48 hours, the skin breaks down, and the body is extruded as a sequestrum. Once the skin has started to break down there is no option but to remove the body, if it is not already extruded, and to immobilize the limb in plaster until infection has subsided and the wound has healed, taking care to maintain contact between the lower end of the tibia and the neck of the astragalus—i.e., to prevent the whole foot slipping forward.

If seen within a few hours of injury, however, I cannot agree with Squad. Ldr. James's assessment of the relative values of the various methods of treatment available. Closed reduction is admittedly not easy, but it is certainly feasible in many recent injuries. If reduction by manipulation proves impossible I have used skeletal traction by an os calcis pin, and inserted a second pin into the displaced body to rotate and guide it back to its socket. This method has since been described by Watson-Jones in his book already referred to (p. 835) and by W. D. Coltart in a paper read to the British Orthopaedic Association, Oct., 1943. Operative reduction should only be employed as a final resort. Removal of the body of the astragalus is preferable to astragalectomy. Not only is the immediate result better but subsequent arthrodesis, if necessary, is easier if the head of the astragalus is *in situ*.

Regarding the relative values of astragalectomy and tibio-calcaneal fusion, in the series referred to above, "the most striking inference was that the results of astragalectomy were uniformly bad and the results of tibio-calcaneal fusion surprisingly good" (Watson-Jones's work, p. 840). As the astragalectomies in the series were performed by a number of different surgeons, it seems unlikely that Squad. Ldr. James's suggestion that "the depreciation of this operation is in large measure due to inadequate surgical technique" is correct.

It is suggested that immediate arthrodesis is the treatment of choice. This would entail arthrodesis of both ankle and subastragaloid joints. Reduction of the dislocation would first be necessary, and operation would be further complicated by the presence of a fracture of the neck of the astragalus. To attempt such a sweeping procedure in the face of the gross bruising and swelling which is always associated with these injuries appears to me to be unduly resolute surgery, even in these days of chemotherapy.

This war has provided an opportunity for the study of a larger series of these very difficult and complicated injuries than has ever before been collected. The conclusions reached have been very clearly expressed by Wing Cmdr. Coltart and Mr. Watson-Jones. It seems a pity that a paper controverting so many of these conclusions should refer to one case only.—I am, etc.,

J. R. ARMSTRONG.

Elv.

### Fractures of the Carpal Bones

SIR,—The article on fractures of the carpal bones by my old teacher, Prof. H. A. Harris (Sept. 16, p. 381), was long overdue, and I sincerely hope that it is widely read and thoroughly digested by all those in the profession. One has too often seen these "minor" injuries of the carpal bones entirely missed, and only diagnosed many months later when the damage has been done and cannot be undone—namely, an osteo-arthritic wrist. This is partly due to inexperience and partly to the too infrequent use of radiography in diagnosis. Also it is the oblique view which is so often the one that shows up these "fake" fractures, and so often the clinician omits to have an oblique view taken. It should therefore be taken, as well as the lateral and A.-P. views, as routine in all cases where bony injuries to the wrist are suspected. Prof. Harris states that in Colles's fractures the ulnar styloid is also sometimes fractured. It is generally considered, however, that the ulnar styloid is always fractured in a Colles's fracture, although the lower end of the radius is often fractured without involvement of the ulnar styloid.

It might also be timely to state here that a very similar state of affairs to that which Prof. Harris pointed out as existing in the wrist exists in the ankle. "Flake" fractures often occur at the proximal or distal attachments of the deltoid ligament of the ankle-joint. Either the joint is not x-rayed or the radiograph is misinterpreted, and the patient is sent hobbling out as a "sprained ankle." The result of this is prolonged disability. These flakes are sometimes extremely difficult to see, and in cases of doubt the treatment should consist of the immediate application of a walking-plaster. The diagnosis of these fractures is made much more difficult by the presence of an effusion, which makes early x-ray most important. In cases of unavoidable delay one should therefore not omit to apply a pressure bandage and an efficient splint with the leg elevated.—I am, etc.,

B. S. SKINNER.

### Laryngeal Spasm

SIR.—Fl. Lieut. Heyworth states (Sept. 16, p. 385): "My impression is that once severe [laryngeal] spasm has been allowed to develop, nothing can be done until the false and true cords have relaxed." I can assure him that it is unnecessary to wait until the patient is "pulseless, black, and virtually on the point of death." I have never yet, during a good many years' experience, met a laryngeal spasm which could not be dealt with by intubation with a gum-elastic catheter (urethral or as supplied for purposes of anaesthesia is equally suitable, of about 7 mm. diameter for adults). The smooth rounded end of such a catheter will pass between cords in spasm easily, quickly, and without trauma. I always have several sizes handy when anaesthetizing. As the American gentleman is alleged to have replied when asked why his hip-pocket contained a gun: "I don't need it often, but when I do I need it darned quick."—I am, etc.,

London, N.W.11.

STEPHEN COFFIN.

### Trypanosomiasis treated with Pentamidine

SIR.—After reading Lieut.-Col. R. R. Bomford's article in your issue of Aug. 26 I feel the time is opportune to add a comment on the place of pentamidine in the treatment of West African sleeping sickness in general, since late as well as early cases may be met with in this country among Europeans returned from West Africa, and some articles which have appeared may have conveyed the impression that pentamidine is the drug of choice. No reflection is intended on Lieut.-Col. Bomford's article, in which he specifically referred to early cases, though in point of fact the case he describes had passed the first stage.

I am at present on leave from Sierra Leone, and can only quote the literature from memory; but I have before me records of nearly 2,000 cases of sleeping sickness treated with various drugs and combinations of drugs, including pentamidine. These cases were re-examined more than a year after treatment; over half were lumbar-punctured before treatment and the cells counted, and in about half both cells and total protein were enumerated at the final examination. They included 192 cases treated with pentamidine and 55 with propamidine. The dosage of pentamidine varied between 8 and 12 daily doses of 50 to 100 mg. No appreciable difference in curative effect was noted between the higher and lower dosages, and propamidine produced very much the same results as pentamidine.

In brief, in early cases with a normal C.S.F. cell count the curative value of pentamidine proved to be only slightly, if at all, inferior to that of a course of antrypol followed by tryparsamide (total of 8 or 9 doses), but the toxic effect of the drug itself was less than some of the antrypol-tryparsamide combinations. Incidentally, such toxic effects are likely to be less pronounced in Europeans than in undernourished Africans. For in-patient treatment pentamidine also has the merit that the doses can be given daily.

In late cases, however, pentamidine showed to great disadvantage, and where the C.S.F. count exceeded 100 cells per c.mm. before treatment about 45% of the patients died within a year, and of the survivors about 75% had definitely abnormal spinal fluids at the time of examination. The corresponding figures after antrypol plus tryparsamide were only about 13% of deaths and 20% of abnormal fluids. Comparing the general run of cases as met with at all stages, 93.5% appeared to be cured after the best combination of antrypol and tryparsamide, but only 73% after pentamidine or propamidine. It is the general experience also of workers in Nigeria, the Gold Coast, and the Belgian Congo that pentamidine is useful in early cases but of very little value once the central nervous system has been affected. In the Sierra Leone series the dividing line lay around 10 to 15 cells per c.mm.

These findings indicate that it is unjustifiable to treat any case of trypanosomiasis with pentamidine alone without first carrying out a lumbar puncture, and that it is still unjustifiable so to treat it if the C.S.F. shows more than a very slight degree of abnormality. In a small-scale trial in Sierra Leone with 53 cases treated by a combination of 5 doses of 100 mg. of pentamidine and 5 of 2 g. of tryparsamide, given concurrently, the results were excellent in late as well as early cases. Either the pentamidine and tryparsamide were given together at

5-day intervals, or the tryparsamide was given at 5-day intervals while the pentamidine was given daily, starting the day after the first tryparsamide. In this way the whole course of treatment was reduced to three weeks. There were no toxic effects beyond the transient symptoms frequent after pentamidine, and the combination appears promising; but the common type of trypanosomiasis in Sierra Leone, even when symptoms are severe, is rather unusually amenable to treatment, and further trials elsewhere are indicated before an authoritative pronouncement can be made. In the meantime it would seem best to continue to use the well-tried combination of antrypol and tryparsamide as a routine for cases with any involvement of the central nervous system.

It is worth mentioning that most of the results published on treatment with pentamidine lose much of their value owing to the fact that the cases have not been followed up long enough. Experience in Sierra Leone has shown that it is not possible, within a year after treatment, to be certain whether cure has been effected, and cases have been met with whose C.S.F. cell count has been normal at six months but has risen again later. Conversely, some cases still showed raised counts at six months which have returned to normal in a year.

The dosage given by Lieut.-Col. Bomford—repeated doses of the isethionate up to the equivalent of nearly 4 mg. of pentamidine per kilogramme—is very high, and most workers do not exceed 2 mg. per kg. when daily doses are given. Though one should exercise caution in applying results obtained on animals directly to man, it is worth recalling that Van Hoof found repeated doses of about 4 mg. per kg. lethal to guinea-pigs, and Daubney and Hudson observed delayed poisoning after pentamidine in only moderately heavy dosage in cattle. In default of sufficient observations on the maximum tolerated dosage in man, such results indicate the need for great caution in employing such heavy dosage, and there is no evidence of which I am aware that anything is to be gained by it in sleeping sickness, though it may be otherwise in kala-azar.

Since writing the above I have come across the paper by Allen, Burgess, and Cameron (*J. Path. Bact.*, 1944, 56, 217) on the toxic effects of propamidine. They found the lethal dose (LD50) of the dihydrochloride to be 10 mg. per kg. for the goat, 15 to 20 mg. per kg. for the rabbit, and 10 mg. per kg. for the guinea-pig. The isethionate appeared to be only slightly less toxic. One may expect considerably smaller doses to be lethal if repeated daily, and these results emphasize the need for caution in the dosage of the closely allied drug pentamidine in man.—I am, etc.,

Wootton Courtenay, Minehead.

R. D. HARDING, D.M.

### War Malaria and its Treatment

SIR.—In the letter on war malaria and its treatment (Sept. 9, p. 351) we read: "It is necessary to continue with small doses of quinine by the mouth—10 to 15 gr. daily—for three weeks or longer. I certainly believe that small doses of pamaquin—0.04 g. daily—in addition to quinine, also aid in preventing relapses." Did the writer intend that pamaquin—0.04 g. daily—should be administered for as long as the quinine—namely, three weeks—instead of the usual five to six days? He later goes on to say that "quinine (30 gr. daily) for two days, mepacrine (0.3 g. daily) for five days, followed by pamaquin (0.03 g. daily) for a similar period, appears to be inadequate."—I am, etc.,

Kilmarnock.

H. M. OWEN.

### Specialties and Diplomas

SIR.—There must be diversity of view about the problems of postgraduate medical study, but I think that Major-Gen. Max Page's kindly dissent from some of my views is based upon misunderstanding, for which a lack of clarity on my part may be responsible.

Of course I do not include the F.R.C.S. or the M.R.C.P. among the mushroom growth of specialist diplomas, though I am not persuaded that they are noticeably concerned with the basic sciences of medicine. Also, I have not advocated the abolition of the special departments of general hospitals, but rather the necessity for conducting higher studies and research in certain branches of medicine in special hospitals and schools. I have served on both special department and

special hospital, and believe that the functions of the two are different and cannot be merged in the special department of the general hospital, large or small. No one disputes that all branches of medicine are but parts of a whole, but the argument has no bearing upon the expediency of devoting special institutes to some of them. It is not for me to argue the status of dermatology as a special branch of medicine, but the notion that the skin is just the wrapping of the human parcel, occasionally betraying the disquiets of its contents, does scant justice to a very complex organ, and I should have thought that few branches of medicine more urgently required intensive study in a special institute.

There is, however, a misapprehension in his letter that is none of my making, as when he suggests that had those who have worked in the National Hospital shown themselves as interested in disorders of the functions, as in those of the structure, of the nervous system, medicine would have benefited even more. This is a surprising comment upon the hospital of Hughlings Jackson, Ferrier, Horsley, and others since their day whom I need not name. Surely, too, the essence of neurological diagnosis is the study and analysis of disorders of nervous function, from which alone, clinically, can the seat and nature of structural disorder be determined. Casting round in my mind for some explanation of this false idea of the history and nature of neurology, it occurs to me that Major-Gen. Max Page has confused two very different notions—namely, physiological and psychological disorder—how different the psychologist will be eager to tell him. Even so, I venture to suggest that he is rather out of touch with the facts. Thus, in this war as in the last, major contributions to the problems of psychological stress in air-crews have come from distinguished members of the hospital staff.

However, in so far as he is in favour of the still more intense study of psychological medicine in the hospital, I am with him. Up to date, as a leading psychiatrist has stated before the Goodenough Committee, "the accurate knowledge possessed by psychiatrists of mental disorders and their treatment is still of modest dimensions," and no one can doubt that neurology has an important contribution to make to the subject.—I am, etc.,

London, W.1.

F. M. R. WALSH.

SIR.—Conversations with medical colleagues have convinced me that Dr. Walshe's article (Sept. 2, p. 297) must rank as one of the most candid, stimulating, and reasoned essays of recent years. Already it has moved some of the senior members of the profession to reply. The article is extremely opportune, and merits full discussion from all points of view. It is as one of those who did not, at the appropriate time, as Dr. Walshe says, "acquire those alphabetical adornments that we have asked of those to whom we have offered opportunities in consulting and academic medicine" that I lay a claim to take part in the discussion.

With my due respects to Mr. Max Page (Sept. 16, p. 384) I think Dr. Walshe presents the case for and against postgraduate diplomas very fairly and reasonably. Is not the F.R.C.S. a postgraduate diploma? Talking of this and the F.R.C.P. Mr. Max Page says: "These diplomas are generally accepted as evidence of a man's sound training in the basic sciences and his subject." With certainty, much better evidence could be obtained from a detailed inquiry into his work and interests from school upwards. Further, Mr. Max Page remarks: "Few would regard them as more than that." May I respectfully suggest that that is not the opinion of the general public, local authorities, or even the majority of the medical profession.

Many agree with me that we might gain something from the adoption of Continental methods. Surely five years' suitable postgraduate experience could constitute not merely evidence but proof of a person's suitability or otherwise for consultant or academic medicine. A good surgeon needs a deft pair of hands, a suitable temperament, and a sensitive conscience. An examination track mind is not necessarily an asset.

I understand that the regulations for the F.R.C.S. have been altered recently. There may be some good reason that I, for one, do not know of, but it would rather suggest that the "oldest and best established" were not, after all, the best. In spite of the fact that it was not an essential for a candidate

for the F.R.C.S. ever to have performed a major surgical operation, nevertheless the possession of that diploma is *sine qua non* in most hospitals for appointment to the surgical staff. Thus, whatever a person's ability and experience he is barred from being an applicant if he cannot show proof in the way of a diploma that he has been a house-surgeon. Perhaps Mr. Hamilton Bailey will forgive my quoting from the preface to his book on *Emergency Surgery*. "I had now climbed another rung, and found myself on the junior honorary staff of a teaching hospital, with plenty of time to write, but with hardly any emergency operations to stimulate me to do so. Commencing to form the early chapters, I came to the conclusion that my experience was still insufficient, and it was largely on this account that I descended the surgical ladder and once again became a resident surgical officer, this time at a very large hospital in Birmingham. Here I was afforded unique experience in emergency surgery." Due reflection on these comments must leave some of us apprehensive, particularly when the subject of teaching is up for discussion.

Dr. Walshe's cryptic reference to original articles is very much to the point when he states: "And the author, especially if he be young, who ventures daringly to attempt some generalization or synthesis of his findings with those of other workers is in danger of having his contribution declined. Having suffered thus, I am bound to complain that this state of affairs is beyond an average comprehension. Any sincere worker would welcome any criticism of his observations and conclusions provided such criticisms are supported by appropriate evidence. And if there remains only a small contribution to learning, surely the profession should be glad of it.—I am, etc.,

J. SHIRLEY CALVERT.

Wembley.

### Present-day Medical Education

SIR.—This is the view-point of a product of present-day medical education. I cannot speak as a representative of the views of young practitioners, because we have no uniform views any more than experienced general practitioners or clinical teachers have such views. I cannot accuse my teacher of hiding behind laboratory results. They knew what they wanted the student to do: they wanted him to master the technique of interrogating and examining a patient and to learn to think. From pre-clinical times it was drilled into us that we were going to reach our conclusions via our eyes, our ears, and our finger-tips. The wards, the out-patient departments, and the practical classes were stressed as far more valuable than the systematic lectures. Pity the man who, when asked how he would diagnose a condition, replied first of all with a laboratory examination!

And what about the finished product? Personally, I qualified less than a year ago, and still feel unfit to attempt large classes of patients such as are met with in general practice. Four or five months as a house-surgeon and the same period in the Army have brought home to me two outstanding faults: the number of cases I cannot diagnose, and the even greater number which I cannot treat to my satisfaction.

Over half of these failures can be laid at my own doorstep: ignorance, insufficient care or patience, and sometimes the easy classification of a case as "functional." This still leaves a large number unaccounted for. Some of these could have been successes given different medical training. Too little time is paid to treatment, especially local treatment, and too little attention to the diagnosis and prognosis of those cases with symptoms but no signs. How many of my contemporaries can dismiss a patient with the confident assurance that there is nothing wrong with him?

The cure, in my opinion, lies after the final examination rather than before it. A year's compulsory hospital residence? Certainly; and let there be sufficient emphasis on out-patient work. But still more is a year's apprenticeship in general practice required for all doctors, no matter what they may eventually tackle. The training of efficient G.P.s is more difficult, and promises bigger dividends in national health, than the training of specialists. I have heard specialists regretfully admit that they have had too little general training; but I have yet to hear one say that he spent too long a preliminary period in general practice.—I am, etc.,

H. A. LANG.

### Observation in the Student's Training

SIR—In his most interesting article (Aug 26, p 284) Dr Ft Roberts emphasizes that the modern student, instead of asking himself what he actually sees, asks himself what he should see. This outlook is encouraged at the present time by the variety of labels attached to diseases and syndromes. In many schools the student who can recite parrot fashion the varied nomenclature of such diseases as thrombo angustis obliterans is looked upon with favour. Naturally his class-mates endeavour to emulate him. Until the end of the Dark Ages almost all academic thought centred on the teachings of the ancients. While Plato and Aristotle were studied intently the emphasis was on the purely intellectual interpretation of these men's work, and their conclusions were considered as the be all and end all rather than as indications for further work, both observational and theoretical. With Galileo, Newton, and their contemporaries we witnessed the birth pangs of the age of accurate observation. At the present time we seem to approach the twilight of this age.

Whitehead has divided the scientific approach into three stages: the stage of description, the stage of classification, and the stage of measurement. At the present time, in the medical field, some workers are concerned with the first stage, some with the second, and many with the third. For results to be of value and not subject to almost immediate contradiction, careful and full observation is of supreme importance at each stage.

As a background to all this comes the question of interpretation, and for this sound reasoning—inductive and deductive, as emphasized by Dr P T Macdonald (Sept 9, p 354)—is of paramount importance. Dr Macdonald does not seem to appreciate, however, that a mighty intellect working on wrong observations may be made much more of a hindrance than a help. Much importance is attached to the conclusions of the great minds, but these are only of value in so far as they are based on accurate and painstaking observation. At the present stage of medical development we are far from being able to dispense with those relatively neglected but very useful instruments: the human eye, the human ear, the human fingers and the human nose. In how many, alas, these are the eyes which look but do not see, the ears which listen but do not hear, the fingers which touch but do not feel, and the noses which sniff but do not smell!

The reason for the accumulation of undigested facts is that the present generation is being trained on absorptive rather than observational lines. As time goes on, many of these undigested 'facts' are found to be fallacies. The trained observer can spot a fallacy much more quickly than the student who can recite large portions of Cunningham, Gray, or Price verbatim, but who is often incapable of recognizing before him the conditions with whose theoretical aspects he is well acquainted. I believe Dr Macdonald would agree that Michelangelo, Leonardo da Vinci, Shakespeare, Dickens and (more near our own time) Rutherford, Lister, and Elliot Smith were all shrewd observers, and that no small amount of their permanent contribution to knowledge, thought, and art was the result of painstaking observation.

The teaching of accurate methods of thought is more difficult than the teaching of observation—as witness the powers of observation of most young children. That these studies are complementary and not antiaesthetic would be admitted by most. Let us start our reforms with emphasis on the powers which tend to atrophy, but not forgetting the importance of the powers we can acquire—namely those of accurate thought—I am, etc.,

JOHN GRIEVE  
Squad Ldr R.A.F.V.R.

### Limitations of Current Medical Training

SIR—In his letter on limitations of current medical training (Sept 16 p 352) Dr Robinson restarts the old argument of old methods versus the new, and although there are some elements of truth most of the remarks can be criticized.

It is quite true that in teaching hospitals many of the pathological tests which are performed are quite unnecessary, but in most of the cases the diagnoses have been made and the laboratory tests are done merely to show the student the com-

plete picture of the disease. The young doctor who goes into practice thinking that diagnoses can only be made by tests rather than by examination of the patient is the exception and not the rule.

The third and fourth paragraphs appeal to me, being an unfortunate R.M.O. He states that lobar pneumonia was diagnosed on the wrong side due to laboratory findings. I should be interested to know what investigations gave one the diagnosis of lobar pneumonia except an x-ray examination, which would hardly give the wrong side. He then states that both the patients, being dosed immoderately with sulphapyridine, developed lung abscesses, this not being unexceptional. I feel that lung abscesses following lobar pneumonia are very exceptional, and I should like to know his reasons why immoderate dosage should cause such a condition. As an R.M.O. one so often reads in doctors' letters that sulphonamides have been given—tab. two t.d.s.—it being very unusual to find that it is the house officer who gives the wrong dosage.

As for the typical remarks about cardiac murmurs, at my London teaching school (and I do not believe that this is the only exception) we were taught the relation of cardiac murmurs to the pathology of the cardiac condition, but it was stressed that murmurs were not the be all and end all of cardiology.

In the last but one paragraph the house officer gets it in the neck again. It was stressed throughout the whole of his teaching that he should not, if possible, reduce a dislocation without an x-ray examination, not because he is unsure of his diagnosis but because of concomitant fractures being unrecognized and the intricacies of the law courts.

To finish, I should like to know how many old practitioners with the aid of physical signs can differentiate between 75% and 100% haemoglobin, this being of importance in a case of pernicious anaemia where the threat of subacute combined degeneration is not always so far distant. I feel that 265 blood counts could just possibly be performed on such a case over many years, but to say that this is a typical example of modern methods is, I feel, a little over-exaggerated, as is also, I think, the whole of Dr Robinson's letter—I am, etc.,

High Wycombe Hospital.

RICHARD STURTON

SIR—I should like to make a few comments on Dr Henry Robinson's letter.

I agree with his remarks about specialization at an early age. I was swept up by the Army six months after qualifying and was quite unable to start on the road to specialization and am duly grateful. I now see all sorts of complaints and am learning the great importance to the individual of the trivial. But when he starts to criticize the abilities of the young doctor he paints a picture of unmitigated gloom, only relieved by touches of sheer balderdash. I have never seen or read before of lung abscess as a direct result of sulphapyridine overdose. What is the scientific proof for this amazing statement? It sounds like pure intuition on the part of the "old physician." In my experience it is far commoner for sulphapyridine and other sulphonamides to be given in too small rather than too large quantities.

His remarks about the diagnosis of cardiac disease are true of physicians of all ages. But we were always taught that a murmur gives no indication of the efficiency of the myocardium but it may give an all-important clue to the aetiology of a given case of cardiac failure and thus have a very important bearing on prognosis.

It was also always insisted by my teachers that we should take a full history and make a thorough examination before we ever thought about laboratory tests. X-ray and other examinations not forgetting those carried out in the "Temple of Verities," the post-mortem room, are an essential check on one's physical signs. Those who use these aids frequently and intelligently find out how often they are wrong and learn to do better in the future. Those who do not, remain in blissful ignorance and are a menace.

Lastly I should like to express a word of admiration for the persistence of the poor fool who carried out 265 blood counts on one individual. Perhaps he discovered some important variations in the healthy blood picture, which I hope he will duly publish—I am, etc.,

I S STADDON

### Refresher Courses for the G.P.

SIR,—Dr. Walshe in his article (Sept. 2, p. 297) looks to the replanning of the conditions of medical practice rather than the refresher course to help the practitioner keep abreast with the advancement of medicine. Unfortunately it is doubtful whether such an ideal state of affairs can be brought about in the near future, and so the following is suggested as an alternative method of achieving the same result.

General practitioners, who naturally have little time to spare for refresher courses and little inclination to upset their regular work, do find they have an occasional hour or two to spare on some afternoons in the week. Surely postgraduate study could be arranged to coincide with these spare times? The type of study that appeals to the practitioner is that which most nearly approaches his own work—i.e., a clinical round in a hospital. Therefore, if all the hospitals in any area held a clinical round for practitioners, each on different afternoons in the week, when members of the staff demonstrated medical and other cases at the bedside, the practitioner living in a large city like London would always find a local hospital where a clinical round was being held at the time he happened to be free.

Regular instruction of this nature throughout the year is the best method of postgraduate training, and at the same time leads to better co-operation between practitioners and hospital staffs. The benefits of such a plan to all concerned were obvious to those who attended such a weekly round held before the war at St. Mary Abbots Hospital, L.C.C., Kensington, by the great initiative of the medical superintendent, Mr. James Carver.—I am, etc.,

London, W.8.

H. STEPHEN PASMORE.

### Cancer Clinics: Beware

SIR,—While clinics have their uses, they can be overdone. In the case of venereal disease they serve well, but there the symptoms are usually unmistakable. It would be the very reverse with a disorder so protean in form as cancer, in which the early stages are apt to arouse but little suspicion of their sinister significance.

The public is painfully aware of the hideous later stages of cancerous disease, but knows little of its inception. Yet often in the early stages it is curable. But will the cancer clinic get patients in their early stages? No! since the patient does not recognize that he has cancer, and the idea of consulting a cancer clinic will never enter his head. Even if his suspicion is aroused, he will be inclined to shun a place labelled "Cancer Clinic." Finding something wrong with himself and wanting a remedy, the patient naturally resorts to his general practitioner. Therefore he is the man to make responsible for diagnosis. When the family doctor is fully alive to his responsibilities and maintains full competence in diagnosis the patient stands the best chance of early detection of a cancer. Having known his patient previously, the doctor can view complaints in their proper perspective, which makes for quick and sure diagnosis. Moreover, the family doctor, deprived of such an important function, would lose interest, and his proficiency in diagnosis would deteriorate. Already rival services, such as infant welfare, school, and industrial clinics, tend to diminish his influence.

Not only in diagnosis but in psychology the doctor at a cancer clinic is at a disadvantage. The family doctor knows his man and the tactful way of dealing with a solemn and delicate situation. To one he is candid, to another he may hint at possibilities, while with timid or neurotic folk he excludes the slightest reference to cancer. Thus he wins the patient's confidence and willing co-operation. Once diagnosed or suspected, the case is directed to the appropriate consulting specialist for confirmatory opinion and treatment.

As already shown, special clinics dotted about the country are of little practical value in this campaign, as but a few of those for whom they are intended would avail themselves of the service. On the other hand, they would certainly do harm by initiating or fostering thoughts of the disease in those inclined to a cancerous obsession. Already cancerphobia is notorious. The existing machinery clearly contains the elements for a successful campaign—all we need is more of it. In regard to the present shortage, the bald facts are that the uninsured public can't afford their doctor, and he can't afford the time. Patients won't incur expense for a slight illness. Yet the

tantalizing fact is that operating early offers the one great chance of cure. The doctor's difficulty is that he has too crowded a surgery, and cancer calls for detailed study of symptoms and deliberate examination in adequate space, light, and warmth. Now, however, the Government promises to remove the financial handicap by a national health insurance scheme for every man, woman, and child. But money alone cannot provide the much-vaunted first-class service for all. We are bound to wait for the training of personnel. Time—7 years minimum—is needed to double the meagre ranks of the profession, just as time was required before we could convert our inadequate Air Force into a potent one.

Once the diagnosis is established and treatment arranged a third requisite remains. The case must be pursued throughout the patient's life. This is necessary to detect possible recurrence promptly and nip it in the bud, to observe the effect of treatment, and for statistical study of the disease. The general practitioner is the one most interested, and he can readily make regular observations. A special supervisory department of the public health service would be responsible for collecting official records and statistics, and would ensure that regular reports reached its office. It would be compulsory for the general practitioner to send returns annually or as often as required and to direct the patient for a consultant's opinion as occasion demanded. From the mass statistics compiled conclusions of far-reaching significance would emerge. Such a perfect follow-up system would ensure that the doctor's interest was maintained and would give the patient full confidence and satisfaction.—I am, etc.,

Bristol.

A. WILFRID ADAMS.

### Lay Psychotherapy

SIR,—By way of illustrating Dr. D. Stanley-Jones's admirable letter (Sept. 2, p. 322), may I state briefly what is being done by one small body to provide doctors with skilled psychotherapeutic auxiliaries? The Guild of Pastoral Psychology was founded some years ago by a number of doctors and clergymen who felt a growing double need: among doctors, busy and untrained in psychotherapy, for workers who could help patients with personality disorders as distinct from definite mental illness; and among clergymen and teachers for sound guidance in the principles of psychology, to enable them to do their own life-work more effectively. The Guild's policy is to explore the wide common ground between psychology and religion, and its publications now cover a very respectable field. It promotes lectures and study groups, and has made a start with the difficult and delicate task of instituting a higher qualification. A "Fellow" must, unless for quite exceptional reasons, be a doctor, a clergyman, or a qualified psychotherapist; he must have passed a stiff written examination, had a thorough personal analysis, and trained under expert supervision at probation work, psychiatric out-patients, or some other recognized form of practical social psychology. Candidates are very sparingly hand-picked by the executive committee. A Fellow may not display his fellowship as a qualification. The Guild sets its face against creating a class of non-medical persons who would conceive themselves qualified to practise quasi-medical psychotherapy. It considers that any minister who wishes to practise professionally as a psychotherapist should conform to the standards laid down by recognized schools for lay psychotherapists. Its policy is to co-operate with medical practitioners and help them by all possible means in the difficult days which lie ahead, when neurosis will be rife and those who can cope with it will be few and overworked.—I am, etc.,

London, S.W.19.

D. H. KITCHIN,  
Hon. Treasurer, Guild of Pastoral Psychology.

### Mass Radiography

SIR,—Your reprint *re* mass radiography in the *Journal* of Sept. 9 (p. 350) shows a desire on the part of the Ministry of Health to retain mass radiographic procedure in their own hands, with no departure from the particular method and apparatus they have sponsored. Question definitely arises whether the method they have selected is the best, and, unless this is the case, use of alternative methods should not be prevented by official disfavour.

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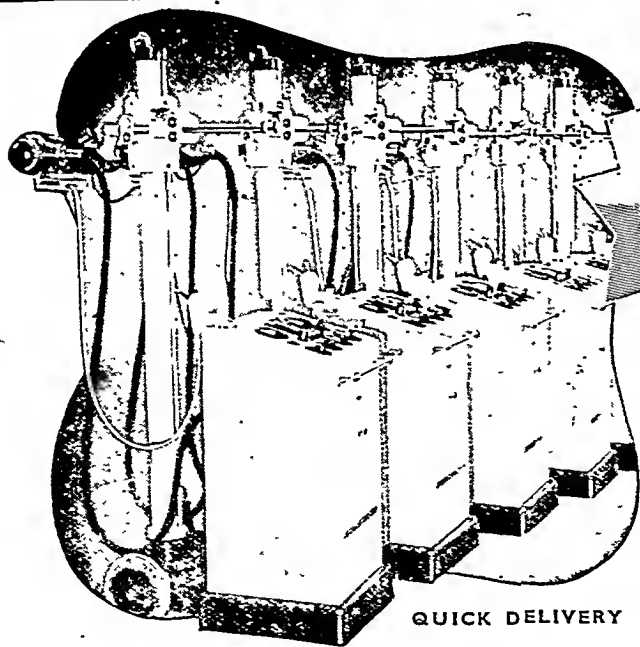
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In an editorial, *Radiology* (1942, 38, 496) discusses the relative value of 14 in  $\times$  17 in films (12 in  $\times$  15 in films are more commonly and economically employed in Britain), 4 in  $\times$  5 in films (as employed in the U.S.A. in mass procedures), and 35 mm films as employed in this country by the Ministry. This editorial summarizes that full size films are the most accurate, 4 in  $\times$  5 in films next, and 35 mm films 'should also be considered, but do not deserve such a high rating as the other two.' Kerley (*Brit J Radiol*, 1942, 15, 346) states, "Miniature radiography does not compare in detail with the full size picture, hence the method is restricted to lifting cases of comparatively gross disease." Supe (*Fort a d Geb d Roentgenstrahlen* 1940 62, 145) on the basis of 25 000 cases of minor *s. pneumonokomosis* considers the fluorographic method as unsatisfactory for the study of asbestosis. Bailey (*Radiology*, 1942, 39, 306), having used normal and 4 in  $\times$  10 in stereoscopic films for examination of U.S.A. recruits states that since most time is taken in positioning the recruits there is no time economy with miniature films. The claims for 35 mm films based on film cost is compared to 12 in  $\times$  15 in (invariably based on small film purchases instead of by thousands) evade the fact that the film cost is only a fraction of the total establishment expenses. Magnification of 35 mm films cannot be increased to approaching normal size without the emulsion grain obscuring the detail of utmost importance in early lesions.

To popularize mass radiography articles have been published in the popular press (*Picture Post*, Feb 12, 1944), but nothing is stated that such examination cannot give immunity to later infection. Hence a false sense of security is given. At a Rotarian luncheon to which I was invited a lay lecturer gave me the impression that such examinations may be carried out by laymen only. Question strongly arises whether in practice secrecy can be maintained.

With the possibility of hostilities ending there is already a reaction against regimentation in normal life and in respect to tuberculosis, question arises whether propaganda should not be preferably directed towards the more early radiological examination of clinically suspicious cases with full size films at hospital or in private, at the instance and under the consideration of the patient's private medical attendant with resulting secrecy. The private medical attendant can best decide, on the basis of the report and his clinical observations, whether care and notification are necessary, or only an old lesion is being dealt with and secrecy can be maintained without danger to others. Once these cases become official, routine home inspections, loss of work time for periodical clinic attendances, etc., result, with publication of the patient's past condition and detriment to his present economic position. If one can judge by the difficulty of obtaining an impartial board which exists in respect to those enlisted in the Services and suffering from definite conditions, with many months before proper discharge, to remove the official classification of tuberculous will be equally difficult, particularly if the Ministry is to dictate the mode and technique of examination—I am, etc.,

London, E7

BERNARD LEGGETT

### Service Medicine

SIR—My reaction to Dr P B Corbett's letter (Sept 9 p 355) is a desire to point out that as a civilian medical practitioner he is only on the very fringe of Service medicine, and is not in a position to express a true opinion as to its merits or demerits. The number of beds in his sick quarters suggests that he is in charge of a very small station and is therefore acting in the place of a very junior M.O. He probably does not realize the large amount of paper work that even his small station causes his Wing S.M.O. It is well known that junior M.O.s and C.M.P.s are not delegated the "responsibility" of paper work and have more time to devote to the rare case, presenting a clinical aspect of any interest, during the short time that it may remain in the sick quarters. In this they are more fortunate than their slightly more senior and more numerous brethren.

It is only partly true that the "crux of the matter is that the medical orderlies must know and do their part." It is my experience in five years in the R.A.F. during the war and one year in the Volunteer Reserve, and two C.M.P. appoint-

ments before the war, that it is rare to find orderlies who have the conation or volition to be trusted with more than menial tasks, and that to leave even the routine paper work entirely in their hands is to invite a shower of abuse and a visit from the Group S.M.O. A good staff is admittedly very helpful, but the very best cannot absolve the M.O. from the tedious completion of forms and procedures that are his sole responsibility. For example to send an officer on sick-leave four forms must be completed in manuscript of which no fewer than fifteen copies must be personally checked and signed. The completion of board action on an airman or airwoman on F 496 with M.P.B. 204 is equally tedious but necessary for the proper compilation of R.A.F. records. This form eventually bears the signatures of six medical officers (surely they could be better employed). As a C.M.P. Dr Corbett would never come in contact with more than the initial phase of these procedures. Another aspect of Service medicine of which he is in all probability happily oblivious is that of stores. The Service medical officer in charge of a station is responsible for everything in his sick quarters, even to the electric light bulbs, as he may find to his own financial disadvantage if he is negligent. To be classified as careful in this matter entails no small amount of time and labour spent in holding frequent "checks."

I could continue with examples such as these certainly *ad nauseam* if not *ad infinitum*. I am not entirely destructive in my criticism and I heartily endorse Dr Corbett's suggestion to provide the G.P. with a secretary to enable him to "have more time to devote to the clinical aspect of medicine," which (here I beg to contradict) is *not* the case in Service medicine, as I hope I have already made clear. Let us be under no delusion lest the red tape of Service medicine should be adapted to fetter civilian practice to the detriment of the care of the public—I am, etc.,

"SERVICE DOCTOR"

### Thumb-sucking

SIR—One of the lessons experience has taught me is never to be "oracular" with regard to medical matters. I particularly used the words "no doubt in my mind" for this reason. I have no wish to claim more than the right to express my own honest, considered opinion regarding the harmfulness of persistent thumb sucking. That opinion is founded on the detailed clinical observation of 3 400 children examined in the speech research, and on the clinical impression of 20 years' practice among children of all ages, involving the inspection of some 8 000 mouths each year. Some of these children I have now been able to re-examine at intervals throughout their entire school life from the kindergarten to the sixth form.

I am deeply interested in Dr Colin Edwards's contrary clinical impression (Sept 16, p 387), and would be sincerely glad to know the scope of his own experience. But, Sir, what exactly is a "flesh mortifier"? Am I supposed to be one? I hope not. It sounds very disagreeable—I am, etc.,

Manchester

MARY D SHERIDAN

## The Services

Capt W R Dalziel, R.C.A.M.C., has been awarded the M.C. in recognition of gallant and distinguished services in Italy.

The Efficiency Decoration has been conferred upon the following officers of the Territorial Army: Lieut Col A M Campbell and D P Levack, Majors (Temp Lieut-Col) M DeLacy, H G Garland, and W E Orchard, Majors J C C Howe, R G Morrison, and L D Williams, Capt (Temp Major) C S France.

Capt W L Wainwright, Home Guard, has been appointed M.B.E. (Military Division) in recognition of gallant conduct in carrying out hazardous work in a very brave manner.

### CASUALTIES IN THE MEDICAL SERVICES

Capt ROBERT ALASTAIR BOYS KINLOCH, R.A.M.C., previously reported missing in Burma, is now known to have been killed in action. He was the second son of Dr R Blair Kinloch of St Albans and studied medicine at St Thomas's Hospital, qualifying M.R.C.S., L.R.C.P. in 1941. He joined the R.A.M.C. as a temporary lieutenant in January, 1942.

## Obituary

SIR HUMPHRY ROLLESTON, Bt., G.C.V.O., K.C.B.

Former President of the Royal College of Physicians

With the death of Sir Humphry Davy Rolleston on Sept. 24 there has passed from our midst a physician who helped to sustain the literary tradition of British medicine which began with Linacre. But those who came within the wide circle of his friendship mourn even more deeply one who attracted and retained to an unusual degree the affection and confidence of his fellows. From the record of the offices he held and the work he did, as clinician, teacher, writer, and man of affairs, almost every hour of every day must have been fully occupied, yet his courtly bearing and manner always conveyed the leisure and dignity of the old school.



All the best traditions of his profession, its courtesy, its learning, its uprightness and devotion to truth, met in him. He was a teacher who had much to impart, but he remained to the end a humble learner, with a zest for fresh knowledge concerning things new and old.

His family descended from a branch of the Rollestons of the village of that name in Staffordshire. Sir Humphry's grandfather, the Rev. George Rolleston, was a fine old man of the almost extinct parson-squire type, who until his death in 1868 held the family living and also looked after the small estate at Maltby in the West

Riding. His son, George Rolleston, M.D., F.R.S., qualified at the age of 21, served as a medical officer in the Crimean War, returned home to become physician to the Radcliffe Infirmary at Oxford and Lees Reader in Anatomy at Christ Church, and in 1859 was appointed Linacre Professor of Physiology. George Rolleston was a dominant and gifted man, one of the earliest, if not indeed the first, to relate biology to chemistry. He married Grace, the daughter of Dr. John Davy, whose deep attachment to his brother Humphry, the famous chemist, inventor of the safety lamp and discoverer of Michael Faraday, makes a pleasant chapter in biography. George and Grace Rolleston settled in New Inn Hall Street, Oxford, and had a large family. Their eldest son, named after his mother's uncle, was born on June 21, 1862.

Humphry was educated at Marlborough, a school for which he cherished a lifelong affection, shown in later life by his presidency of the Marlburian Club. From Marlborough he went to St. John's College, Cambridge, of which he became a Fellow, afterwards an Honorary Fellow. At Cambridge he made friendships with several men who were to become famous in his profession, notably Donald MacAlister, eight years his senior, then medical tutor at St. John's. Rolleston gained first-class honours in both parts of the Natural Sciences Tripos, and then went on to St. Bartholomew's Hospital. He qualified for practice with his Cambridge M.B. in 1888 and proceeded M.D. in 1892. After serving as house-physician and demonstrator of anatomy at Bart's, during which time he wrote jointly *A Manual of Practical Morbid Anatomy*, derived from his experience of the post-mortem room, he became attached to the visiting medical staff, first of the Metropolitan Hospital, and then of St. George's and the Victoria Hospital for Children. No opening in the succession at Bart's was then within sight. He filled teaching posts in pathology at St. George's and had been demonstrator of pathology, physiology, and anatomy at Cambridge. At Cambridge he came into association with Sir Clifford Allbutt, who had recently been appointed Regius Professor of Physic there. Allbutt had been a friend of Rolleston's father, and now between the older man and the younger there began a close friendship which lasted until

Allbutt's death thirty years later. In the preparation of his famous *System of Medicine* Allbutt was greatly assisted by Rolleston. The work first appeared, in eight volumes, in 1896-9, and a revised edition, in eleven volumes, with Rolleston's name associated with Allbutt's in the title, in 1906-11. In both editions of this work, which still holds its place among the chief encyclopaedic medical works in the English language, Rolleston wrote several of the articles, notably those on alcoholism, diseases of the oesophagus, the small intestine, the adrenal glands, the spleen, and the lymphatics.

Meanwhile, in 1898, Rolleston was appointed physician to St. George's and held the active post for twenty years. When he retired from the full staff in 1919 under the rules of the hospital he was appointed emeritus physician for his lifetime, with the privilege of using cases in the wards for clinical teaching. He was also made a vice-president of the hospital. In 1925, on the death of Sir Clifford Allbutt, he was appointed to succeed him as Regius Professor at Cambridge. There could have been no more fitting appointment to that famous chair, with its four hundred years' history, than the man upon whose shoulders the mantle of Allbutt had so obviously fallen. He acquitted himself in it, as in all his positions, with distinction, and retired, under the newly imposed age limit, at seventy. In the year of his retirement he published a biographical history of the Cambridge Medical School, having already written a full-length life of Allbutt.

For a period of eight years, beginning before his election to the Fellowship in 1894, he was an examiner for the Royal College of Physicians. He also examined in medicine at various times for the Universities of Glasgow, Oxford, Cambridge, London, Durham, Manchester, Bristol, and Sheffield. He served the Royal College as councillor and censor, and finally, in 1922, as President, a position he held until 1926. His annual presidential addresses to the College during that period have been published, each of them a careful and complete disquisition. During the same period he represented the College on the General Medical Council, and later, on his appointment to Cambridge, he continued a member of the Council as representative of that University until 1932. As far back as 1895 he was Goulstonian lecturer to the Royal College, discoursing on the suprarenal bodies, which at that time were attracting much attention, so that it was opportune to review the state of knowledge concerning them. In 1919 he delivered the Lumleian lectures, taking as his subject cerebrospinal fever. In 1933-4 he was Fitzpatrick lecturer, and dealt with the history of the endocrine glands. In 1936 he expanded these lectures into an extensive monograph with a historical review. His Lloyd Roberts lecture in 1933 was on the association of medicine and literature, a subject that always charmed him. He delivered the Harveian Oration in 1928 on cardiovascular diseases since Harvey's discovery.

Sir Humphry Rolleston's work as a writer, a historian, and, perhaps most of all, a bibliographer deserves a separate memoir. At its best his literary style, like his penmanship, was neat as an etching. His care for dates and reference might have seemed to some people to amount to pedantry; but it was a part of his scrupulous courtesy. To be accurate with regard to names, dates, facts in general is, after all, a compliment which the writer owes to those who read him and to those about whom he writes. In many contacts with Sir Humphry Rolleston the only time we have seen him ruffled was when it was suggested that a reference, the verification of which would have been tiresome, might be passed without checking. It was a matter for regret, and yet it was a reflection of his own modesty, that he should have written so little relatively on his own observations and thoughts and so much on the observations of others, which he had carefully collected and collated. He was an omnivorous reader, and he had a regular system of filing and annotation. In using it he sought accuracy and completeness. He was ready at any time to sacrifice an epigram of his own for a quotation from somebody else, but it was important that the quotation should have appended to it the source. Medical literature was to him a kind of scripture, and he delighted in the construction of a concordance. In his Harveian Oration on cardiovascular diseases just referred to some 300 authors are quoted. In his *Medical Aspects of Old Age*, published in 1932 (a revised and enlarged edition of his Cambridge Linacre

lecture) almost 400 names of persons are given. In a little six-page essay on Thomas Sydenham which he contributed to D'Arcy Power's *British Masters of Medicine* the names of a score of eminent people are given and after the name of each one of them there follow in brackets the year of birth and of death. The research, the labour, the patience he expended over writings which in bulk were not large would have been remarkable in a man who had nothing else to do but sit in a library. When one got used to it this quiet writing crammed with facts was very enjoyable, the more so for an occasional unexpected piece of irony or humour.

The first important work to appear under his own name was *Disease of the Liver, Gall-bladder, and Bile Ducts* published in Philadelphia in 1905, and in a second revised and enlarged edition, in London 1912, and in a third (with Dr J. W. McNee) in 1929. Other shorter works were his *Medical Aspects of Samuel Johnson* published in 1924, an essay *On Writing Theses for the M.B. and M.D.*, republished in 1925 after an early appearance in 1911—one of the best, as it is the shortest, of medico-literary first aid manuals, the memoir of Sir Clifford Allbutt, published in 1929, the Osler Memorial Oration in 1930, and *The Two Heberdens* in 1933. Several pages of the British Museum catalogue are filled with the titles of inaugural and other addresses and monographs from his never-wearying pen. In 1936 he began a new enterprise in the editorship of the *British Encyclopaedia of Medical Practice* in twelve volumes, writing several of the sections himself, including some interesting observations on the progress of medicine from pre-Hippocratic days. Amid all this output he found time to edit the *Practitioner* from 1928 onwards with Mr. Scott Stevenson, and from 1934 with Dr. Alan Moncreff as joint editor.

In the South African War Rolleston was attached to the medical staff of the Imperial Yeomanry Hospital, Pretoria. In the war of 1914-18 he was consulting surgeon to the Royal Navy, with the rank of surgeon rear-admiral, and here his knowledge and wisdom, matched by his energy and tact, enabled him to render great service, which was recognized by the King in the conferment of the K.C.B. in 1919. Later he was a member of the Medical Consultative Board for the Navy 1924-35, also of the Medical Administrative Committee of the Royal Air Force. He served on several Royal Commissions, Departmental Committees, and the like, including the Royal Commission on National Health Insurance. Noteworthy was his service, under Lord Macmillan, on the Royal Commission on Lunacy and Mental Disorder, the sittings of which were extremely protracted. He took part in Home Office inquiries into industrial diseases from the point of view of the Workmen's Compensation Act, and was a member of the Colonial Office Committee on Medical Services, and chairman of the Ministry of Health committees on vaccination and on medical records. He was one of the two assessors at the public inquiry into the Crofton typhoid epidemic of 1937. On one of the severest mornings of that winter the tribunal began its sitting without him, and as he had a journey of several miles to make and was then in his seventy-fifth year his absence on such a day caused no surprise. But after a quarter of an hour he arrived, having been delayed by a snowbound train.

Of his work for the British Medical Association and its Journal much could be written. Although never a member of its Council nor a partaker in its medico-political activities, he rendered much quiet unostentatious service along his own particular line. His wise counsel, his accessibility, his willingness to give freely of his time and thought to matters which were often very detailed laid the Association under a great debt on many occasions. He joined the Association in 1895, and in that year he was honorary secretary of the Section of Pathology and Bacteriology. He was vice-president of the same Section in 1904, and of the Section of Diseases of Children in 1910. In 1899 he was vice-president of the Section of Medicine, and president of it at the Cambridge Meeting in 1920, and again at the Centenary Meeting in London in 1932. During his tenure of office as Regius Professor at Cambridge he became president of the Cambridgeshire and Huntingdonshire Branch. In 1926 he was awarded the Association's Gold Medal for his distinguished services. The engrossed testimonial handed to him on that occasion, after mentioning the objects of the award—namely, to recognize the work of those who "have conspicuously raised the character of the medical profession"—went on to state:

"Every member of the Association feels that the object has never been better fulfilled than in awarding the medal to you who, during your career, have added very much to the lustre of names already illustrious." Humphry Rolleston was fittingly added to a list which included the names of Clifford Allbutt, Dawson Williams, and, of an earlier generation, William Farr.

In 1932 he was elected a Vice President of the Association, and in 1935, when the Annual Meeting was held over-seas and had an Australasian President, he served as Acting President in London. He was always ready to defend the good name of the Association. Once after the late Lord Riddell, in a characteristically pert speech had accused the B.M.A. of being a trade union and the G.M.C. of snobbery, Sir Humphry rose at once and very effectively defended both institutions. He did much faithful work on headquarters committees over a period of twenty years especially the committees concerned with the arrangements for the Annual Meetings, with the Library, and with the science work of the Association, including the bestowal of scholarships and grants. One of the special committees in whose work he took a large part was that which considered the causes and treatment of arthritis, and he had a principal hand in the drafting of its report. Another noteworthy piece of service was his eighteen years' chairmanship of the Committee of Management of the Medical Insurance Agency.

His presidencies make a formidable list. He was president of the Royal Society of Medicine in 1918-20, having already been president of some of its Sections, including the Clinical Section and the Section of the History of Medicine, president of the Medical Society of London in 1927, and of the Association of Physicians in 1925 and 1929. He was also president of the former Roentgen Society and again of its reincarnation in the British Institute of Radiology. For ten years he presided over the committee of the Papworth Village Settlement. The treatment of tuberculosis and the rehabilitation of its victims was one of his interests, and he was consulting physician to the King Edward VII Sanatorium, Midhurst and the Royal National Hospital, Ventnor. Other societies which claimed his active interest were the Eugenics Society and the Society for the Study of Inebriety. He was chairman of the Voluntary Aid Detachment Council over a period of fifteen years. Probably his presidency of the London Cornish Association was thrown in as a light relief, his interest in Cornwall deriving from Sir Humphry Davy.

In 1923 he was appointed Physician-in-Ordinary to King George V, and created a baronet in the following year. He was the senior member of the team of consultants and specialists whom Lord Dawson called in during the King's long and serious illness in 1928-9. For this he was created G.C.V.O. In 1932 until the end of the reign he was Physician Extraordinary. The number of honorary doctorates and fellowships he held was surely a record. He was an honorary D.C.L. of Durham, LL.D. of Edinburgh, Glasgow, Bristol, Birmingham, and the National University of Ireland, M.D. of Dublin, and D.Sc. of Oxford. He was Honorary Fellow of the Royal College of Surgeons of England, of the Royal Faculty of Physicians and Surgeons of Glasgow, and of the Royal College of Physicians in Ireland, also an Honorary Freeman of the Society of Apothecaries of London. In medical circles abroad his name was held in great esteem. He was an Officer of the Legion of Honour, a corresponding member of the Academy of Medicine in Paris, and an honorary M.D. of Paris and Bordeaux. The Academy of Medicine in Rome also made him a corresponding member, and Padua and Madrid conferred on him their honorary degree. He was an honorary member of the Association of American Physicians, an honorary Fellow of the New York Academy of Medicine, and an honorary graduate of the universities of Jefferson and Pennsylvania. In 1936 he took part at Washington in a celebration much after his own heart—that of the centenary of the library of the Surgeon-General's Office, U.S. Army, and in his commemorative address he paid a worthy tribute to John Shaw Billings and his assistants and successors, all superlative bibliographers. He came home "consultant for life" to the U.S. Army medical library.

He married in 1894 Lisette Ella, daughter of Mr. F. M. Ogilvy. Their elder son, Francis Lancelot, was killed in action in the first European war, and their second son, Ian Humphry, who was in the Crown Colonies Civil Service, was killed in endeavouring to quell a riot in Zanzibar in 1936. Not much

had been seen of Sir Humphry in London during the war; he spent his last years quietly with Lady Rolleston at Haslemere in Surrey. But that indefatigable pen went on. He was a faithful friend to two Editors of this *Journal* and for many years helped them with frequent reviews and unsigned articles. Often, on the passing of a noteworthy figure in medicine, we received from him a beautifully phrased "appreciation," a perfect piece of appraisal, saying not too much nor too little.

#### FRANK DOUGLAS MARSH, M.B., F.R.C.S.

We regret to announce the death on Sept. 17 at Edgbaston, Birmingham, of Major Frank Douglas Marsh, M.C., honorary aural surgeon and laryngologist to the Children's Hospital, Birmingham, honorary surgeon to the ear and throat department of Queen Elizabeth Hospital, and clinical lecturer on diseases of the ear and throat in the University of Birmingham.

He was born at Edgbaston on Nov. 26, 1888, elder son of the late Frank Marsh, F.R.C.S., the well-known Birmingham surgeon. From Shrewsbury School he went to Trinity College, Cambridge, and graduated B.A. with honours in the Natural Sciences Tripos of 1910. At St. Bartholomew's Hospital he won the Shuter Scholarship and qualified in 1914. He served on the Western Front as an officer in the R.A.M.C. Territorial Reserve from 1915 to 1919, reaching the rank of major and winning the Military Cross, and was for a time otologist at the Royal Victoria Hospital, Netley. On demobilization in 1919 he returned to Bart's as house-surgeon, and took the M.A., M.B., B.Ch. degrees at Cambridge and the F.R.C.S. diploma in 1920. He then set up in Birmingham as a specialist in otorhino-laryngology, and besides the appointments listed above he became consulting ear and throat surgeon to the Nuneaton General Hospital, the Guest Hospital, Dudley, and other neighbouring hospitals.

Frank Douglas Marsh joined the B.M.A. in 1922 and was a member of the Otological Section of the R.S.M. He published a number of papers on his subject in the *Journal of Laryngology and Otology* and elsewhere. His widow was formerly Dr. Erythe M. Bankier.

#### DENNIS EMBLETON, M.A., M.B.

We regret to announce that Dr. Dennis Embleton died suddenly on Sept. 17 at Ashridge E.M.S. Hospital, Berkhamsted, where he had been pathologist during the war. He was well known at B.M.A. House as a member of the Pathologists Group Committee from 1932 onwards, and as a member of the Central Medical War Committee and its predecessor the Central Emergency Committee since 1938; he was also a member of the Special Practice Committee for two periods, and of the Conference on Pathological Services which met in the year before the war. When the Association held its Annual Meeting at Plymouth in 1938 he held office as vice-president of the Section of Pathology, Bacteriology, and Immunology.

Dennis Embleton was born in Madeira in 1881 son of Dennis Cawood Embleton, M.D., and was educated at Tonbridge School, Christ's College, Cambridge, and University College Hospital, London; he qualified in 1906 and took the M.A. and M.B. degrees at Cambridge in 1911. From schooldays his heart was in the laboratory: At U.C.H. he was appointed assistant pathologist in 1907, assistant bacteriologist in 1910, and bacteriologist in 1919; he had been assistant lecturer on bacteriology in the medical school since 1912. He served during the last war with the rank of major, R.A.M.C., in charge of the laboratory of the Royal Victoria Hospital, Netley, and was also district cerebrospinal fever officer and district tetanus inspector. Embleton published a number of articles in medical and scientific journals, both in this country and on the Continent, on the dietetic treatment of diabetes, the pathogenicity and virulence of bacteria, the Wassermann reaction, the tuberculin reaction, bacterial endotoxins and exotoxins, meningococcus infections, and bacterial carriers. One of his early writings was a joint paper with his senior colleague, Dr. F. H. Teale, on anaphylaxis and its bacterial aspects read at the Annual Meeting of the B.M.A. at Brighton in 1913. Twenty-five years later he presented to the same Section an analysis of the glucose-tolerance curves from a large number of obese patients. He had been an active member of the

Association of Clinical Pathologists from the time of its formation.

A friend of undergraduate days writes: We have lost medical scientist who worked always in strict obedience to his sense of duty. Dennis Embleton was steadfast of purpose and honest to the core. Great height and almost boyish good look made him a conspicuous figure anywhere; and it needed little discernment to perceive the thoroughness and sincerity of the man or the natural reserve behind his straightforward speech and manner. In congenial company he would unbend, with most delightful smile and sense of fun.

#### HELEN LUKIS, M.D., B.S.

We regret to announce the death on Sept. 9, after a long illness of Dr. Helen Lukis, honorary medical officer to the Kingston Victoria Hospital, Surrey. For a number of years she has been a keen worker for the British Medical Association, both at headquarters and as secretary and, later, chairman of the Kingston-on-Thames Division.

Dulcie Helen Lukis was the youngest daughter of S. Pardey Lukis, K.C.S.I., who was Director-General of the I.M. from 1910 until his death in 1918, and held many other high offices in India. One of her brothers, T. S. Lukis, after brilliant career at his father's hospital (Bart's), was killed in action in 1915. Helen studied medicine at St. Mary's Hospital and graduated M.B., B.S.Lond. in 1923. She obtained the M.D. degree in 1926 after serving as house-physician and house surgeon at St. Mary's. Settling-in practice at New Malden she worked also as honorary anaesthetist to the South London Hospital for Women and Children and, for a time, as clinic assistant in the ear, nose, and throat department of the Queen's Hospital, Hackney. Her excellent essay, which won the Sir Charles Hastings Prize of the B.M.A. in 1934, was published in the following year as a book under the title *Problems of Anaesthesia in General Practice*. This dealt with every side of anaesthesia from the point of view of the practitioner, and it filled a gap in medical literature; the aim throughout was to show the reader how to do the best for his patient, coupled with a recognition that what is best in the hands of one type of administrator is not necessarily the best in the hands of another type. Her active service in the B.M.A. began thirteen years ago when she undertook the duties of honorary secretary of the Kingston Division, and on relinquishing that office in 1937 she was elected chairman. She represented her Division at eight consecutive Annual Meetings (1929-36); she served on the Journal Committee for two periods; and she had been a diligent member of the Organization Committee, the Propaganda Subcommittee, and the Maternity and Child Welfare Subcommittee.

All who knew Helen Lukis's energetic nature and gaiety of spirit will feel sorrow at the passing of a very able colleague at an age when many years of good work should have lain ahead of her.

A colleague writes:

Helen Lukis's choice of general practice in preference to specialization was an index of her outlook on the profession. To her the patient was a human personality and not merely a "case," and when the human as well as the clinical aspect of medicine appealed the continuity of general practice gives something which lies outside the experience of a consultant. And because she had her heart in the human side of her profession and brought a personal interest, steady cheerfulness, and a calm competence to aid her undoubted ability, her eighteen years of service in Malden built up for her practice of considerable size among men, women, and children drawn from all circles of society over a wide radius—a practice which she was "our Doctor Helen." Apart from her main work as a general practitioner she had considerable local reputation as an anaesthetist and an expert on eyes. She served on the honorary staff of the Kingston Victoria Hospital for a number of years as surgeon. It was characteristic of her that, the busier her professional life became, the more she filled her fragments of leisure. An adept organizer, she applied that gift in double measure to her own life and managed to pack into a few spare hours activities which would have fully occupied a woman with no other ties. Social life meant, for her, active use of body and mind. She took a lively part in those local activities which marched with her profession. As divisional surgeon she did much for the prosperity and efficiency of the local branch of the St. John Ambulance Brigade. But, above all, she loved young people and was the beloved aunt, not only to her many real nephews and nieces, but also of numerous children.

whom she had brought into the world. Her life had included many vicissitudes over a frail body, and in the early part of the war the overload of practice life, plus the labour of love in building up first-aid organization in Malden, led to a serious cardiac breakdown. Having overcome this, she returned to her work to meet the strain of the London blitz, the reduction in number of practitioners on civil duty, and the peak-load of Boards for the Women's Services. In the early part of 1944 the onset of her last illness came, and, after a gallant and ever-cheerful period of suffering, she entered into her rest.

News has reached this country from New Zealand of the death of a very old member of the British Medical Association, Dr. JAMES WHITTON, who was elected as long ago as January, 1892. He died suddenly on July 3, 1943, from an attack of angina pectoris at the age of 83. Dr. Whitton studied medicine in Dublin and graduated M.D. of the old Royal University of Ireland in 1880. He obtained the M.A.O. degree in 1886 and the F.R.C.S.Ed. diploma in 1899, having taken the licence of the Edinburgh College in 1883. After practising in Wellington, N.Z., for many years, he retired from active work and lived in the suburb of Lower Hutt. His wife survives him.

L. V. C. writes: Having known Dr. ALEXANDER FRANCIS professionally for over forty years and enjoyed intimate knowledge of him and his work I feel that, in justice to his memory, I cannot do less than place on record his unselfish devotion to the relief of suffering asthmatics. Combined with his special treatment, attested to in the admirable obituary notice published on Sept. 2, no possible factor was omitted from his survey of each case, and his patients were always loud in their praise of his thoroughness, and many almost worshipped him for the difference he had made to the comfort of their lives. He will be greatly missed.

## EPIDEMIOLOGICAL NOTES

### Discussion of Table

In England and Wales notifications of dysentery, scarlet fever, measles, and diphtheria were higher than last week by 203, 14, 69, and 36 respectively. Those for whooping-cough fell by 166.

The only local increase of any size in the notifications of scarlet fever occurred in Lancashire, where 63 more cases were recorded than last week. In Durham there was a rise of 59 in the notifications of measles. The incidence of whooping-cough tended to fall in most areas, but the only decreases of note were in Lancashire and Gloucestershire, which had respectively 42 and 41 fewer cases than last week. Deaths of infants from diarrhoea and enteritis in the large towns rose from 63 to 102.

The record total for dysentery notified last week was exceeded by 203. The majority of the 622 cases occurred in the north, the chief centres of infection were Hertfordshire 80, London 6, Surrey 67, Southampton 45, Essex 38.

In Scotland there was again a small rise in the common infectious diseases of childhood; the increases over last week were: diphtheria 11, measles 19, scarlet fever 20, whooping-cough 69. The notifications of dysentery rose by 18, 55 of the total of 111 cases being in Glasgow. Deaths of infants from diarrhoea and enteritis fell from 57 to 31 in the large towns, all but 4 of these occurring in Glasgow.

In Eire the high incidence of diarrhoea and enteritis among infants was maintained; 136 of the 172 cases were reported in Dublin C.B.

In Northern Ireland the notifications of diphtheria rose by 11, the largest return for this disease was Antrim R.D. 6.

### Week Ending September 16

The notifications of infectious diseases in England and Wales during the week included: scarlet fever 1,591, whooping-cough 883, diphtheria 541, measles 1,155, acute pneumonia 291, cerebrospinal fever 37, dysentery 351, paratyphoid B, typhoid 5, fourteen cases of poliomyelitis were reported during the week, and 2 of polio-encephalitis.

### Correction

It is regretted that several small errors occurred in the printing of the table of infectious diseases for the week ending Sept. 2 (Journal, Sept. 23). Notifications of measles for England and Wales were 1,069, instead of 1,669 as printed. Thirteen cases of paratyphoid fever were notified in England and Wales, 1 in London, and 3 (paratyphoid B) in Scotland. There were 10 cases of typhoid fever notified in England and Wales, 2 in London, 4 in Scotland, 14 in Eire, and 1 in Northern Ireland. No deaths were reported for either of these diseases.

## INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended Sept. 9.

Figures of Principal Notifiable Diseases for the week, and those for the corresponding week last year, for: (a) England and Wales (London included), (b) London (administrative county), (c) Scotland, (d) Eire, (e) Northern Ireland.

Figures of Births and Deaths, and of Deaths recorded under each infectious disease, are for: (a) The 126 great towns in England and Wales (including London) (b) London (administrative county), (c) The 16 principal towns in Scotland, (d) The 13 principal towns in Eire, (e) The 10 principal towns in Northern Ireland.

A dash — denotes no cases; a blank space denotes disease not notifiable or no return available

Disease	1944					1943 (Corresponding Week)				
	(a)	(b)	(c)	(d)	(e)	(a)	(b)	(c)	(d)	(e)
Cerebrospinal fever Deaths	41	—	18	1	1	35	3	19	—	—
Diphtheria Deaths	481	14	158	79	26	700	36	180	72	16
Dysentery Deaths	622	76	111	—	—	201	8	112	—	—
Encephalitis lethargica acute Deaths	—	—	1	—	—	—	1	1	1	—
Erysipelas Deaths	—	—	30	10	2	—	37	11	1	1
Infective enteritis or diarrhoea under 2 years Deaths	102	6	31	72	12	52	6	14	153	8
Measles* Deaths	1,135	14	84	13	27	516	41	87	6	4
Ophthalmia neonatorum Deaths	63	3	15	2	—	95	2	20	1	—
Paratyphoid fever Deaths	—	—	—	—	—	5	—	1	—	—
Pneumonia, influenza† Deaths (from influenza)	103	10	7	—	2	308	23	7	—	4
Pneumonia, primary Deaths	—	11	15	11	5	—	16	150	7	4
Polio-encephalitis, acute Deaths	3	—	—	—	—	3	—	—	—	—
Poliomyelitis, acute Deaths	24	—	12	3	—	9	1	—	3	—
Puerperal fever Deaths	—	1	11	—	—	—	4	16	—	—
Puerperal pyrexia‡ Deaths	117	11	11	—	1	157	14	9	1	1
Relapsing fever Deaths	1	—	—	—	—	—	—	—	—	—
Scarlet fever Deaths	1,251	30	224	27	44	2,432	235	303	36	75
Smallpox Deaths	—	—	—	—	—	—	—	—	—	—
Typhoid fever Deaths	7	1	2	10	1	9	1	6	3	4
Typhus fever Deaths	—	—	—	—	—	—	—	—	—	—
Whooping-cough* Deaths	1,223	47	130	33	7	1,751	123	255	43	19
Deaths (0-1 year) Infant mortality rate (per 1,000 live births)	335	29	77	60	30	305	31	70	52	21
Deaths (excluding stillbirths)* Annual death rate (per 1,000 persons living)	3,621	399	577	224	114	3,622	488	564	177	125
Live births Annual rate (per 1,000 persons living)	5,843	361	811	359	263	5,811	729	817	318	261
Stillbirths Rate per 1,000 total births (including stillborn) .. ..	185	9	21	—	—	211	27	28	—	—

\* Measles and whooping-cough are not notifiable in Scotland, and the returns are therefore an approximation only.

† Includes primary fever for England and Wales, London (administrative county), and Northern Ireland.

‡ Includes puerperal fever for England and Wales and Eire.

§ Owing to evacuation schemes and other movements of population, birth and death rates for Northern Ireland are no longer available.



## Medical News

The opening address to students of the Welsh National School of Medicine, Cardiff, will be given by Prof W E Le Gros Clark, FR S, of the University of Oxford, on Tuesday, Oct 3, in the Medical School.

At the opening of the 103rd session of the College of the Pharmaceutical Society of Great Britain at 17, Bloomsbury Square, London, W C, on Wednesday, Oct 4, at 3 o'clock, the inaugural address will be given by the president, Mr Frederick George Wells.

The Food Education Society, 29, Gordon Square, W C 1, announces that Miss Rose Simmonds, dietitian at Hammersmith Hospital, will give a lecture on "Food and the Sick," on Monday, Oct 23, at 2 30 p m, at the London School of Hygiene and Tropical Medicine, Keppel Street, Gower Street.

"Red Army Medical Service," will be the chief film at a special showing arranged by the Leeds Division of the BMA at the Majestic Cinema, Leeds, on Sunday, Oct 1, at 3 p m. The programme will also include a film from the series on "Technique of Anaesthesia," dealing with nitrous-oxide-oxygen-ether anaesthesia. All medical members of the Services in the Leeds area will be welcomed.

The British Insulin Manufacturers announce that the prices of insulin, protamine-zinc-insulin, and globin insulin are to be reduced on Monday, Oct 2, when a new schedule of retail prices will come into operation.

On Tuesday, Oct 3, all voluntary hospitals serving the City and Metropolitan Police Districts will unite in their combined street collection. Gifts may be sent to the chairman of the Central Committee, Lord Luke, 36, Kingsway, London, W C 2.

The Ophthalmological Society of Egypt (Dar El Hekma, 42, Kasr El Ainy Street, Cairo), in order to encourage scientific ophthalmic work, will award a prize to the value of £E 20 for the most valuable contribution brought before the annual congress of the Society by any of its members of less than 20 years' practice, according to regulations, of which a copy may be had from the honorary secretary.

Dr Alan Churton Taylor, medical officer in charge of first-aid post, Civil Defence Casualty Service, Southsea, has been appointed M B E, and Frederick George Mitchell, of the rescue service, Portsmouth, has been awarded the B E M. The citation in the *London Gazette* reads:

During an air raid a H E bomb destroyed premises, and a man was trapped in a cellar which had collapsed and was covered with wreckage from the building above. After debris had been cleared away, Dr Taylor and Mitchell entered the cellar through a small opening between two concrete slabs one of which was supporting the debris of the house. The casualty was trapped at the base of these slabs and the cutting of the reinforcement had to be effected by means of a hacksaw. Each time a piece of reinforcement was cut through the supporting concrete slabs moved thereby endangering the lives of the rescuers. Neither Dr Taylor nor Mitchell came out of the hole until the casualty was eventually removed 2 hours later. Dr Taylor and Mitchell showed courage and determination with a total disregard of personal danger.

A revised and enlarged British standard specification for conversion factors and tables (B S No 350 1944) has been issued by the British Standards Institution. This comprises linear, square, and cubic measures, measures of capacity, weights, speeds, stresses and pressures, weight per unit length, densities, concentrations, forces, moments, moments of inertia, work, heat, energy, and power. There are also temperature conversion charts and tables, and wire and sheet metal gauge sizes expressed in decimals of an inch and in millimetres. Copies of the specification can be had from the Publications Department, British Standards Institution, 28, Victoria Street, London, S W 1, price 3s 6d post free.

The Czechoslovak Government, in consultation with UNRRA, has organized a medical mission which will shortly be leaving London to assist the health services of liberated Czechoslovak territory and to bring them sufficient hospital supplies to tide over the emergency period. The thirty doctors of this mission, led by Dr Ungar, many of them specialists in health administration, will be assisted by a staff of trained nurses and social workers. Their instructions are to follow as closely as possible upon the retreating enemy forces, surveying medical and nutritional needs and aiding in epidemiological control. The rapid organization of this mission has been made possible by the British Government and local authorities having granted immediate leave to Czechoslovak medical personnel.

Medical officers of health are asked to arrange for the medical examination, particularly with regard to tuberculosis, of nurses employed in residential and wartime nurseries in their areas. Any nurse found to be suffering from active tuberculosis in an infective state should be excluded from nursery work.

## Letters, Notes, and Answers

All communications with regard to editorial business should be addressed to THE EDITOR BRITISH MEDICAL JOURNAL BMA HOUSE TAVISTOCK SQUARE LONDON W C 1 TELEPHONE EUSTON 2111 TELEGRAMS *Antioch Westcent London* ORIGINAL ARTICLES AND LETTERS forwarded for publication are understood to be offered to the *British Medical Journal* alone unless the contrary be stated.

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BMA SCOTTISH OFFICE 7 Drumsheugh Gardens Edinburgh

### ANY QUESTIONS?

#### Byssinosis Regulations

*Q.—What are the Byssinosis Regulations? In my district no one seems to know them.*

*A.*—Schemes for compensation and benefit for byssinosis have been made by the Secretary of State under the Workmen's Compensation and Benefit (Byssinosis) Act, 1940, and came into force on May 1, 1941. Administrative and Medical Boards appointed by the Secretary of State administer them. The compensation scheme applies to all male workmen employed at any time on or after that date for a period or periods amounting to not less than 20 years in cotton rooms, blowing-rooms, or card-rooms, in factories in which the spinning of raw cotton is carried on. The weekly payments made are the same as those made in respect of total incapacity under the Workmen's Compensation Act. The benefit scheme applies to all male workmen employed under the same conditions as above, before but not on or at any time after May 1, 1941. The benefit payable is 15s per week. For both schemes the workman must be totally and permanently incapacitated for work, or, for the purposes of compensation only, have died as a result of the disease. Fuller details of both schemes are given in Statutory Rules and Orders, 1941, Nos 525 and 625, and 1944, No 504, published by H M S O, and other particulars may be obtained from Mr John Lowe, the Secretary of the Administrative Board, 68, Deansgate Arcade, Manchester, 3.

#### Surgical Treatment of Migraine

*Q.—A patient with very severe migraine for the last few years has tried various types of treatment without the slightest result. Is the operation of cutting the cervical branch of the sympathetic nerve any use?*

*A.*—An account of the surgical treatment of migraine by section of the cervical sympathetic was given in an article in this *Journal* written by G F Rowbotham (1943, 1, 12). Very few cases have been done, but enthusiastic results have been reported. There is a certain amount of anatomical evidence to support an operation of this sort, but at present it is best to treat with reserve the results which have so far been published. The disability resulting from section of the sympathetic high up in the neck is not great, and this alone might justify the procedure as a last resource when all other methods have failed.

#### Tentorial Pressure Cone

*Q.—Would you state briefly the causes of "traumatic tentorial pressure cone," and the chief diagnostic symptoms and signs?*

*A.*—The prime cause of traumatic tentorial pressure cone is increase in pressure above the tentorium. After trauma this is likely to be a haematoma, either subdural, extradural, or intracerebral, or cerebral oedema or infection. It is unwise to look upon the condition as different from a pressure cone due to any other cause of high intracranial pressure. The main symptoms and signs are those of the cause. There will be signs of a head injury with high pressure and the patient will probably be in coma. Added to this there will be signs of the complication, such as intra- or extra-cerebral bleeding, and, finally, there will be the signs of the cone itself. These will usually be variations in consciousness, with altering pupillary signs, increasing external ophthalmoplegia, and also alterations in the pulse rate—in short, signs of brain-stem compression. Lumbar puncture may show a very low pressure or the physician may be unable to obtain any cerebrospinal fluid at all; but this must not be expected, for the interruption of the flow of cerebrospinal fluid is likely to vary from hour to hour. In no event should cerebrospinal fluid be removed. The object should be to reduce pressure above the tentorium.

### Death from Drowning and under Anaesthesia

**Q**—In the resuscitation of the apparently drowned by artificial respiration recoveries have been recorded after as long as 6 to 8 hours. In anaesthetic accidents when the heart has ceased to beat, the life of brain cells is generally accepted to be a matter of seconds only. What is the explanation of this apparent discrepancy? Is there any record of cardiac massage being tried in the former? What is your opinion on the usefulness of this procedure?

**A**—The apparently drowned patient starts off with the advantage that, when resuscitative measures are applied, his body tissues do not have to exert an overdose of anaesthetic agent before normal respiration can be resumed. In anaesthetic misadventures it is rare for recovery to be recorded no matter what measures are resorted to, after the heart has ceased beating for five minutes. If an animal were held with its head under water until the heart ceased beating for a similar length of time, it is improbable that any restorative measures would be effective. Long delayed recovery of the apparently drowned after prolonged artificial respiration is explained on the grounds that over ventilation from artificial respiration, enthusiastically administered, prevents the resumption of normal respiration. A victim is pulled out of the water. If he is dead he is dead, and no restorative measures will be effective. If there is still a spark of life, artificial respiration by ensuring an intake of oxygen should effect recovery. Artificial respiration, however, is often applied with unnecessary vigour and maintained by a series of willing helpers. This hyperventilation lowers the  $CO_2$  in the alveolar air below normal, and this, in turn, results in a lowering of the tension of the blood  $CO_2$  below the level necessary to initiate normal respiration. At a class demonstration it can be shown that active hyperventilation on the part of the volunteer 'tends towards unconsciousness' (Haldane and Priestley, 1934, p. 189). Gross hyperventilation from artificial respiration mitigates against recovery of consciousness in the unconscious patient. Less enthusiasm in the matter of artificial respiration allows  $CO_2$  to build up and start normal respiration.

### The Vertical Fluoroscope

**Q**—What are the present views on (a) the use of the vertical fluoroscope and (b) scope for use in the consulting room? (c) Is it of great use in the diagnosis of chest conditions? (d) What type of fluoroscope would you recommend for use in the consulting room? (e) Is there any risk in using the fluoroscope and what protection is necessary?

**A**—Screening and radio-raphy are complementary to each other and only rarely can either be omitted without risk of error. Radiology plays a vital part in the diagnosis and control of the treatment of intrathoracic disease, as it is indispensable to establish normality. Training and experience in radiological interpretation and clinical correlation is imperative, without this the use of apparatus will be a menace and may degrade what otherwise might have been sound clinical judgment. The practitioner would be well advised to consider that, should trouble arise, his work may be assessed on the presumption that he has specialist training and experience.

For ambulatory patients (consulting room practice) the vertical apparatus is preferable, but units combining facilities for examinations erect and horizontal are available. The erect examination alone, however, would cover the greater part of consulting room practice. The apparatus should provide for radiography at not less than 4 ft 6 in. distance and with an exposure time of not more than 1/10 second for the biggest patient. Screening alone is not an adequate examination.

With regard to protection, reference should be made to the recommendations of the British X-ray and Radium Protection Committee, available free on application to the General Secretary, British Institute of Radiology, 32, Welbeck Street, London, W.1, also to the article, 'Effects of Radiation on Workers' (Brit J Radiol Jan., 1943 p. 3) and to the reply in the Journal of April 1, 1944 (p. 480), and also Sept. 23, 1944 (p. 423).

### Therapeutic Dosage of Iron

**Q**—What is the present explanation of the fact that the treatment of microcytic anaemia requires 100 times as much iron per day as is the daily requirement of iron in food? (90 gr. of ferrous sulphate contains about 1,000 mg. of iron and the daily requirement in food is 10 mg.) The hypothesis of Prof. Bunce 50 years ago was that medicinal iron protected the food iron from being changed into non-absorbable sulphide.

**A**—The dose of a vitamin or similar food principle required to cure an established deficiency is usually of the order of ten times the maintenance dose. Accepting the figure of 10 mg. as the daily requirement of iron in the food, we obtain a therapeutic dose of 100 mg. Fe, or 300 mg. (gr. 7½) of iron and ammonium citrate a day. In practice it is found that something like two out of three women with hypochromic anaemia will recover with a dose as small

as this. It is because of the third who will not that it is the rule to give much larger doses of iron. The therapeutic dose of iron by injection is only 30 mg. Fe (gr. 2½ iron and ammonium citrate), which unfortunately approximates closely to the toxic dose by this route. When women who are resistant to treatment with iron by mouth are investigated, it is usually found that their serum iron does not rise as it should after a dose of iron, and presumably therefore the iron is not being absorbed.

The factors concerned in the absorption of iron are complex, but it is doubtful whether sulphide is of any importance. Medicinal iron is absorbed as such and used directly for the manufacture of haemoglobin, this has been demonstrated by giving preparations of iron which have been made artificially radio active by the cyclotron and can therefore be traced through the organism. The hydrochloric acid of the gastric juice is generally believed to promote the absorption of iron whereas phytic acid (from whole grain cereals) and phosphoric acid interfere. Reducing substances, such as are present in proteins, favour absorption of iron, and massive doses of vitamin C—i.e. 50 to 100 mg. t.d.s.—at the same time as the iron often have a striking effect. Absorption of iron is apparently favoured by a high concentration of bivalent ferrous iron in the lumen of the intestine and a low concentration of iron in the wall of the gut. The traffic is one way only—from intestinal lumen to epithelial cell, and from epithelial cell to plasma. We do not know the form in which the iron is transported, but for a time at least it may enter into complex combinations comparable with haemoglobin and cytochrome.

### Coronary Thrombosis and Car Driving

**Q**—Is it safe for a man who has had one attack of coronary thrombosis to drive a motor car? I had an attack a few years ago and have acted on the assumption that it is unsafe. What precipitates an attack? Mine occurred in bed. My elder brother had one when walking up a long flight of stairs.

**A**—There is no reason why a man who has had an attack of coronary thrombosis and has made a good recovery should not drive a motor car. It might even be said that motoring would enable him to get about with the least exertion. It would be a different matter if there were cerebrovascular symptoms, but these are not expected.

Few conditions are known to precipitate an attack of coronary thrombosis. Occasionally loss of blood or an operation or a venous thrombosis may do so, but in the great majority no immediate or extraneous cause for it will be found. The basic cause is an exacerbation of the atheromatous process, with thrombosis in the wall or lumen of the affected coronary artery.

### Treatment of Ganglion

**Q**—Is there any other treatment apart from the 'Family Bible' and open radical removal for ganglion? Do they often disappear spontaneously?

**A**—Apart from surgical removal (itself not always radical on account of technical difficulties) there are other methods of treating ganglia which are occasionally used, although no sort of guarantee can be given that they will be successful. If the contents are reasonably fluid they may be aspirated through a large bore needle, aided by local pressure on the swelling, and a few minims of a sclerosing solution, preferably one containing carbolic, injected. This may require repetition. Another method is an adaptation of the seton, Stout threads, usually four, are inserted through the base of the ganglion by transfexion, the contents being expelled through the needle punctures by pressure. The threads are so tied together that the needle punctures are kept stretched open, they remain *in situ* for about ten days. Ganglia have been known to disappear spontaneously after violent use of the part (probably by rupture), but this is an infrequent event.

### Treatment of Otitis Externa

**Q**—A male patient aged 65 of stout build with gouty tendency has complained for the past few years of intense irritation of the external auditory meatus with a sense of heat and fullness causing more recently slight deafness. He now has a chronic eccematous condition of the external auditory meatus. I have tried all the usual remedies but the condition recurs.

**A**—Dermatologists and otologists have twice combined to discuss otitis externa, which indicates its intractable nature. The degree of itching varies and requires treatment of the gouty tendency. Frequently the local eruption is maintained by remedies which are too strong and is at once relieved when simple applications are substituted, such as cleaning the meatus carefully with liquid paraffin and applying oily calamine. Small doses of x-rays may help. It debris accumulates the ear must be syringed out. Penicillin might help by attacking the infective fraction, but is not available for this purpose, on the other hand, sulphonamides almost invariably cause acrodermatitis. (See also answer given in the Journal of May 20, 1944, p. 707.)

## Otosclerosis and Internal Secretion

**Q.**—What is the supposed connexion between otosclerosis and internal secretion? What kind of hormonal treatment of that disease is recommended?

**A.**—Some authorities have advanced the theory that otosclerosis may be caused by a lack of sex hormones, and have recorded apparent improvement in female otosclerotics following the administration of oestrogens. Most observers fail to confirm this. The cause of otosclerosis is still unknown, and so-called "cures" are usually due to suggestion. It is possible, however, that hormones, by their "tonic" effect, enable the patient to make a greater effort to hear. It is well known that the hearing power of such patients varies directly with the state of their general health.

## Blue Bag for Stings

**Q.**—With reference to the recent question on bee stings and wasp stings (JOURNAL, Aug. 26, p. 295), there is, so far as I know, nothing that is so good as the old-fashioned washing blue, or blue bag. I should be most interested to know the composition of this. Perhaps it is efficacious on account of its alkalinity.

**A.**—There are a number of formulae for the preparations known as washing or laundry blue and blue bag. The essential constituent is ultramarine, which is compressed into a fairly hard mass with the use of binding agents to prevent its too rapid disintegration and solution. These binding agents are usually of an alkaline nature, such as bicarbonate of soda, and glucose is also commonly present.

The rationale for the use of blue bag for the treatment of wasp stings is not clear. Its use for bee stings is understandable, as these are acidic in nature. Wasp stings, on the other hand, are alkaline in nature, and it would appear that the use of a weak acid such as acetic acid or vinegar would be more effective. Nevertheless, blue bag is frequently used in the treatment of wasp stings and appears to give relief.

## Habitual Hypnotic

**Q.**—I have recently seen two doctors who told me they take nembutal 3 gr. (two capsules) every night, which ensures them a good night's sleep and they wake up refreshed, as a result, in the morning. Otherwise they sleep badly. There is no question of taking more than 3 gr. nocte. Is any danger, other than habit, likely to accrue from this practice?

**A.**—Nembutal is one of the more quickly destroyed barbiturates and, therefore, relatively safe. The dose indicated would not be expected to produce cumulative effects. Idiosyncrasy to nembutal is exceedingly rare and would have shown itself already had it been present. The danger would seem to lie in the fact that such a habit postpones inquiry into the cause of the insomnia. The symptom is treated but the cause of it remains undiagnosed.

## Diet for Steatorrhoea

**Q.**—A patient with steatorrhoea finds a fat-free diet monotonous. Are pancreatic extracts of any use?

**A.**—The fault in steatorrhoea is thought to lie in the intestinal cell, and as yet there is no specific therapy which can remove this fault. The causes of steatorrhoea are varied. Thus, it may occur in obstructive jaundice, gastro-colic fistula, extensive resection of the ileum for various causes, acute and chronic pancreatitis, some types of enteritis, after total gastrectomy, and, finally and most commonly, in the group comprising coeliac disease, adult idiopathic steatorrhoea, and tropical sprue. Recent work has shown that among the last group, at any rate, some have been due to pancreatic disease, but the diagnosis can be made only either by demonstrating an absence of pancreatic ferments by duodenal intubation or by necropsy. The amount of fat usually absorbed is about 95% of that ingested, whereas in steatorrhoea this figure falls usually to between 65 and 85%, except in severe exacerbations with diarrhoea. Under controlled conditions it has been shown that a high-protein diet leads to a higher percentage of fat absorption, and clinical experience has shown that the most consistently useful treatment is a high-protein diet with a restricted fat intake. Some relaxation may be made in many cases, especially in regard to butter, but the daily quantity of fat should not exceed 50 g. The need for increased protein in these cases has been recognized by the Ministry of Food, and extra meat rations can now be obtained in place of the normal fat ration.

Generally speaking, the use of pancreatic extracts and of pancreatic and duodenal secretions has been disappointing. The dried extracts show great variation in their potency and contents. In cases of proved pancreatic disease Rhoads and his co-workers have demonstrated some improvement in fat absorption by their use, and pancreatin B.P. gr. 15 twice daily two hours after food may be given a trial, but its use does not permit any marked relaxation in dietary restrictions. Many references will be found in a recent

article by Stannus (*Trans. roy. Soc. trop. Med. Hyg.*, 1942, 36, 123). A suitable 50-gramme fat diet is appended:

**Daily Allowance.**—1 to 1½ pints household skimmed milk, 3 to 4 oz. lean meat, liver, fish, rabbit, chicken, or lean ham. Restrict fats to 1½ oz. of butter or margarine. Note: *Obvious meat fat should not be taken.*

**Breakfast.**—Porridge, fruit, or cereal as desired. Tea with milk from allowance. Butter from allowance. Bread or toast without restriction. Jam, honey, syrup, or marmalade without restriction.

**11 a.m.**—Tea with milk from allowance, or meat extract or marmite. Toast or biscuits.

**Dinner.**—Meat from daily allowance. Potatoes and all other vegetables as desired. Vegetables must be well cooked, and boiled, not fried. Fresh, dried, or tinned fruit of all kinds. (Cooked fruit may be sieved if desired.) Milk pudding—e.g., sago, rice, tapioca, semolina, or custard—from daily allowance.

**Tea.**—Tea with milk from allowance. Bread as desired. Butter from allowance. Jam, honey, jelly, marmalade, or syrup as desired. Salad, tomatoes, etc., when available.

**Supper.**—Meat from daily allowance. Vegetables of all kinds without restriction (not fried). Bread without restriction. Butter from daily allowance. Fruit as desired.

*The following must be avoided:* Overdone and well-cooked meat. Food fried or cooked in fat. Dried and fat fish, such as salmon, herrings, trout, or mackerel. Grease, fat, salad dressing, sweet puddings, cakes, and pastry. Toffee and chocolate.

## LETTERS, NOTES, ETC.

## The Solvent of Colourless Flavine

Dr. J. B. KEARNEY (Kingston Hospital) writes: I would like to ask Mr. Victor Bonney and Mr. Sandeman Allen one question in connexion with their recent article on colourless flavine, in which they suggested that a solution of this substance might replace "Bonney's blue" as an efficient skin antiseptic (Aug. 12, p. 210). Is their rectified spirit really necessary? Our pharmacist informs me that it is much more expensive than ordinary industrial spirit. In Kingston Hospital "Bonney's blue" made up with industrial spirit suitably diluted has been used for many years as an external antiseptic with much success. However, it was chiefly in the treatment of vaginal discharges and septic skin conditions that it was used by us, and now, as we are contemplating utilizing this colourless flavine solution as a pre-operative skin antiseptic, we would like to know the views of the authors on the importance of rectified spirit in the make-up of their new preparation. Would not a suitable dilution of industrial spirit be equally or, at any rate, sufficiently effective as a solvent? If so, it would mean a substantial reduction in the cost of dispensing this antiseptic, and therefore would offer a greater likelihood of its becoming more universally popular.

## Release of Wounded Medical Officer

M.B., CH.B. writes: I was interested in Dr. F. C. Durbin's observations on the Army Council's attitude to wounded medical officers (Aug. 12, p. 232). His remarks apply, not quite so forcibly, to those of us who have been invalided to Britain, after varying periods of service in overseas theatres of war, on account of chronic "medical" conditions. I am one of these unfortunates, now only fit for home service, and not likely to be fit for overseas service again. I have not applied for release, and I don't think many of us would do so, but there has never been any suggestion that I might be released, and my place taken by one of the many young men in E.M.S. hospitals and general practice who have not yet experienced the discomforts of Army life and separation from family and home, sometimes for many years. It would appear that the only way a medical officer can obtain release from the Services is either to be killed outright or be hopelessly mutilated, or to contract some disease which is considered to be incurable. There is no happy medium.

## Interpretation of G.C.F.T.

Messrs. BURROUGHS WELLCOME write: In the reply which appeared under "Any Questions?" in the *Journal* of Sept. 2 (p. 327) it was stated that there was difficulty in obtaining a suitable antigen. We introduced "Wellcome" brand gonococcus antigen in May, 1942, since which time it has been used by a large number of workers and has been found completely satisfactory.

## Disclaimer

Mr. E. HAMBLEY (Seer Green, Bucks) writes: I wish to dissociate myself entirely from the articles in the lay press which were written without my consent, and which were copied from my article in the *British Medical Journal* of Sept. 9 upon the subject of severe fracture-dislocation of the spine with recovery. May I also take the opportunity of apologizing for my omission in thanking Dr. K. Y. Mann in this article for his great assistance on the medical side in the case described.

# BRITISH MEDICAL JOURNAL

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## SURGERY IN TUNISIA: NOVEMBER, 1942, TO MAY, 1943

BY

J. M. WEDDELL, C.B.E., F.R.C.S.

*Colonel, late R.A.M.C. Late Consulting Surgeon, Allied Force Headquarters, British North African Force*

It is proposed to give a short outline of the campaign in North Africa to describe the general lay-out of the medical units with the force, and to indicate some of the points of interest and lessons learned during that period.

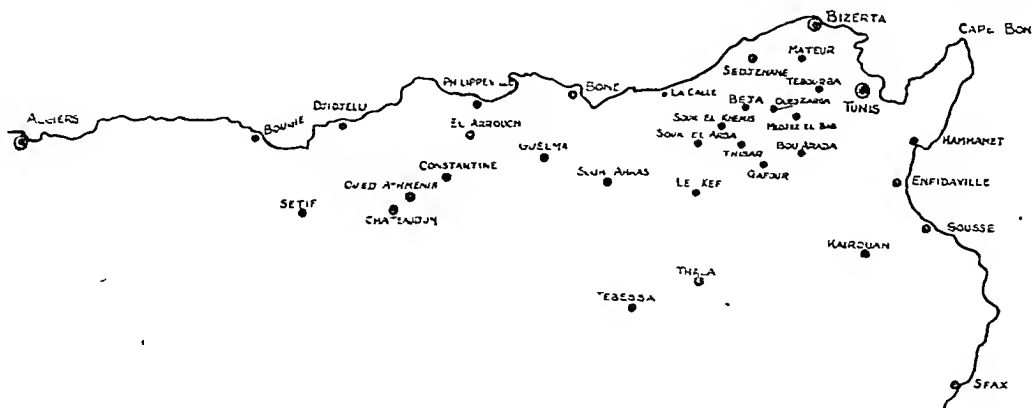
In Nov. 1942, American and British forces landed at various points on the coast of North Africa. The British force—called the First Army, but in reality at this time only two infantry brigades, a tank regiment, and auxiliary services—made landings on the coast of Algeria. The subsequent campaign may be divided into various phases: (1) the thrust forward of the First Army into the hills overlooking the plain of Tunis; (2) the build-up of the force; and (3) the final attacks on Bizerta and Tunis. During the first phase there was heavy fighting to establish our positions in the hills around Beja, Medjez el-Bab, and in the north round Sedjenane. The build-up occupied the winter months and early spring of 1943. During this period there was continuous hard fighting in the hills, which culminated in the capture of Longstop Hill and other key positions and made possible the final break-through to the plains of Bizerta and Tunis. Towards the end of this period the Americans had moved up from the south and taken over the northern sector of the line. The Eighth Army, in pursuit of Rommel, had broken through the enemy lines at Mareth and the Wadi Akarit and occupied Gabes and Sfax. The British and French forces held the central sector. The

and much improv sation was necessary. A number of schools and barracks in Algeria were taken over for hospitals, and several of the general hospitals had to open up at once in tents. This involved a great deal of alteration and construction work for the Royal Engineers and Works Services. As time went on, a proportion of hutting was carried out for the tented hospitals.

The country was difficult. Much of it was mountainous, with narrow winding hill roads. Considerable stretches of plain intervened between the mountainous areas. The main roads were limited. There were two routes to the forward area—one inland through Setif, Constantine, and Souk Ahras to Beja and Medjez-el-Bab leading on to Tunis, the other along the coast through Bougie, Philippeville, and Bone. A certain number of cross roads connected the two main routes.

The railway consisted of the main line through Setif and Constantine to Tunis. Branch lines ran from this to various places on the coast. The lines of communication were long and difficult: the distance from the main base at Algiers to the forward area was the best part of 500 miles by road.

In the winter months rain and mud made conditions extremely hard. The forward troops fighting in the hills, living in fox-holes and under any cover that could be found, had a gruelling time. The tented hospitals—until proper camp roads, concreted floors for operating theatres and tents, adequate



nal phase included the capture of Bizerta by the Americans, the capture of Tunis by the First Army, the French, and some divisions of the Eighth Army, and the advance northwards of the main Eighth Army to the base of Cape Bon. The battle terminated with the round up and surrender of the whole of the enemy forces on the Cape Bon peninsula.

One difference between the Middle East and the North African campaigns was that the operations in the Middle East started from a large peacetime organization, whereas in North Africa everything had to be brought by a long sea route

sanitary annexes, and cooking arrangements could be prepared—worked under most difficult conditions.

By the middle of Jan. 1943, the medical lay-out was as follows. The main base was at Algiers, with secondary bases on the coast at Bougie, Philippeville, and Bone. At each base there was an Assistant Director of Medical Services at area headquarters. Other areas and medical units were on the inland route on the lines of communication. The Director of Medical Services for the force and his staff including the consultants and advisers, were located at Algiers. Four general

hospitals were established a few miles outside the town in buildings (an orphanage, a school, and barracks) and partly in tents. One unit was in an excellent sanatorium at Rivet, in the hills about 20 miles inland, with good operating theatres, x-ray department, and wards.

At Bougie one general hospital was in tents about four miles inland from the port. Near Philippeville one 1,200-bedded general hospital was in tents at Ste Jeanne d'Arc, a small seaside resort about four miles east of the town. A 600-bedded hospital was in process of opening alongside. These were excellent sites on sandy ground sloping down to within a few hundred yards of the sea. Another 1,200-bedded hospital and a Canadian general hospital came later to El Arrouch, about 20 miles inland, both in tents. Near Bone one 600-bedded general hospital was in tents about 15 miles inland from the town. A 200-bedded general hospital was at La Calle, near the coast some miles east of Bone. Inland, the headquarters of the lines of communication were at Setif; the Deputy Director of Medical Services for the Lines of Communication was here, and a field hospital (50 beds) was in buildings in the town. Further east, on the Setif plateau, a 600-bedded hospital was at Oued Athmenia, partly in a good building and partly in tents. Later a 1,200-bedded general hospital opened at Châteaudun. A field hospital (50 beds) was at Constantine; at Guelma, a few miles off the main road, a 600-bedded hospital was open in tents. The most forward of the 600-bedded general hospitals was at Souk Ahras, near the Tunisian border: this was partly in buildings and partly in tents. For a time one 200-bedded general hospital was at Biskra. The personnel and equipment of this unit were moved to the site entirely by air.

In the forward area the C.C.S.s, F.S.U.s, F.T.U.s, advance depots of medical stores, and the field ambulances were with the First Army from Sedjenane in the north, through Medjez-el-Bab, Beja, and Thibar, down to Bou Arada and Gafour in the south. The Medical Headquarters for the Army, the D.D.M.S., and his staff were at this time in the neighbourhood of Souk Ahras. One parachute field ambulance dropped very early in the campaign near Beja and carried out 136 operations there in the first few weeks.

Evacuation from the forward area was by road, rail, and air. By road, evacuation was by motor ambulance convey through the general hospitals to (1) Philippeville, Guelma, and Bone, and (2) Souk Ahras and Oued Athmenia, to Algiers. Rail evacuation, to begin with, was slow and difficult. Ambulance trains were improvised from ordinary French rolling-stock, but by degrees corridor ambulance trains became available. And by May, 1943, nine of these were working. In the early stages of the campaign evacuation by air from the forward area was not practicable, but was carried out, in considerable numbers, from airfields on the lines of communication. A large airfield was sited near Oued Athmenia, and the general hospital there evacuated many cases in quite early days.

When forward airfields were established round Souk El Arba and Souk El Khemis, and air superiority had been obtained, more forward air evacuation became possible. Certain difficulties were encountered: low cloud over the hills and poor visibility often made flying impossible. The arrival of planes on a forward airfield is apt to be capricious, and it is not always certain to what destination the planes will return. To take patients 20 miles or so over indifferent roads, make them wait several hours on the airfield, and then have to take them back is not good treatment. Also, to have a holding medical unit at a forward airfield is not always possible. Therefore air evacuation, though often extremely valuable, has its limitations.

By May, 1943, the total American and British cases moved by air in the British North African Force were 16,500. The average distance was 300 miles. The average time of each journey was two hours. The British cases numbered 4,400 (surgical, 2,400; medical, 2,000). All types of surgical cases were taken except the following: (i) perforating chest wounds in the early stages; (ii) pneumothorax; (iii) severe shock associated with heavy loss of blood; (iv) intestinal wounds or disease. Evacuation to the United Kingdom was based on a 90-day policy: that is to say, those who would not be fit for duty in 90 days were evacuated from the force. Hospital

ships and carriers sailed only to and from Algiers, so all cases for evacuation to England had to be collected that port.

### Field Surgical Units

The F.S.U.s were the War Office scale of personnel, equipment, and transport. They differed from the Middle East surgical units in that, in North Africa, the F.S.U.s had more equipment, including 20 hospital beds and a lighting system. The personnel and transport were on a slightly more general scale. This was the first occasion these units had been mobilized for a field force. The Middle East had improvised their own. At this time there were no field dressing stations (F.D.S.s), which were the units designed to combine with F.S.U.s to form an advanced operating centre. The F.S.U.s were therefore attached to C.C.S.s or the main dressing station of field ambulances as their parent units. I think that many of the difficulties met with in those early days are overcome by the F.S.U.s when they are combined with their correct parent unit, the F.D.S.

As previously stated, the earlier months of the campaign were occupied in clearing the hills overlooking the Tunisian plain. During this period the C.C.S.s and F.S.U.s were comparatively static. When the general advance took place the fighting became mobile these units were able to follow up behind the fighting troops. Concerning this latter phase there are some points of interest:

On account of the short distances it was possible to group C.C.S.s and F.S.U.s at points fairly close to the fighting line. For example, at one time at Oued Zarga three C.C.S.s were grouped, each with two F.S.U.s and a field transfusion unit attached. These made an excellent operating centre 10 to 15 miles behind this portion of the front. Each C.C.S. admitted 100 casualties and then closed until 100 casualties had been admitted by each of the other two. In this way surgical teams could work with a reasonable time for sleep, meals, cleaning up theatres, and after-treatment of patients.

Three 600-bedded hospitals and three 200-bedded general hospitals had been allotted to the D.D.M.S. of the First Army. These were made "movable" and were also grouped. In the battle of Tunis one group of these was located at Thibar, about 20 miles behind the C.C.S.s and F.S.U.s. They admitted third-priority cases from the front and staged cases operated on at the advanced operating centre. This was made possible by a system of sectional packing of the hospital equipment and by the excellent work of the Royal Engineers and Works Services in providing a piped water-supply, sanitary conveniences, concrete floors for operation tents, etc., all carried out within a very few days.

It was possible to spare an officer in charge of the surgical division of one of the newly arrived 1,200-bedded general hospitals, not yet open, to go round the C.C.S.s and F.S.U.s, work with them, and advise on operative technique and treatment generally. This was most useful, and is well worth arranging when possible, especially if some of the forward surgeons have not had much experience in dealing with battle casualties. Personal instruction and example are far more useful than all the paper one can send round. The officer in charge of the maxillo-facial unit had also been round advising the forward surgeons on the initial treatment of these cases.

An experienced operating ophthalmic surgeon was with the First Army. He had a lorry, a small technical staff, and optical equipment (lenses and frames), and toured the forward units and formations. In this way not only was skilled operative work available as far forward as possible, but the replacement of lenses and spectacles was carried out in the most expeditious manner and a large amount of man-wastage saved. This was a forerunner of the mobile ophthalmic unit later created: the Consulting Ophthalmic Surgeon.

### Team-work and Equipment

These units thoroughly justified their formation. They did excellent work throughout. The policy of bringing the surgeon to the wounded, within limits, is sound. Team-work is

\* Grouping of C.C.S.s was first carried out in 1915 at El Siding, where Nos. 10 and 17 C.C.S.s were located and alternate periods of duty were taken. This grouping of two and often three C.C.S.s then became routine.

essential. The unit must work as a whole and each man have his definite duties. The orderlies have more to do after the operating is finished, and tend to tire sooner than the surgeon. All need reasonable time off, sleep, and regular meals.

The equipment on the whole was adequate. General demands for certain items were put to the War Office and have been supplied. Heating is necessary for the theatre and wards in cold weather. Two Valor stoves were authorized for each FSU in Tunisia.

A surgeon should not be kept with a forward unit too long. He must see at the base the results of forward surgery and thus complete his surgical education. I am of the opinion that a year is quite long enough for a surgeon to be with one of these forward units. If possible, a newcomer should work his way from a general hospital at a forward base where he can observe the later conditions of wounds and see the reasons for advising certain lines of treatment and the various troubles and difficulties which may arise during the evacuation of casualties.

### Location of Advanced Operating Centres

These should be as far forward as possible. This undoubtedly does help the morale of the troops, but they must be in a position where the severe cases, especially wounds of the abdomen, can be retained in reasonable safety and comfort for at least ten days after operation. After treatment and good nursing are just as important as surgery. Early evacuation of these severe cases is disastrous. When it is possible to attach nursing sisters this is a great advantage.

Except in special circumstances, it is unwise to put a single surgical team forward with a field ambulance. One surgeon can cope with only a limited number of cases. The theatre staff do not finish when the operating is over, and they get more tired than even the surgeon. Also the nursing after-treatment and retention of the severe cases become more difficult.

[Note.—With reference to the location of advanced operating centres, it is of interest to recall an extract from a memorandum by the Consulting Surgeon to the Army after the last war:

'The conception of British surgeons is that no surgical operations of magnitude can be satisfactorily performed with a hope of a successful result if the patient has to be moved immediately after the operation. Consequently the arrangement is that, with a few exceptions, operation will be performed at the *casualty clearing stations*. These may be situated from 10 to 15 miles behind the actual fighting line, but experience has shown that, with modern motor ambulance transport, the extra time taken to get the wounded man a few miles further back than the main dressing stations of the field ambulance is only a fraction of the time spent in getting him from the place where he was wounded to the field ambulance. This extra time is well worth while to get the man to an area which will be more or less free from enemy fire, where more elaborate and permanent arrangements can be made for resuscitation operation and, more important still, where serious cases can be *retained for some days* at least and efficiently nursed before being evacuated further to the lines of communication or base.

The policy of having operating areas *nearer* to the fighting lines was tried in the British Army, and was definitely found to be *unsatisfactory*, even in the comparatively stable fighting line in France and Flanders.

'These advanced operating centres were primarily designed to deal with abdominal cases. In quiet times on the fighting front they did good work and undoubtedly saved lives owing to the proved fact that early death in cases of abdominal wounds is primarily due to haemorrhage. In periods of heavy fighting they failed. The reasons for this failure are that an operating unit situated close up to the fighting line could only rarely be efficiently housed. Accommodation for more than one or two operating teams was difficult and shelter for patients bad.

'The time taken to operate satisfactorily on one abdominal case is usually about one hour, and it is easily seen that if 40 or 50 abdominal cases arrived at such a centre a long period would elapse before the majority of cases would reach the operating table. The wounded would have a much better opportunity of receiving surgical attention if they were evacuated by motor ambulance transport another 10 miles further back, where they would take their turn with a mixed class of case. In addition, the difficulties of providing efficient nursing and after-care, on which British surgeons lay great stress, and the possibility of early evacuation on account of enemy fire and pressure of cases were

so much against the interests of the patient that this policy of operating arrangements close up to the fighting line is *not* now favoured."

On the clinical side it is proposed merely to refer shortly to points which were of interest so far as this force was concerned. Every opportunity was taken to make use of the experience gained by the surgeons in the Middle East, and their reports and surgical memoranda had been carefully studied. Copies of several of these had been sent to surgeons before the landings and from time to time fresh memoranda on surgery were issued.

### First-aid Treatment

This was generally of a high standard. The Thomas splint, usually with the metal boot clip was universally and correctly used. Tourniquets were rarely seen and rarely necessary. There was a tendency at times to overdo the injections of morphine. If patients passed through several posts they were sometimes found to have received as much as a grain of morphine by the time they arrived at the operating centre. Morphine is only very slowly absorbed in badly shocked patients. Men would also sometimes arrive with many cups of tea inside them.

### Resuscitation

This was well provided for, and the field transfusion units did excellent work. The question of blood versus plasma has been much discussed. The experience of our surgeons was that cases with severe injuries could be restored to a reasonable condition with plasma but that they would not then stand an operation of probably an hour's duration without blood. Blood will revive patients more quickly and enable them to stand the added trauma of operation much better than plasma alone. I consider that blood was neither wasted nor used excessively. It may be noted that with the advances made in resuscitation, more of the very severely wounded become fit for operation than was possible in the last war. Worse risks come to the surgeon and the actual post-operative mortality is probably higher, but certainly more lives are saved.

In attempting to forecast the numbers of patients who will require resuscitation various factors should be borne in mind. If the unit is dealing with first priority cases a large proportion, probably over 50%, will require resuscitation, if with second and third priorities, there will be many fewer. The longer the time lag in the receipt of the cases, the more will require resuscitation. Local conditions could wet weather, a long journey over rough roads, will also have their effect.

### Anaesthesia in the FSUs and CCSs

Apart from the use of ether for laparotomies and multiple wounds, most patients were anaesthetized with pentothal. The advantages of this drug are the rapidity of induction and the freedom from post-anaesthetic vomiting—a point of the greatest importance in the busy post-operative wards. Pentothal with oxygen was very satisfactory for the thoracic cases. Many of the anaesthetics in the CCSs were given in a most competent manner by officers of the Army Dental Corps. The Oxford vaporizer proved a very satisfactory machine.

### Types of Wounds

These varied greatly according to circumstances. Often the wounds were multiple. Mortars were much used, and were responsible for many of these. Mines caused many severe wounds of the feet and legs. It is essential to examine the whole of the patient, and extensive cleaning with soap and water and wide shaving should always be carried out.

### Wound Treatment

Treatment was conducted on standard and accepted lines. In the early stages of the fighting one saw cases from which too much skin had been excised, a few attempts at primary suture, too tight packing of wounds, and insufficient division of deep fascia. This last was found especially necessary in wounds of the buttock, calf, and popliteal space. Attention was drawn to these points in surgical memoranda.

*Extremities and Joints*.—For transport during evacuation some form of the "Tobruk" plaster was universally used for the lower limb. Some surgeons developed slight modifications of their own.



The type generally used at this time was the encasing of the limb in plaster, with slits for the traction strapping and fixation of the limb to the Thomas splint with plaster bandages. The plasters were always padded and split. Details, with dates and simple diagrams, were well marked on the plaster, and proved most useful. For the upper extremity the "U" plaster, from the nape of the neck and including the forearm, was mostly used, and proved satisfactory. The immobilization of extensive soft-tissue wounds had been advised, but was perhaps not carried out as often as it might have been. Traction for wounds of the knee-joint was occasionally found to have been omitted. The usual faults in plaster work appeared from time to time—carrying the plaster beyond the proximal crease of the palm, so that stiffness of the metacarpophalangeal joints and fingers results, lack of instruction to the patients to move the fingers and toes continually, faulty position of the ankle and foot. These faults always seem to be cropping up, and need constant attention. The results are very difficult to correct.

**Abdomen**—The treatment evolved in the Middle East was amply confirmed, suture, when possible, rather than resection; exteriorization and colostomy for wounds of the colon and rectum, gastric suction and intravenous therapy as a routine, and retention of cases for a minimum of ten days.

**Chest**—Conservative surgery (wound excision and closure of the open pneumothorax), with early aspiration, was the rule, and proved satisfactory. Great relief of dyspnoea was noted after the early aspiration of haemothorax fluid. Many breathless shocked patients were greatly relieved by being propped up, and these cases travel better in ambulances and trains when so positioned. The advantage of treating the shock by the completely recumbent position does not compensate for the serious respiratory embarrassment caused. In only a few cases was full thoracotomy indicated in the forward area.

**Head**—At the beginning there was some difference of opinion between the FSU surgeons and the neurosurgeons as to whether the general surgeons should deal with these cases. It was pointed out that in the forward units the general surgeon had no special equipment for this type of work: diathermy was not available, x-ray examination was not always possible, and at the time there was only improvised suction. It was therefore accepted that it was better to get patients back to the neurosurgical unit with 48 hours if this was possible, for operation there. The sulphonamides—sulpha diazine when available—were always used.

**Maxillo-facial Wounds**—As little as possible was done in the FSUs and CCSs beyond cleaning up, the arrest of haemorrhage, and fixation of the jaw, when necessary, by the dental officer. These cases were then transferred to the maxillo-facial unit.

**Burns**—All coagulation treatment was forbidden as first aid. The routine was sulphanilamide and vaselined-gauze dressing. It was confirmed that cases of severe burns travel badly during the first five or six days after injury.

**Septic Sores**—During the hot weather there was much man-wastage from sores on the exposed areas of the knee, elbow, and forearm regions. Often quite trivial in origin, they became chronic and resistant to treatment if neglected, and frequently meant weeks in hospital. There seemed to be no panacea for them. Unit medical officers were asked to get men with even minor skin abrasions, thorn-pricks, etc., to report sick at once so that they could obtain early treatment.

**Whitlows**—It was found necessary to issue an instruction that only the most minor conditions should be treated by unit medical officers. Much time and many bad results are saved by early admission to hospital. Too many midline and inadequate incisions under ethyl chloride were seen in the early stages of the campaign.

**Chemotherapy**—It was impressed on all that the sulphonamides are not a substitute for early surgery. These drugs were used prophylactically and therapeutically. To begin with, oral doses at four-hourly intervals had been advised for all wounded. In practice this broke down on the long lines of communication, and the Middle East sulphanilamide label, with the two doses at 8 a.m. and 6 p.m., was adopted. Owing to the universal use of these drugs, both orally and locally, it was impossible to evaluate their effect. The general impression was that they were of value in retarding the onset of infection. Also, as compared with the last war, the appearance and general condition of the men in the base hospitals seemed better. Although many wounds were infected the patients did not look so toxic and ill. Sulphanilamide, sulphathiazole, and sulphapyridine were the forms mainly in use for surgical cases. Some sulphadiazine was obtained latterly. Penicillin was not available in this campaign. The Penicillin Unit arrived in North Africa in May, 1943, and began investigations in one of the Algiers hospitals.

**Anaerobic Infections—Tetanus** Up to May, 1943, one case of generalized tetanus occurred in a German prisoner-of-war and one case of local tetanus in a British soldier. Both recovered. Gas gangrene. It is regretted that actual figures are not available. Up to May, 1943, there had been under 100 cases. Treatment was by early surgery, large doses of serum, and the sulphonamides.

### Some Statistics

(a) The number of battle casualties operated on in 12 FSU and 6 CCSs between Nov., 1942, and May 15, 1943, was—total operations, 8,881; deaths, 331; mortality, 3.72%. It is interesting to compare these with some figures from the last war. On the Somme in July, 1916, 13 CCSs of the Fourth Army dealt with 14,400 casualties on the first day, 13,306 on the second day, and 8,793 on the third day. The surgical staff of the CCSs had, of course, been reinforced by a considerable number of surgical teams.

(b) Figures from four general hospitals in Algiers for the period Nov., 1942, to Sept., 1943 (wounds of the abdomen, chest, and head), were:

	Total	To Duty	To Conv Depot	Trans to Other Hosp	To U.K.	Died	Remaining	Mortality
Wounds of abdomen	287	77	54	14	129	8	5	2.7%
Wounds of chest	599	147	127	72	221	5	27	0.8%
Wounds of head	420	129	52	43	170	9	17	2.1%

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## INVESTIGATION AND TREATMENT OF ENURESIS IN THE ARMY

### PRELIMINARY REPORT ON 277 CASES\*

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As the result of considerable success in the out-patient treatment, since the outbreak of war, of nocturnal enuresis in soldiers by explanation, education, and suggestion, a fuller investigation of the problem has been undertaken in hospital. The findings and results of treatment presented below are based on the clinical examination and treatment of 277 unselected cases of nocturnal enuresis consecutively admitted to a military (psychiatric) hospital during the eight months ending Sept., 1943.

### Examination

A full physical examination by the medical specialist was made at the time of admission. Special examinations were done on 232 cases as follows:

**Bladder-function-test Cystometry**—With due preparation and without local anaesthesia, a No. 8 E soft rubber catheter was passed into the bladder. The resistance to its passage was recorded by an arbitrary standard  $\pm$  indicated practically no resistance, +++, strong resistance. The bladder was emptied and boric acid solution at a temperature of approximately 100° F was allowed to flow into it at a pressure of 20 cm. of water. The base-line was taken as 1 cm. below the level of the pubic arch as the patient lay on the table. The apparatus used was a simple graduated glass container held on an adjustable stand. Fixed levels were maintained by moving the head of the stand up and down. A pressure of 20 cm. was chosen, as being just above that required to bring about an initial stimulus to micturate. This was confirmed by our preliminary test and is quoted by standard works on physiology. "18 cm." (Sampson Wright, 1940). At this level of pressure, flow was allowed to continue until the patient, having been previously warned, intimated: desire to micturate, when the flow was immediately stopped. A volume reading was taken (see Table I). The patient was then encouraged to relax the bladder by increased control of the external sphincter muscles and an endeavour to create a negative pressure.

\* A paper read at a meeting of Army psychiatrists held at York in July, 1943.

in the abdomen. This was reinforced by strong suggestion that the bladder was relaxing and getting bigger. When desire lessened or disappeared the flow of solution was allowed to proceed until a second stimulus occurred. A second arrest of flow was made and a volume reading was taken. This procedure was carried out a third time. These two latter readings are recorded as volumes under voluntary relaxation, and were taken at 20 cm. water-pressure in practically all cases. Two final volume readings called distension readings were then made under 40 cm. and 60 cm. water-pressure respectively. In a few cases pressure was raised to 70 and 80 cm. Volume readings above 600 c.cm. were taken in only a few instances. The ability to retain the solution under different pressures was noted, and was recorded on an arbitrary basis: — represented a leakage under 20 cm. pressure;  $\pm$ , a leakage under 60 cm. pressure; +, a leakage with catheter removed but controllable; ++, good control. At the end of the test the catheter was removed while the bladder was still full and the patient was asked to get off the table, walk across the room, and empty his bladder.

**Psychological Examination.**—On admission a preliminary psychological examination was made. Special attention was given to the history of the complaint. Periods of remission and relapse were investigated for psychological factors. A personality assessment was recorded at the end of the examination.

### Findings

**Anamnesis.**—The youngest patient was 14 years of age; the oldest 45. Over 50% of the patients were of the ages of 18 or 23 inclusive. The average was 21.33 years. The intelligence score based on the matrix test ranged from S.G. I to V. The mean fell in the S.G. III+ group. The reference of cases or treatment undoubtedly showed selection. Length of service presented no important factor. Medical category was: "A," 10.15%; "B," 10.83%; "C," 9.02%. Bed-wetting at the time of admission was present in all but four cases. Frequency and urgency appeared in 82.67%, and precipitancy in 31.77%. Dysuria was complained of in only 4.4%.

There was a history of the main complaint—namely, nocturnal enuresis—since infancy in 75.81%. Of these, 82.81% had had no remission; though they had many free nights there was no sustained period of freedom. The remaining 17.19% had varying periods of freedom—several months and more. Approximately half of these cases relapsed during a non-service period. The other half relapsed during military service, and the relapse was attributed by the patient to Service conditions. Among the remainder—that is, 24.19% of the whole group—the complaint developed at varying periods in life; 18% occurred before and 42% after enlistment. In presenting these percentages no attempt is made to argue for psychosomatic relations; clinical findings only are recorded.

In the order of their importance the chief factors contributing to the persistence or onset of the symptoms were as follows. In the non-Service group: lack of any training; domestic difficulties in the home and feelings of insecurity related thereto; he so-called "broken home," such as separation of the parents; accidents and operations; sexual traumata or anxiety; the death of one or both parents; and air raids during childhood. In the group that appeared during Service life, failure to adapt to barracks-room life, regimentation, battle experience, accidents—especially injury to the external genitals—and operations were given as the cause of the complaint. 43.32% showed no gross emotional factor, but presented evidence of lack of proper care and training in their difficulties. Definite sexual factors were limited in a remarkably small number of cases. Masturbation guilt was evident in only three. Of the 125 patients who were married only four gave a history of being affected by the marriage. Promiscuity and fear of venereal disease precipitated an attack in one and a relapse in another two. Punishment for the complaint was incurred in only 14% of the cases.

The school history of the group was a little above the average. The work history was quite the average for the personality type. A history of organic illness was reported in only a small number. There were no cases of overt abnormality of sexuality. Family histories presented very little of importance. A history of enuresis in parent or sibling was admitted in only 21% of cases.

### Physical Examination

Physical examination by the medical specialist revealed no abnormality in 92.06% of cases. Of the remaining 7.94%,

genito-urinary disease was present as a chronic nephritis and as acute cystitis in one each and as a chronic prostatitis in one. There were four cases of stricture, apparently congenital, as emphasized by Winsbury-White (1941). Disease of the central nervous system presented one case of disseminated sclerosis. The remaining complaints were of an apparently unrelated type—namely, bronchitis, dyspepsia, and "rheumatism." Spina bifida occulta, as an incomplete development of the neural arches of the lower lumbar and sacral regions, was seen in only 13 out of 104 cases routinely x-rayed. In none of these was there any evidence of the symptom-complex known as myelodysplasia.

**The Bladder-function Test.**—The measure of resistance to the passing of a No. 8 E rubber catheter varied from practically no resistance ( $\pm$ ) in 17 cases, + in 51 cases, ++ in 141 cases, to the very resistant (+++) in 9 cases. In addition actual obstruction to passage occurred in 14 cases; 10 of these were negotiated by an olive-tipped or coude gum-elastic catheter or a silver catheter. Four cases had to be sent to hospital for dilatation of a definite stricture. There was no serious complication about the procedure. Only two refused examination.

Volume readings at the point at which the first stimulus to micturate occurred ranged from 30 c.cm. to 750 c.cm.—the former that of a very small bladder, the latter that of a case of early schizophrenia. Of the series 50% reacted in a volume stimulant between 100 and 250 c.cm. (see Table II).

Table I presents the volume readings of five different cases to illustrate individual findings. Case No. 98 had a small bladder with good initial relaxation. Case No. 79 had a small and very sensitive bladder. His frequency was always severe. Case No. 114 showed a fair average initial relaxation with good powers of voluntary relaxation. Case No. 46 had a bladder of average size but very sensitive. Case No. 163 had a large bladder with a large initial capacity and good powers of voluntary relaxation.

TABLE I.—Volume Readings of 5 Different Types of Case

Case No.	Type of Bladder	20 cm. Pressure			Distension	
		1st Stimn.	Voluntary Relaxation		40 cm.	60 cm.
			2nd Stimn.	3rd Stimn.		
98	Small	c.cm. 160	c.cm. 170	c.cm. 180	c.cm. 230	c.cm. 270
79	(sensitive)	40	70	80	260	300
114	Average	250	320	370	450	540
46	(sensitive)	70	110	140	370	600
163	Large	370	460	560	650—	

TABLE II.—Volume Readings of the Series

Volume (c.cm.)	Stimulus (20 cm.)			Distension	
	1st	Voluntary Relaxation		40 cm.	60 cm.
		2nd	3rd		
1-50	20	6	6	2	1
51-100	52	25	19	3	3
101-150	*51	34	23	7	3
151-200	36	*49	*37	12	5
201-250	32	36	33	25	15
251-300	19	27	35	19	20
301-400	15	32	40	*44	*27
401-500	4	19	26	53	38
501-600	1	2	5	34	60
601-700	1	1	1	30	54
701-800	1	1	1	2	4
801—				1	1
Mean: approx. —	143	198	239	400	500

\* 50% — fall in between the heavy lines.

It will be observed that all patients showed some powers of voluntary relaxation after the initial stimulus. In sensitive bladders this was small, but under pressure the ultimate reading was much the same. Table II gives the volume readings of the entire series within 50 c.cm. Very few readings were taken beyond 600 c.cm. Only one reached 800 c.cm., and this was in an early experimental case. This volume was attained under voluntary relaxation with 34 cm. water-pressure. It is of

interest to note that this patient had previously been under hypnotic suggestion for bladder relaxation.

Waves in pressure-flow that were synchronous with respiration were often noted. However, in a number of other cases 39 were definitely recorded; more frequent waves appeared as the flow continued, and became more evident as the point of toleration was approached. It was felt that if apparatus of greater sensitivity were used further cases would have shown these rapid rhythmic waves. These waves are described by Denny-Brown and Robertson (1933), and are considered to be uninhibited bladder contractions, after the work of McLellan (1939).

The measure of sphincter control showed leakage under 20 cm. pressure in 1.29%, under 60 sm. pressure in 10% with the catheter out but able to arrest the flow in 9.48%, and good control in 71.13%. Cystoscopy was done in 130 cases, and there was no report of any serious bladder disorder. It is not likely that abnormal cases would be referred to us for treatment. A pyelogram taken in 14 cases showed no important abnormality.

### Psychiatric Examination

In the psychiatric study of the series it was found convenient to divide the cases into six main personality types according to the outstanding characteristics of each. As must be expected, there was a considerable admixture of two or more types. The largest group—namely, 48.01%—fell into what might be called a timid, immature, dependent, often frustrated type. Some of these showed definite schizoid trends. They came from the so-called "broken home" situations, or from homes where there had been much emotional stress in early life. On the whole, this group revealed marked evidence of "love deprivation" in childhood; a considerable number, however, showed strong "mother fixation." They nearly all gave a history of bed-wetting since infancy, and without remission. In other words, their bladders had wept for them in all their difficulties, while they themselves had refused or failed to grow up. If members in this group were allowed to go on leave while in hospital they reacted badly, and almost invariably relapsed when at home. The next largest group—namely, 27.07%—were of quite an average type of personality. They presented no important emotional stress in their history of childhood or later life. They, too, were largely chronic bed-wetters. It is of special interest to note that a great majority of these patients showed a considerable degree of real indifference to their trouble. Superficially they appeared anxious for treatment, but on deeper investigation the indifference became evident. They required much firmness in treatment to get them to make a serious attempt to help themselves. Having slept in wet diapers all their lives, they appeared to feel no great need for a change. The third group—10.49%—were those of a reaction type showing compensatory aggression. The fourth—6.14%—were what might be called pure aggressives; the fifth—5.77%—were essentially psychopathic personalities, and in some cases gave a psychotic family history. The remaining small group of 2.52% were predominantly obsessional in type.

### Treatment

By the time the preliminary investigations were completed the patients had already been placed on suitable waking regimes. Fluids were prohibited after 6 p.m. The first move in active treatment was to get the patient to make as frank a statement as possible about his attitude towards his complaint. Following this, in terms easily understood by him, a careful explanation was given of bladder function and control. This was supplemented by a sketch on paper or by the simple device of interlocking the fingers of the two hands to represent the bladder wall. This was related to normal development and control in the average individual. It was conceded that a child might take three or four years to attain full control, and so it was understood that the patient might not achieve this in a night or two. That a prolonged lack of control had built up an attitude in which the patient had become hardened to his complaint was acknowledged; but, in view of his expressed wish to attain control and as he had an adult mind to bring to bear upon the problem, success was most definitely expected.

The aim was to achieve normal bladder control, and the consideration of this problem was based upon the known physiology of the bladder.

The aim and emphasis in treatment were all towards bladder control in its various aspects. Negative suggestion was scrupulously avoided. General fears of wetting the bed or finding oneself in a difficult situation were purposefully replaced by the positive expectation of holding the water under all circumstances. The bladder-function test formed a valuable practical basis for the discussion of the problem with the patient. A bladder of normal size with satisfactory sphincter control could not be denied. What was still more important was the knowledge that good powers of voluntary relaxation were present. When this could not be denied, emphasis upon a need for greater determination in certain aspects of control was self-evident.

The first exercise was therefore maintenance of sphincter control in the daytime. If the sphincter was weak, exercises in holding the water were carried out. The use of ephedrine as an adjuvant may be tried, but in our experience the results were disappointing. The second exercise was voluntary relaxation of the bladder—"Just as you did in the examination." With every initial urge to micturate, while the sphincter is held, the bladder is made to relax with the assistance of negative abdominal pressure by raising of the diaphragm and by strong auto-suggestion of bladder relaxation. This is best understood by trying it on oneself during a time of need. It was interesting to note how many chronic cases of frequency and urgency showed marked improvement under these exercises. Drugs such as atropine or belladonna may be used, and should be carried to full tolerance. These were also found of indifferent value. A dry mouth was a distinct handicap when the patient was restricted in water intake. Medical treatment has now been largely abandoned because of its doubtful value, which experience is supported by the findings of Browne and Ford-Smith (1941).

Nocturnal control was put on the same basis as day control, and was fortified by auto-suggestion at the time of going to sleep. Fears of accident were replaced by strong suggestion of positive control of the sphincter muscle. A "sleep tight" decision, so far as concerns that muscle, was the routine. The rest of the bladder, however, was expected to relax and to go to sleep just as the rest of the body did. This double suggestion of a tight sphincter and a relaxing bladder was given strong and repeated emphasis. It can with great benefit be made the basis of part of the group therapy for a ward. During subsequent psychiatric interviews this procedure was re-emphasized and the patients' determination stimulated. As soon as evidence of control appeared, the waking times were reduced in number and the procedure of "self-waking" was introduced if needed.

This new instruction was based on the idea that while the conscious mind was asleep the deep or unconscious part of the mind would remain in control. Emphasis was placed upon a determination that the latter would maintain continuous control over the sphincter, so that any attempt to force it open by a contraction of the bladder would result in its reflex closure of still greater intensity, such as occurs normally during the daytime. It was stressed that this increased contraction would persist up to a point of such acute discomfort in the bladder that it would wake the patient up. This, after all, is the normal function. One patient who captured the idea of the importance of this mechanism said that he was always waked by a feeling that a knife was being stuck into his bladder. He never awakened of his own volition before. The aim is so to focus the attention on an increase of bladder tone; so to sensitize the individual to it, that this normal mechanism will operate regularly and without failure. In adults this seems to be a much more useful procedure than the mechanical methods of waking, such as the use of the penile clamp of Baretz (1936) or attempts to condition the patient by use of an electric pad that when wet will ring a bell, as devised by the Mowrers (1938). In these the stimulus comes too late.

As treatment proceeded one emphasized the successes and disregarded the failures. Analogies, such as learning to skate

were presented in which the ability to stay on one's feet, rather than the number of falls one sustained, was considered an index of achievement: the brook having been leapt once, it could be leapt again. Reference to the presence of any fear before the leap always brought the response, "I would land right in the middle"—and so they do, and get wet on both occasions. Any tendency to relax this determination is evidence of the need for immediate and further psychiatric investigation, and sometimes discipline.

General psychotherapy was given throughout the training. This ranged from simple reassurance and suggestion in the mild and more stable type to "depth therapy" by directive educative methods in the more severe and unstable cases. The use of hypnosis early in treatment was largely abandoned, and was replaced by systematic education under conscious control. We do not think we achieved anything under hypnosis that we have not achieved since without it. Ancillary treatment in hospital was that of the training wing, to which cases were transferred at an early date. Here they received regular physical, para-military, and diversified occupational training. When day and night control was established, posting to duty was arranged. The necessity for posting some of the men to new units, to avoid embarrassment, was kept in mind.

**Difficulties in Treatment.**—Difficulties increased with age. Of 60 patients of 30 years and over only one-third went back to duty. The same percentage applies to those of low mental category—namely, S.G. V. Physical category in itself had no material bearing. Chronicity, and especially an associated psychoneurosis, made treatment more difficult. A bladder which showed less than 300 c.cm. capacity with 60 cm. water-pressure was always found most difficult to treat.

### Disposal

Up to Nov. 25, 1943, disposal of the 277 cases of the series was as follows:

Returned to duty	113
Returned to duty after use of a small bladder	40
Returned to duty after use of a small bladder (2)	53
Returned to duty after treatment of associated neurosis	13
Returned to duty after treatment of associated neurosis	23
Returned to duty after treatment of organic disease	4
Death (accidental drowning)	1
Transfer to another hospital (organic disease)	1
Still in hospital	29

### Follow-up

The follow-up of this series is necessarily very incomplete. Reports have been received from only 40 cases. Of these, 31 are on full duty, efficiently and willingly, with satisfactory bladder control—3 of them after six months; 4 are on light duty, efficiently and willingly, with satisfactory bladder control; 2 have been discharged from the Service; and 3 have been readmitted to hospital for further treatment. In addition a personal communication has been received from 4 more cases, expressing difficulties.

### Conclusions

The older the patient and the poorer the intelligence, the greater the difficulties in treatment. Physical disabilities were negligible in this series, excepting the small bladder. This is in contrast with the 13% of organic cases mentioned by Stockwell and Smith (1940) in their study of 100 children, and the findings of Winsbury-White (1941) in children in whom cystitis and congenital stricture appeared to be the chief causal factors. Whether the bladder was anatomically or physiologically small was not determined. It is suspected that the size was often the result of increase in muscle tone. A follow-up of these cases, with further cystometric examinations, is needed before any decisions can be reached. A few patients with a small bladder were discharged without much treatment, but the great majority of them were given prolonged and intensive therapy without improvement. One patient remains in hospital, one was discharged after the return to service, and only two, returned to duty, are carrying on.

Even though the history of the enuresis with precipitancy was nearly all cases similar to that described by Russell Brain (1940) and others in spina bifida occulta, this latter condition appeared to have no effect upon the treatment. Of the cases of spina bifida 8 were returned to duty; the follow-up

report of one of these is very satisfactory. Of the 5 discharged Category E, 4 had bladders under 300 c.cm. capacity and the other was a severe psychoneurotic with low intelligence. This supports the view of Karlin (1935), who considers the defect unimportant unless there is evidence of myelodysplastic change or extensive neural-arch defect.

The problem of treatment, therefore, is essentially psychological. In this series at least 27% gave no evidence of difficulty other than lack of proper training in childhood. The same difficulty applied to a considerable proportion of the rest, but other factors were also present. Evidence of bladder reaction of the infantile type was seen in many of these cases, as mentioned above. In this group one agrees with Hamill (1940), who considers it "a refusal to accept responsibility," and the Mowrers (1938), who agree with the emphasis of most that it is a continuation of inadequate training. In this type of case in which control appears to be delayed we would agree with Wainwright (1941) that definite treatment towards establishing control should be undertaken. On the other hand, normal inhibitory impulses establish themselves in the vast majority of children, and for other psychological reasons a too early interference or too aggressive training should not be undertaken as his concluding paragraph would suggest. In view of the fact that nearly 50% of the patients in this series showed immaturity and dependence, psychotherapy directed towards emotional release and maturation is important.

Suitability for treatment in the Army therefore depends on: an age preferably under 30 years, fair intelligence, a bladder of more than 300 c.cm. capacity with 60 cm. of water-pressure, and evidence of voluntary powers of relaxation. The personality type should include a reasonably good attitude towards further service. All cases in which the findings are favourable are suitable for out-patient treatment in the unit. An educative routine, as set out above, will produce satisfactory results in a considerable percentage of cases. Where there are no adverse psychiatric factors, admission to a general hospital for routine treatment may be necessary. If this fails, or if psychiatric factors are present, the case should be referred to a psychiatrist with a view to admission to a psychiatric hospital for treatment.

### Summary

A psychiatric study has been made of 277 unselected cases, and a cystometric examination of 232 of these. The average age was 21.33 years; mean intelligence fell in the S.G. III + group. Length of service and medical category were unimportant. 75% were bed-wetters from infancy, and four-fifths of these had had no remission.

Various factors are set out as possible causes: physical disorders appeared in under 8%; spina bifida occulta in just over 10% of those x-rayed; just under 25% showed small bladders under cystometry, with varying degrees of voluntary control.

Psychiatric investigation presented six main personality types. In order of predominance they were: the timid, the average, the compensatory aggressive, the pure aggressive, the psychopath, and the obsessional.

A form of treatment is outlined and difficulties relating thereto are mentioned.

A report of a small follow-up is given.

Observations and recommendations are set out.

We wish to express thanks to our late commanding officers, Lieut.-Col. J. D. W. Pearce and Lieut.-Col. R. J. Rosie (still C.O. to one of us) for permitting us to do this work and for their great interest and assistance; to Major H. G. McGregor and Capt. S. T. Lewsoe, Medical Specialists, for their assistance and co-operation; to various members of the hospital staff for their unflinching assistance; and to Brig. J. R. Rees, whose continued interest and encouragement have kept us on the job in the midst of other somewhat arduous duties. We wish also to thank Brig. J. S. McCombe for permission to publish this paper.

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## POST-OPERATIVE CHEST COMPLICATIONS IN GASTRIC SURGERY

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The purpose of this communication is to draw attention to the frequency of post-operative pulmonary complications in gastric surgery and also to assess the importance and severity of such complications. With this object, the post-operative chest condition of 100 consecutive patients on whom partial gastrectomy has been performed is reviewed. In submitting figures of the incidence of pulmonary complications for an operation such as partial gastrectomy it is necessary to give some information about the condition for which the patient was advised to undergo operation, together with the operative mortality. Also, the standards by which the pulmonary complications have been assessed must be stated.

### Condition and Operative Mortality

It is generally recognized that the operation is more difficult if it is done for a peptic ulcer for which a previous operation has been performed, and more severe if it is done for an ulcer which is bleeding or for malignant disease. We have therefore classified our patients into four groups, stating the number of patients in each group, with the fatalities. (1) Those suffering from peptic ulceration on whom surgery had not previously been employed, apart from the suture of a perforation. In this group were 78 patients, one of whom died. (2) Those suffering from peptic ulceration on whom surgery had previously been attempted. There were 11 patients in this group, two of whom died. (3) Those suffering from peptic ulceration complicated by acute haemorrhage: 5 patients; one death. (4) Those suffering from carcinoma of the stomach: 6 patients; no fatalities.

It will be seen, therefore, that these operations were performed for the usual indications and were not confined to any special group of patients; and that of the 100 patients four died.

### Assessment of Pulmonary Complications

Our practice has been to rely upon physical examination of the chest as a routine during the first two or three post-operative days. When any abnormal physical signs have been found, or a rise in temperature, pulse, or respiration rate suggests the possibility of a pulmonary complication, radiography has been carried out. In fact, 45 of our 100 patients have been x-rayed within the first few days of operation.

The primary types of immediate pulmonary complication encountered have been: (1) bronchitis, (2) lobar atelectasis, and (3) lobular or patchy atelectasis. We have diagnosed bronchitis in patients who after operation have had a productive cough with moist sounds in the lungs, but who on x-ray examination have shown no abnormality. The term "lobar atelectasis" is used when the whole of one or more lobes is atelectatic—a fact which can be well demonstrated on a radiograph.

The frequency of the diagnosis of lobular or patchy atelectasis, as Brock (1936) has pointed out, depends very much on whether or not the surgeon is looking out for this condition. In our experience it is by far the most common complication after operation. In most cases physical examination showed that the lower part of the chest on one or both sides was expanding somewhat less fully than normal, and auscultation revealed a poor air entry with some adventitious sounds. The temperature would be raised, often not more than to 100°, and the patient would feel that he wanted to cough but had some difficulty in doing so. He was encouraged to cough during the first or second day, bringing up some mucopurulent sputum. Following this the pulmonary condition rapidly improved and returned to normal. A radiograph of the chest in a patient of this type has shown slight elevation of the diaphragm together with slight patchy increase in density of the lung at one or both bases. In none of our cases in

this group was any mediastinal shift detected either by examination or by x rays. In a few patients this condition progressed to some more serious complication, such as broncho pneumonia; a fuller description of these patients is therefore given.

### Incidence of Post-operative Pulmonary Complications

Working on the lines indicated above, we find that 34 of our 100 patients are classified as suffering from a post-operative pulmonary complication. Of these, 4 had bronchitis, 1 lobar atelectasis, and 29 lobular atelectasis.

*Acute Bronchitis.*—All these 4 patients were suffering from chronic bronchitis and had an exacerbation after the operation. In three the complication was not serious and did not prolong their stay in hospital; but in a man who had chronic fibroid phthisis of both apices together with chronic bronchitis the exacerbation of the bronchitis led to reactivation of tuberculosis and prolonged hospital treatment. In only one of these four patients, therefore, was the complication serious.

*Lobar Atelectasis.*—We recognized complete atelectasis of the lobe in only one patient. He was a man of 45 who had a collapsed right lower lobe which failed to re-expand rapidly. Twenty-eight days later a radiograph still showed that the lobe was not fully expanded. Bronchoscopy and aspiration of the secretion were carried out, and after this the lobe re-expanded. This complication prolonged his stay in hospital by some weeks, and must be considered a serious one.

*Lobular or Patchy Atelectasis.*—Of the 29 patients in this group, the right lower lobe was involved in 12, the left lower lobe in 10, and both lower lobes in 7. In 25 the complication was a mild one and for several days they suffered the discomfort associated with a post-operative cough; but the condition rapidly cleared, the lung re-expanded, and the cough and sputum ceased. In none of these cases was the stay in hospital prolonged owing to this complication, and it seems that the post-operative lobular atelectasis amounted to an uncomfortable nuisance rather than a dangerous complication. In the remaining four cases, however, this initial complication was attended by more serious sequelae, and was responsible for the death of a patient. These four cases are reviewed in detail:

*Case 1.*—A man of 69 who had a patchy atelectasis of the left lower lobe following an operation in the winter, when respiratory infections after influenza were frequent. He proceeded to bilateral septal bronchopneumonia and died on the eighth post-operative day. His death must be attributed to the pulmonary condition, as necropsy showed that there was no trouble below the diaphragm.

*Case 2.*—A man of 57 in whom operation was followed by patchy atelectasis of the left lower lobe. This subsided rather slowly and his cough had not entirely settled down on the tenth day, when an urgent operation for the removal of a gangrenous appendix with spreading peritonitis was carried out. He made a satisfactory recovery from this second operation, but his pulmonary condition was made much worse and consolidation of the left lower lobe followed. This proceeded to an empyema, for which surgical drainage was done. His stay in hospital was prolonged by many weeks, but he ultimately made a satisfactory recovery. He was unfortunate to suffer from an attack of appendicitis so soon after a major abdominal operation.

*Case 3.*—A man of 59, known to have a large chronic lesser curve and posterior-wall ulcer, was operated on as an emergency case on the fourth day of a severe haemorrhage. His condition was very bad in spite of repeated transfusions. Patchy atelectasis of the right lower lobe was present after operation, and he died on the eighth post-operative day from peritonitis and bilateral broncho pneumonia. Necropsy showed that the primary cause of death was a spread of peritonitis from the floor of the ulcer; the persistence and exacerbation of the pulmonary condition were almost certainly due to this peritonitis. His death therefore cannot really be attributed to a chest complication.

*Case 4.*—A man of 47 with a very high posterior-wall and lesser curve ulcer for which two previous attempts at cure had been carried out elsewhere. A very high partial gastrectomy was performed. The surrounding tissues were indurated, and it seemed impossible to obtain a satisfactory anastomosis between the cardia end of the stomach and the jejunum. A drain was therefore put down to the anastomosis and the floor of the ulcer. He developed a patchy atelectasis of the left lower lobe and also a left subphrenic infection, and died on the tenth post-operative day. Necropsy showed bilateral bronchopneumonia and subphrenic infection round



the anastomosis. It seems that in this case the inflammation round the anastomosis, which was probably due to the pulmonary complication.

It will be seen, therefore, that in only one of these four cases in which lobular atelectasis preceded bronchopneumonia was this sequel unconnected with the trouble in the peritoneal cavity.

To sum up: in the whole series of 100 patients there were 34 whose post-operative progress was complicated by a pulmonary abnormality. Of these, 28 suffered from a mild and transient complication, but six had severe pulmonary disease. Three died, but only one death was directly due to the chest complication. Of the three who recovered, the severity of the pulmonary condition was in one case due to peritonitis following an attack of appendicitis. It will be seen, therefore, that in this series of 100 patients, six developed a serious pulmonary complication—three being attributable to post-operative peritonitis and three occurring in patients whose condition was otherwise satisfactory.

#### Notes on the Series

The factors influencing post-operative pulmonary complications were excellently reviewed by Brock in 1936, and we will only comment on a few points which we have noted in our series.

##### 1. The Operation

It is, of course, well known that upper abdominal operations are chiefly responsible for post-operative pulmonary complications in that diaphragmatic respiration is embarrassed. This embarrassment is likely to be accentuated by local peritonitis or post-operative distension of the stomach. Probably the most certain way to produce a post-operative pulmonary atelectasis is to do an operation which gives rise to a severe peritoneal inflammation. As we have just noted, necropsy showed that two of our patients had septic bronchopneumonia, and in our opinion this was secondary to peritoneal inflammation. We avoid any chance of post-operative distension of the stomach by the use of an indwelling Ryle's tube for at least the first post-operative day.

It has been suggested that a transverse abdominal incision allows the patient either to cough or to breathe deeply after the operation with less discomfort than is the case when a vertical incision has been employed. On 35 occasions we have made a transverse incision, and 12 of these patients suffered from post-operative pulmonary complication, while 23 remained clear. It does not seem, therefore, that a transverse incision, as employed by us, has any influence on the incidence of complications. What is much more important, in our opinion, is that whatever incision is made should be very well and strongly sutured: it is then easier for a patient to cough after operation. At the close of the operation the dressing is held on by elastoplast, applied so that it does not restrict respiratory movement.

##### 2. The Anaesthetic

Our view is that the type of anaesthesia influences the severity of these complications rather than the incidence. A patient who develops lung complications after two and a half hours of third- or fourth-plane narcosis will be less able to combat them than a patient who has been in the second plane for a similar period.

In order to provide the requisite relaxation for gastric surgery and at the same time maintain the patient in the first or second plane, some sort of regional block is necessary. We use bilateral intercostal block of the sixth to the eleventh nerves inclusive. The solution employed is 1/1,000 atropine with adrenaline. No splanchnic block, in our opinion, is necessary with inhalation anaesthesia, and for some time now we have discarded it. Premedication is by omnopon-scopolamine, the average dose being omnopon gr. 1/3, scopolamine gr. 1/150. The narcosis is induced by pentothal and is maintained with cyclopropane, administered by a large-bore endotracheal tube and to-and-fro absorption. The second plane is quite deep enough for the whole of the operation, except for intubation and for traction of the stomach to free the upper end; the third plane is entered for these two procedures. This technique enables good ventilation to be maintained throughout, and since breathing is mainly intercostal in character this does not embarrass the surgeon.

Nosworthy (personal communication) has pointed out that the bronchial spasm following intubation in light anaesthesia should be avoided in patients in whom pulmonary complications are feared. It was our practice to give a decalin lozenge 20 minutes before operation and to intubate after a pentothal induction. This process gives rise to considerable reflex bronchospasm and can be avoided by deepening the anaesthesia to the third plane with cyclopropane and ether if necessary. Up to now the results of this method have been encouraging, but the cases have been too few for conclusions to be drawn.

Under the technique described above the patient is as fit as possible after the operation; fall in blood pressure and sweating do not occur. Aeration has been maintained throughout with a mixture containing a large percentage of inert gas (either air or helium). We are of the opinion that the agent employed for the narcosis is not of paramount importance; a few of these cases were done with ether, and the post-operative condition was satisfactory. We prefer cyclopropane because of its flexibility and the lack of toxicity when used in the lighter planes, but we have no hesitation in supplementing with ether should necessity arise.

##### 3. The Post-operative Condition of the Patient

If the surgery and anaesthesia are of good quality the patient's post-operative condition should be good and he should be reasonably comfortable. This obviates the need for frequent injections of morphine and therefore avoids subsequent depression of respiration. We have tried to keep our patients both lively and comfortable after operation and to avoid the use of morphine as much as possible. It is, however, a fact that of five patients operated on for haematemesis only one developed a post-operative chest complication; yet these five patients received much more morphine, both before and after operation, than the average patient. We are now trying the effects of giving more of that drug after operation.

##### 4. Effects of Sex

Of the 100 patients admitted for operation, 14 were females, four of them suffering from pulmonary complication. This shows no striking alteration in incidence compared with that in the male patients; but the figures, of course, are not large enough to enable one to draw any conclusion. As most of our patients have been on medical treatment for some time and their smoking has been reduced or stopped altogether, it is possible that this may explain why in our series the incidence has been about the same in both sexes.

##### 5. Seasonal Incidence of Chest Complications

Of four patients with post-operative bronchitis, three were operated upon in the winter and one in the summer. Of 29 with post-operative lobular atelectasis, 16 had their operations in the winter and 13 in the summer. Of the 66 who had no pulmonary complication, 32 were operated upon in the winter and 34 in the summer.

It is, of course, well recognized that a patient suffering from chronic bronchitis is a better operative risk in the summer than in the winter. Apart from this, we do not think that in this country the incidence of complications is to any extent affected by the season; but the presence of an epidemic, such as influenza, seems to increase the severity of any pulmonary complication which may appear, and may lead to a troublesome infection in a partially atelectatic lobe. It is also very important, of course, to postpone operation should a patient show any evidence of respiratory infection.

##### 6. Treatment of Pulmonary Complications

**Prophylactic Treatment.**—Satisfactory prophylactic treatment, of course, is what one wishes to obtain. We aim to keep the patient active and his lungs fully aerated during the post-operative period. With this end in view we give pre-operative breathing exercises to each patient so that he will know what is expected of him after the operation. We endeavour to keep his condition good by the performance of a sound operation under a well-administered anaesthetic and to have him in as fit a condition as possible shortly after the operation.



is completed. This enables one to avoid heavy or prolonged sedation. Post-operative breathing exercises are restarted the day after operation, and in most cases heavy percussion of the thorax is allowed to be carried out by the masseuse during the first post-operative day. Movements in bed are encouraged, and our patients are rolled for washing purposes during the first post-operative day, unless their condition is unusually poor. Clinical examination of the chest is carried out daily as a routine for the first few post-operative days, for both diagnostic and therapeutic purposes. We believe that the movement and the activity involved in the clinical examination of the chest have a useful therapeutic effect. Coughing is encouraged by all those who deal with the patient. We endeavour to avoid infection in a collapsed lobe by postponing operation in any patient who has an upper respiratory infection or is in any way unfit. We have also been giving 3 g. of sulphathiazole by mouth three hours before operation, followed by 1 g. four-hourly after its completion, for 24 hours. There is no evidence whatever that this measure is of any use, but it seems reasonable to suggest that it may lessen the risk of infection in a lobe which has some stagnant secretion in the air passages.

**Curative Treatment.**—Should a pulmonary complication be diagnosed, we rely on frequent breathing exercises and heavy percussion of the chest to assist coughing and expectoration of sputum. We try to keep the patient as active in bed as possible, as movement often forces an unwilling patient to cough. We have occasionally used suction through a tracheal catheter, both as a prophylactic at the end of operation and as a therapeutic measure, when there appears to be difficulty in coughing. It certainly seems to assist subsequent expectoration. Up to date we have not subjected patients on whom a partial gastrectomy has been performed to bronchoscopy within the first few post-operative days. We have, however, used this for patients who have undergone rather less severe operations, and are prepared to consider it in suitable cases in the future.

### Discussion

One of the great difficulties in discussing post-operative pulmonary complications is to draw a line between what is a complication and what is not. Hypoventilation, as described by Beecher (1933) and others, is probably universal in patients after this operation. Henderson (1935) refers to "collapse without symptoms" as almost a normal sequel to major surgical operations.

In this series we x-rayed only those who showed some signs on physical examination. In a second series we are now x-raying every patient as a routine during the first or second post-operative day. It seems likely that in assessing his second series we shall find a rather higher percentage of mild patchy atelectasis, which was almost symptomless but was apparent on a radiograph if looked for. Probably few patients have a post-operative course entirely free from cough and sputum, and if one watches carefully enough some slight pulmonary abnormality can be detected. One's complication rate may therefore rise as time goes on, but this should be of little importance if the awareness of these slight abnormalities leads, as it should, to a reduction in the incidence of the more severe post-operative complications. In a second series we rather expect to show a greater incidence in the mildest type of patchy atelectasis.

We believe, however, that the avoidance of the more severe types of post-operative chest complication depends largely on the satisfactory post-operative condition of the peritoneal cavity. No amount of post-operative treatment will prevent those severe chest complications which are due to an unsatisfactory post-operative peritoneal condition.

### Summary

The post-operative chest complications in 100 consecutive cases of partial gastrectomy have been reviewed.

A pulmonary complication was detected in 34 cases.

The influence of various factors is discussed.

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## TWO VARIETIES OF LEUKAEMIA IN ONE FAMILY

BY

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The aetiology of leukaemia is so obscure that all facts which might ultimately be of value in solving this problem seem worth recording. Leukaemia occurs sporadically, and familial incidence is rare (Whitby and Britton, 1942); hence the presentation of the following notes of the disease, which apparently involved different types of white blood cell, in a brother and sister of middle age. The two patients lived in the same house; there were no other members in the family, and there was no family history of other cases of leukaemia.

### Case I

Mr. A., aged 46, was admitted to hospital on Jan. 20, 1942, complaining of a sore throat of six weeks' duration, with loss of weight and general weakness, slowly developing for a number of months. The chief clinical features were marked pallor, tonsillar enlargement with yellowish exudation but no obvious ulceration, cervical adenitis, and slight enlargement of the liver; the spleen was not palpable. Fever up to 100° F. was noted. The pulse rate was 120 to 140 a minute. Death occurred five days after admission, but a necropsy was unfortunately not permitted.

### Case II

Miss A., aged 43, entered hospital on April 22, 1944, some two years after her brother, complaining of sore throat, spontaneous bruising over forearms and abdomen, a single epistaxis, and menorrhagia; there were also fatigue and headache of four months' duration. The chief clinical features were a sallow colour of the skin, ulceration of the throat with yellowish-white sloughs on the soft palate and tonsils, a single enlarged lymphatic gland at the right angle of the jaw, subcutaneous haemorrhages on the forearms and abdomen, and microscopic haematuria. Neither liver nor spleen was enlarged. There was fever up to 105° F., with rigors every evening. Pulse rate, 110 to 160 a minute. This patient died in coma six days after admission, and again no necropsy was possible.

### Haematology

In Case I only a single blood count was done and a supply of films was taken for staining. The following figures were recorded: erythrocytes, 2,000,000 per c.mm.; haemoglobin, 55%; colour index, 1.4; leucocytes, 201,000 per c.mm. Differential count (1,200 cells): monocytes, 86.8%; monoblasts, 2.5%; lymphocytes, 7.4%; polymorphs, 1.7%; myelocytes, 1.6%. Nucleated red cells were also present, numbering 16 per 1,000 w.b.c.

It is to be noted in the differential count that there was a great preponderance (86.8%) of cells regarded as monocytes. These are contrasted later with the abnormal white cells found in the sister's blood. No sternal puncture was carried out.

In Case II two blood counts were done—on admission and again five days later. Sternal puncture was also performed. Blood examination (April 22, 1944): erythrocytes, 3,110,000 per c.mm.; haemoglobin, 51%; colour index, 0.8; leucocytes, 88,000 per c.mm. Differential count (1,000 cells): myeloblasts, 92.6%; lymphocytes, 6.6%; polymorphs, 0.8%. No promyelocytes or myelocytes were noted. On April 24 sternal puncture was performed; examination of the marrow confirmed the findings in the peripheral blood. Leucoblastic cells greatly exceeded erythroblasts in number, and again 92% of the marrow cells were regarded as typical myeloblasts.

### Discussion

Apart from the interest of leukaemia of acute type occurring in middle age and affecting brother and sister living in the same house, the question whether both suffered from the same or from different haematological varieties of the disease requires discussion.

In the blood film of Case I 86.8% of the cells were undoubtedly typical monocytes, the majority of which, however, contained a convoluted nucleus, and were, in fact, identical with blood histiocytes as described by Levine (1934). One of these was seen to have ingested a red cell. The 2.5% of cells, regarded as monoblasts contained large, round, densely staining nuclei, some of which showed one or two nucleoli; the cytoplasm, Leishman-stained, was blue and relatively small in amount. It is to be remarked that myelocytes and mature polymorphs together accounted for only 3.3% of the white cells.

Lymphocytes, mainly of the small variety, made up the remainder. A hyperchromic type of anaemia affected the red blood cells, the colour index being 1.4. Haematologically, therefore, the signs were those of monocytic leukaemia. Reference to the literature, however, indicated that these facts alone were not conclusive evidence in favour of such a diagnosis. The question arose whether the brother had died not of monocytic leukaemia but of a myelogenous leukaemia, which had been in the monocytic phase at the time of his arrival in hospital (Kraeke and Garver, 1937). The absence of a marked myeloid reaction was regarded as a strong point in the support of the former diagnosis.

The striking feature of the blood picture in Case II was the presence of a high percentage (92.6) of mononuclear cells, each of which, when stained by Leishman's method, consisted of a round eccentrically placed nucleus, often containing nucleoli, and blue agranular cytoplasm, many were undergoing division. These cells were considered to be myeloblasts. Only 0.8% of the leucocytes were polymorphonuclear, and the remaining 95% were lymphocytes.

These findings, together with those in the bone marrow, clearly constituted a blood picture of myeloblastic leukaemia.

### Conclusion

Two cases of very acute leukaemia, occurring in a brother and sister living in the same house, are reported. The sister's illness developed two years after her brother's death.

In the brother, a study of blood films strongly suggests the diagnosis of monocytic leukaemia, whereas the sister undoubtedly suffered from acute myeloblastic leukaemia.

I am very grateful to Prof J W McNee for helpful advice and criticism in the preparation of this paper and for permission to publish the second case. To Dr Forbes Walker, Ayr, I am indebted for the clinical details of the first case.

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## SUPERFICIAL GANGRENE IN ADOLESCENT DIABETES

BY

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Gangrene in the young diabetic is a rare event. Joslin (1940) the greatest authority on clinical diabetes, describes it as an accompaniment of arteriosclerosis, therefore developing almost entirely in the arteriosclerotic era of life. Of the few cases recorded in young people, some are determined by rare vascular accidents, disease of the blood vessels, or overwhelming infection of devitalized tissue. Kiefer, Brigham, and Wheeler (1926) reported frank gangrene of the entire left foot due to infarction in a young aged 19 who was in diabetic coma complicated by pneumonia. Gangrene of the nose in three children under 10 years of age was described by Bowers (1924). Carbuncle, essentially a gangrenous lesion, may be a grave complication of diabetes at any age.

Recently we have seen two cases with a pathology obviously differing from the above rarities and from the common gangrene of the extremities of elderly diabetics. With their description is included that of a third case almost meriting the bizarre title *dermatitis artefacta gangrenosa diabetica*.

### Case I

A boy aged 15 who had suffered from diabetes for three years was admitted to hospital on April 25, 1944, in coma. At an out-patient clinic on April 18 his diabetes had seemed to be well controlled by two doses of soluble insulin, with a noon blood sugar of 143 mg per 100 c.c.m., slight glycosuria, and no ketosis. Three days later an illness labelled "gastroitis" had started with much vomiting. Insulin, at first reduced, had later been omitted, and coma had inevitably ensued.

No complication was found on clinical examination. The coma was profound, with air hunger, ketosis, and extreme dehydration.

The pulse rate was 140, the temperature 98.2°, and the respiration rate 30. The blood pressure, at first 90/60, later fell to 80/50. A specimen of urine could not be obtained for some hours, but then showed gross amounts of sugar and ketones, with a strong reaction to ferric chloride. The blood sugar attained the notably high level of 1,320 mg per 100 c.c.m. Despite his coma the boy was so intensely restless that the insertion of a cannula into the right internal saphenous vein with splinting of both legs offered the only chance of maintaining the necessary intravenous therapy over a long period. This seemed a better arrangement than splinting of the arms.

Although four hourly attention to the back was scrupulously observed, a large area of gangrene, involving the upper part of the right buttock, suddenly appeared on the second day of splinting. The surrounding skin was red and indurated, and over the blackened skin of the gangrenous part small vesicles containing serous fluid arose. Separation at the edges was apparent by the third day, but a week later secondary infection had spread to the underlying fatty tissues and an abscess in the right buttock was evacuated. Culture of the pus produced *B. coli*. Consciousness was regained on the third day, and a complete recovery made from the coma. Fig 1 shows the gangrene as it appeared on May 15.



FIG 1—Case I. Photograph of the gangrene on May 15, one day before separation of the slough and eighteen days from the onset.

### Case II

A soldier aged 24 was transferred on June 2, 1942, from another hospital for stabilization after diabetic coma. He had noticed thirst and polyuria for six months, but had felt quite well until a carbuncle appeared on the back of his neck on May 20. At this time he was on manoeuvres, and diabetes was not diagnosed until his admission to hospital on May 30 in diabetic coma, which lasted for two days. The blood sugar was then 560 mg per 100 c.c.m., and dehydration, ketosis, and peripheral circulatory failure seem to have been pronounced. The coma had been treated in the usual way and the diabetes was well controlled.

Each knee showed an area of dry superficial gangrene on the anterior surface. Overlying the surface of the flexed knee each area was 4 in long by 3 in broad on the right and 2½ in on the left, the outer border on the right being just lateral and on the left just internal to the midline of the knee. The shape and symmetry of these lesions, almost mirror images as they were, suggested that they were due to pressure of the bed-clothes with the knees flexed and the thighs in a position of slight abduction and external rotation. There was no effusion into the joints or adenitis. Separation was complete in four weeks, and in six weeks the areas were healed.

The patient was well on discharge after four months, but in the interval many embolic abscesses, including a deep staphylococcal abscess in the adductor muscles of the left upper thigh, required surgery.

### Case III

A packing-case maker, aged 29, who had been diabetic for three years, was admitted on July 15, 1942. Mentally a little dull, he was a most unstable diabetic, and the bruise on his left thumb, well shown in the photograph (Fig 2), attested to those insulin reactions, accompanied by diplopia, through which his erring hammer would miss the nail, beld in his hand, and strike his thumb.

For the first of these three years of diabetes he had had great difficulty with his injections and had been warned not to inject too deeply. When asked to demonstrate his usual technique he produced to our horror, by the injection of 20 units of soluble insulin 40 units per c.c.m. in strength, an intradermal wheal corresponding in size to the lesions shown in the photograph. These consisted

of small round patches of dry superficial gangrene in all stages from discoloration to separation of the slough and fibrosis of the underlying granulations.

Attempts to reproduce the lesions both in this man and in normal controls were unsuccessful. During this time his diabetes was well controlled. No more gangrene has appeared since his use of the correct method of injection, but his diabetes is very unstable,

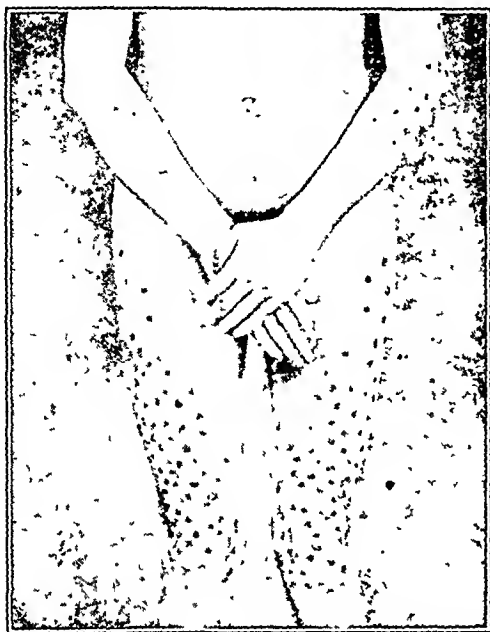


FIG. 2.—Case III. "Dermatitis artefacta gangrenosa diabetica" of areas used for insulin injections; July 9, 1942.

hypoglycaemic symptoms being frequent despite noon blood sugars of the order of 400 mg. per 100 c.cm. on some of his visits to the clinic.

### Discussion

From the first two of these cases it would appear that even in adolescents a comparatively slight degree of pressure during severe diabetic coma will produce a local ischaemia which proceeds to gangrene. Of the various pathological factors present—ketosis, hyperglycaemia, dehydration, and severe peripheral circulatory failure—the last may well be the most important. That arterial disease plays no part is well shown by the intense local inflammatory reaction and the rapid localization and separation of the slough. Indeed, the contrast between the tedious dry gangrene of the extremities in the elderly diabetic and the condition just described is striking.

This condition receives small mention in the literature. In Brier's (1934) description of a case of gangrene of the face and ear in an untreated diabetic farmer aged 24, he notes that superficial gangrene of the heels also appeared. At so young an age as 18 days a female infant, whose case is described by Lawrence and McCance (1931), developed typical gangrenous lesions of pressure-points associated with a severe but temporary diabetes. Similar lesions of pressure-points in a woman aged 40 who was in typical diabetic coma have been named "dermatitis gangrenosa" by Riven (1935).

In the third case intermittent trauma by the intradermal injection of insulin over a period of two years in a badly controlled diabetic produced small areas of dry gangrene at the site of some injections. Lawrence (1944) gives a warning of the effect of intradermal injections, but such a case must indeed be rare, and is worthy of record as a curiosity.

I wish to express my gratitude to Dr. A. C. D. Firth for his kindness and help in this study of his patients, to Sir Francis Fraser for permission to record their description, and to Dr. R. D. Lawrence for helpful criticism.

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## Medical Memoranda

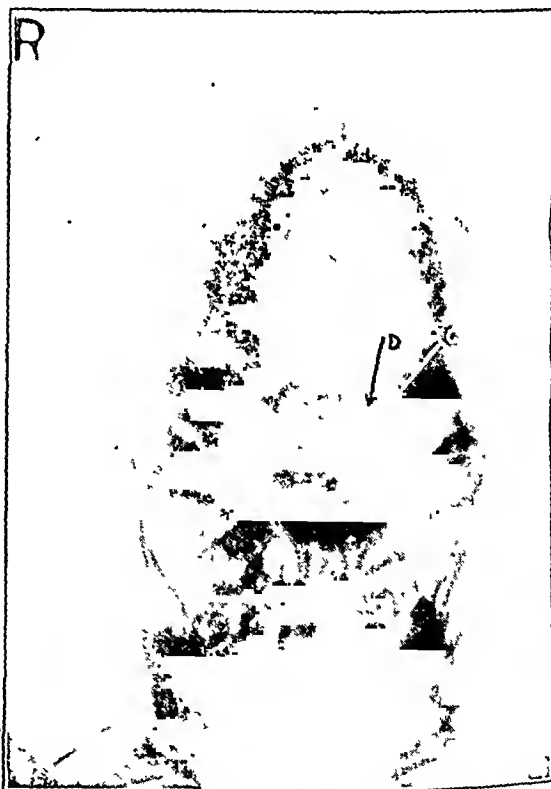
### A Case of Petrositis

The following case is instructive, for it shows, that the serious condition of suppurative petrositis, complicated by extradural abscess, may be treated by a conservative operation preserving the hearing.

#### CASE HISTORY

On March 1, 1944, a girl aged 9 was admitted to hospital with acute left-sided otitis media and mastoiditis. She had a past history of several attacks of bilateral otitis media successfully treated with sulphonamides. Myringotomy was performed on the same day as profuse discharge followed. Sulphonamide therapy was begun in full doses. On March 5 she complained of severe persistent left frontal and post-orbital headache, and on the following day left external rectus palsy developed. Lumbar puncture revealed C.S.F. with a lymphocyte count of 9 per c.mm., but otherwise normal. A diagnosis of mastoiditis and acute suppurative petrositis was made. A left cortical mastoidectomy was done on March 7 and a gallery of infected cells in the sino-petrosal angle was opened.

Although the general condition improved for a few days after the operation, the pulse rate remained high and the temperature did not settle. On March 15 she complained of: (1) severe left frontal headache, mainly in the distribution of the ophthalmic branch of the 5th nerve; (2) weakness when chewing on the left side (mandibular branch of 5th nerve); (3) deafness and giddiness. The deafness apparent a few days before now increased (8th nerve). The squint persisted (6th nerve), and there was some slight evidence of facial palsy (7th nerve). It was obvious that a lesion was present involving the courses of the 5th and 6th nerves. A small extradural abscess at the apex of the petrous temporal was diagnosed. Involvement of the 7th and 8th nerves was accounted for by diagnosis of acute petrositis and serous labyrinthitis.



Radiograph of Case.—A: Normal mastoid cells. B: Mastoid cells removed up to bony labyrinth. C: Track of absorbed bone. D: Site of abscess.

**Operation (Mr. Magauran).**—To preserve the hearing it was decided to approach the abscess along the superior surface of the petrous bone. This was done after removing the bone down to the bony labyrinth (lateral and posterior canals) and elevating the dura from this aspect of the bone. An extradural abscess containing a few cubic centimetres of pus was found after separating the dura for about 1½ in. Two thin rubber strips were used to drain the abscess, and 30% sulphacetamide injected into the cavity. The strips were removed three days later. The patient is now (April 15) well recovered. The wound is closing satisfactorily and hearing is nearly normal (whispering voice, 10 ft.).

**Morbid Anatomy.**—It was demonstrated at operation that the superior galleries of the petrosal cells were infected. Radiographs

ken after operation (see Fig) showed the amount of bone removed and the track of absorption of cells near the superior aspects of the one leading to the site of the abscess.

My thanks are due to Dr W C D Maule, medical superintendent, for allowing me to publish this case, to Mr W H B Magauran F.R.C.S., for an invaluable assistance in preparing this paper, and to the staff for their help and encouragement.

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### Use of Dried Rabbit Plasma for the Staphylococcus Coagulase Test

In laboratories where occasional staphylococcus coagulase tests are done, supplies of fresh human or rabbit plasma known to be suitable for the test are not usually available. Fairbrother (1940) found that different batches of human plasma showed some variation in coagulability, and advised the use of positive and negative controls. Christie and Keogh (1940) observed that false positives occurred if plasma more than forty-eight hours old was used. We have found human plasma from transfusion blood unreliable. Rabbit plasma was therefore dried from the frozen state and tested for its suitability after prolonged storage at room temperature. This dried product has also been used in routine work for the past twelve months and found to be reliable and convenient for both the slide test and the orthodox tube method.

#### EXPERIMENTAL WORK

**Selection of Strains.**—From our collection of dried cultures of staphylococcus aureus six strains—two coagulase-negative, two weakly coagulase positive, and two strongly positive—were selected and used for testing plasma. It was of interest to observe that of no subcultures of a particular strain the culture which had been assayed through mice before drying had a coagulation time of ten minutes whereas the relatively avirulent strain maintained solely in artificial media for some time before drying had a coagulation time of five hours.

**Collection and Drying of Rabbit Plasma.**—Blood was obtained from rabbits by cardiac puncture; 10 ml of blood was withdrawn into a 20-ml syringe containing 10 ml of 4% sodium citrate in distilled water. The mixture was centrifuged and the supernatant fluid withdrawn, 0.5 ml of this diluted plasma in small glass tubes of approximately 0.7 x 7 cm was dried from the frozen state using any of the standard methods using a high-vacuum pump are satisfactory. Dry nitrogen was run into the evacuated tubes containing the dried plasma, and the tubes were sealed in a blow pipe flame.

**Testing of Fresh Plasma.**—To 0.5 ml of diluted plasma were added four drops, about 0.2 ml, of a suspension of staphylococcus. The mixture was then incubated at 37° C for six hours and left at room temperature overnight, readings were taken at intervals. A comparison was made, with each of the selected strains, of (a) a dilute suspension from an overnight growth on an agar slope, (b) a similar suspension in tryptic digest broth, and (c) an overnight growth in digest broth.

TABLE I—Clotting Times with Fresh Rabbit Plasma

Dilution of Fresh Plasma	Organisms suspended in	Clotting Time with Strains					
		CN 49	CN 659	CN 70	CN 69	CN 384	CN 64
1/2	Saline from culture on agar slope	30 mins.	1 hr	5 hrs.	5 hrs.	Neg	Neg
	Broth from culture on agar slope	10 "	30 mins.	4 "	5 "	"	"
	Broth culture	20 "	10 "	3 "	4 "	"	"
1/6	Saline from culture on agar slope	30 mins.	1 hr	Neg	Neg	Neg	Neg
	Broth from culture on agar slope	10 "	1 "	3 hrs.	24 "	"	"
	Broth culture	10 "	10 mins.	5 "	24 "	"	"
1/18	Saline from culture on agar slope	10 mins.	2 hrs	Neg	Neg	Neg	Neg
	Broth from culture on agar slope	10 "	1 hr	5 hrs	5 hrs	"	"
	Broth culture	10 "	10 mins.	5 "	24 "	"	"

A suspension in broth or a broth culture is satisfactory, whereas suspension in saline is ineffective with higher dilutions of plasma, as shown by Fisk (1940).

It was thought that there might be differences in the coagulability of different rabbit plasmas, but there was no significant difference in the clotting time when the plasma of 18 normal rabbits was tested against the six strains of staphylococcus.

**Testing of Dried Plasma.**—For use in the test, dried plasma was dissolved in a volume of distilled water equal to the volume of the plasma before drying. Table II shows the clotting time of three dried rabbit plasmas tested against the six selected strains. The dried plasma was dissolved in 0.5 ml of distilled water and tested against a broth suspension of an overnight growth of staphylococcus on an agar slope. It can be seen that the dried plasma is just as effective as fresh undried plasma. So far the dried product has shown no deterioration over a period of twelve months, and it is possible that it will be stable for a much longer period.

TABLE II—Clotting Times with Dried Rabbit Plasma

Dilution of Reconstituted Dried Plasma	Rabbit No	Clotting Time with Strains					
		CN 49	CN 659	CN 70	CN 69	CN 384	CN 64
1/2	1	>20 mins	1 hr	2 hrs	3 hrs	Neg	Neg
	2	30 "	1 "	3 "	4 "	"	"
	3	20 "	>30 mins	2 "	3 "	"	"
1/6	1	20 mins	1 hr	3 hrs	4 hrs	Neg	Neg
	2	30 "	1 "	4 "	5 "	"	"
	3	30 "	30 mins	3 "	4 "	"	"
1/18	1	20 mins	30 mins	5 hrs	5 hrs	Neg	Neg
	2	1 hr	1 hr	4 "	4 "	"	"
	3	30 mins	2 hrs	4 "	4 "	"	"

**Slide Test for Coagulase-positive Staphylococci.**—Since the original observation of Much (1908) that coagulase-positive staphylococci are immediately clumped by plasma, a slide test has been used extensively in some laboratories. Berger (1943) found that natural agglutinins are present in some samples of normal rabbit serum. In order to "obviate this source of false positive results" he used a fibrinogen solution, which when stored in the ice chest could be used for "at least four weeks." The dried plasma was found to be as suitable as the fresh plasma when used in the slide test. However, a number of strains of staphylococcus which were coagulase-positive with the tube test failed to give a slide test with either fresh or dried rabbit plasma.

#### SUMMARY

Rabbit plasma may be conveniently dried for use in the staphylococcus coagulase test and is stable for at least twelve months.

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### Abortive Lobar Pneumonia after a Course of Sulphapyridine

The interest of this case lies in the occurrence of lobar pneumonia, in an abortive form, in an adult who had, three to six days before, had a full course of sulphapyridine therapy.

#### CASE HISTORY

A healthy man aged 36 fell ill with acute otitis media. He was put on full doses of sulphapyridine, and the otitis subsided uneventfully after four days. The sulphapyridine was stopped.

I had seen the patient on the morning of the sixth day. The same night I was called to him because of very severe pain in the right side of the chest. On examination he was obviously in great pain; there were no physical signs in the lungs, no temperature, no history of rigors or vomiting, and very little cough. The respirations were quickened, but this was thought to be due to the fact that deep breathing increased the intensity of the pain, which in addition was worse on movement. The possibility of lobar pneumonia was considered, but it was thought that the absence of temperature, the lack of physical signs, and the history rendered this improbable.

Expectant treatment was given—poultices and analgesics—and the comforting diagnosis of pleurodynia made. Next day the patient was much better. His appetite was normal, the pain was much less, there was little or no respiratory embarrassment or physical signs, and he felt very well. The condition had subsided to such an extent as to make a visit on the following day unnecessary. The patient seemed a perfectly fit man with a slight pain in the chest. On the next day but one he was again visited and found in the bathroom washing himself preparatory to going downstairs. To use his own expression, he was "champion." The chest was examined as a matter of routine and, to my astonishment, the right lower lobe presented the typical clinical features of consolidation. The signs were those of lobar pneumonia on the second to fourth day of illness. It was only then that one was able to inform the patient of the diagnosis and, after belief had succeeded scepticism, his return to bed was effected. Convalescence was uneventful.

#### COMMENT

This case is differentiated from one of abortive pneumonia (maladie de Woillez) by the presence of well-marked physical signs which are said not to occur in the latter condition. It is thought that the case may be of interest as adding weight to the suggestion that sulphapyridine or similar drugs should be given prophylactically in conditions in which pneumonia is likely to be a complication, and also because it suggests that patients who have been on a full course of sulphonamide therapy should not be released from medical observation until a full routine clinical examination has been made.

BASIL LEE, M.R.C.S., L.R.C.P.

## Reviews

### THE MEDICAL ANNUAL

*Medical Annual, 1944.* Edited by Sir Henry Tidy, M.D., F.R.C.P.; and A. Rendle Short, M.D., F.R.C.S. Sixty-second year. (Pp. 404; illustrated, 25s., postage 7d.) Bristol: John Wright and Sons, Ltd.; London: Simpkin Marshall (1941) Ltd.

To look back on the medical events of the past year is a wholesome form of postgraduate education, and for years many doctors have found one of the best ways of doing this is to subscribe to the *Medical Annual*, the 1944 edition of which has now been published. It still appears between the evergreen covers, and as usual presents its information in alphabetical order, the first article being "Abdomen, Injuries of," and the last "Yellow Fever." The editors present their familiar survey as an introduction, and the advertisers present their wares in as attractive a manner as possible.

To review such a work adequately would be to list the entries from A to Y and to say after each one, "This is very good." Although the editors observe of the sulphonamides that "possibly in one or two directions the august nose has been put out of joint by its young rival, penicillin," there is no separate entry for penicillin, which seems to us to be a notable omission. What might be called a new department of medicine, known in America as geriatrics, is dealt with under the heading of "Ageing." By reason of the changing distribution of age groups this subject will attract growing attention, and in the meanwhile we might agree with the author's conclusion that "the practical upshot of the problem, as we see it at present, is that certain advantages may accrue from the employment of experienced and well-preserved elders." Though there is apparent anxiety to preserve the elderly, there does not seem to be the same concern in preserving the young, as on a quick glance through we can find no reference to the important problem of infant mortality. The usefulness of the volume as a whole would be much improved by a yearly article under the heading of "Vital Statistics." One disease of special interest—namely, infective hepatitis—is dealt with in the most admirably illustrated article by Col. William S. Middleton, consultant physician to the United States Army in the European Theatre of Operations: so far as we know this is the first time that any contributor from outside the British profession has joined the distinguished team which makes the *Medical Annual* what it is.

### ALCOHOL ADDICTION

*Alcohol Addiction and Chronic Alcoholism.* Edited on behalf of the Scientific Committee of the Research Council on Problems of Alcohol by E. M. Jellinek. Effects of Alcohol on the Individual: A Critical Exposition of Present Knowledge Volume I. (Pp 336. 26s. 6d. or 34.00.) New Haven: Yale University Press; London: Oxford University Press.

Anyone who has spent some months in the United States realizes that alcohol presents a problem there which is much more acute than in Britain. Many people here are content with beer or cider at meals, and drink only an occasional cocktail. In America the hotter weather and the increased tempo of life, which often begins with breakfast at 7 a.m., seem to demand more release about six in the evening than is given by mere cessation of work. So that more alcohol is drunk. When there are parties (and they are numerous) women drink a good deal too. There often appears to be a purpose about it, even a sense of obligation to drink much. One story of a farmer in Vermont on his way to town is told: a friend meeting him inquired, "Well, Tom, are you going to get drunk to-night?" "Ay," he replied, "and don't I dread it!" Hence alcohol has become in the U.S.A. a "medico-social issue," and a Research Council on Problems of Alcohol was organized in 1937. It includes names well known in this country, such as W. B. Cannon, A. J. Carlson, H. S. Gasser, and A. C. Ivy. The council decided to begin by preparing an analysis of existing literature on the problems of alcohol, and obtained funds for a study of the "Effects of Alcohol on the Individual" from the Carnegie Corporation of New York. The first contribution to this study has now appeared as Volume I on *Alcohol Addiction and Chronic Alcoholism*.

This book is edited by E. M. Jellinek, and has as its main contributors K. M. Bowman, who is professor of psychiatry

at the University of California, Norman Jolliffe, who studies nutrition, and the editor himself. The book has two parts, the first dealing with addiction and alcoholic mental disorders and a second concerned with chronic alcoholism and alcoholic encephalopathies in relation to nutrition. The worst feature of the book is that it is written in an unattractive style, which does not vary greatly in different parts. Sentences such as "These factors . . . are prominently discussed in propagandistically oriented writings" (p. 47), or "The experimental study of factors determining inherent tolerance offers a first approximation to the systematic exploration of the etiology of addiction" (p. 46) are fair examples of a prose which has the distracting quality of a toothache, so that it is difficult to take in what one has read. A close runner-up as the worst feature of the book is the psychiatric or psychological jargon with which it abounds. The reader must contend with "acute alcoholic hallucinosis," "amnesic polyneuritic psychosis," "exogenic syndrome," and the like—technical terms which make the reading possible only to specialists. The trouble is that it is impossible at present to make any connected story out of the available facts. In the section on nutrition one looks in vain for those beautiful experiments done by Sebrell—to them A. P. Herbert devoted a page of *Punch*—in which it was observed that rats eating a diet deficient in vitamin B<sub>1</sub> were symptom-free for a longer time when whisky was included in their food. Despite all attempts to explain it away, the result stands unshaken.

As a collection and examination of the literature this book undoubtedly has much value for the specialist, but it is evident that not much of general interest is yet known of this subject.

### MEDICAL PROBLEMS OF FLYING

*Principles and Practice of Aviation Medicine.* By Harry G. Armstrong, M.D., F.A.C.P., Second edition. (Pp. 514; illustrated, 36s.) London: Baillière, Tindall and Cox, 1943.

*Physiology in Aviation.* By Chalmers L. Gemmill, B.S., M.D. (Pp. 129; illustrated, 52.00 prepaid or 11s.) Springfield and Baltimore: Charles C. Thomas; London: Baillière, Tindall and Cox.

The first edition of Col. Armstrong's valuable textbook appeared most opportunely in time for the outbreak of hostilities in 1939, thirteen years after Bauer's smaller textbook *Aviation Medicine*. Its circulation was therefore enormous, since the need for it was great, and it soon formed the basis of learning for many Air Force medical officers. It was admirable for the purpose, and the careful expositions of the underlying human physiology were most valuable to the doctor who had left his civilian practice to follow a surprisingly new form of medicine. After its appearance, aviation medicine in the Services made enormous strides, and sections of the book became open to serious criticism. The second edition has appeared to meet an increasing demand, but, as the author freely admits, it has not been possible to alter the text so as to bring it up to date because he cannot use any of the material which he has at his finger-tips, for it is still considered secret or confidential. He has been able to recast some sections—for instance, that dealing with neuroses—so as to bring them into general line with present thought, and has made additions, as in the section on equilibrium. Nevertheless the bulk of the book remains unchanged, and many chapters, particularly those dealing with high-altitude physiology, oxygen equipment, the physical and psychological standards of air-crew selection, air-sickness, and chronic altitude sickness, will need revision as soon as security and the author's important Service duties permit. This will no doubt lead to an edition which will re-establish the book as the standard text in aviation medicine. In the meantime the second edition is a very valuable stop-gap, which will implement the serving doctor's practical experience.

The excellent short text of *Physiology in Aviation* is based on a course of lectures given by Cmdr. Gemmill at the School of Aviation Medicine in Pensacola. If the Air Force medical officer is to understand the medical problems of modern flying he must have a sound basis of the physiology of respiration and circulation. Cmdr. Gemmill explains in seven short chapters the physical properties of gases and the normal physiology of gaseous exchange before he deals with the effects of low pressure and of anoxia. He then gives a simple account of the physiology of the circulation before he explains the effects of acceleration. Then he deals very briefly with the physiology

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## BRITISH MEDICAL JOURNAL

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## SOCIAL INSURANCE

The Minister of Reconstruction presented to Parliament last week two documents which will rank of first importance in the social history of Great Britain.<sup>1</sup> The first set forth the Government plans for a comprehensive scheme of social insurance—a “mosaic of detail,” covering sickness, invalidity, and unemployment benefits, retirement pensions, and family allowances. Family allowances, by the way, are to be met wholly out of taxation, and therefore do not strictly come within social insurance. In the other cases the tripartite system of contributions by the insured, his employer (if he has one), and the Exchequer holds good. The second document outlined proposals for an industrial injury insurance scheme to replace the present system of workmen's compensation. Workmen's compensation, established nearly fifty years ago, was the pioneer scheme of social security in this country. It is now to be lifted clean out of the employer-versus-employee arena, which has often proved litigious, made into a social service, and placed, like the other benefits, under a Ministry of Social Insurance.

As in the proposed National Health Service, so in this wider territory the governing principle is comprehensiveness. There is no variation or shadow of turning from the 100% inclusion. All ages, all economic groups, all occupations—the leader at the Bar and the woman who sweeps his chambers—all are roped into compulsory insurance, thereby far more than doubling the present number of insured persons. Provision extends from the nursery, by way of maternity benefit and children's allowances, to the grave, by way of a death grant. It is designed to guard against “every one of the main attacks which economic ill fortune can launch against individual well-being and peace of mind.” All persons will pay a single weekly contribution for all benefits by means of one stamp on one card.

In both these documents the Government has largely drawn upon the proposals put forward by Sir William Beveridge in November, 1942. In some respects it has gone further than the Beveridge plan; in others not so far. It has been more generous to the elderly, more parsimonious to the young. Retirement pensions start at some shillings a week higher under the Government scheme, and, on the other hand, children's allowances are on a more meagre scale. The Beveridge scheme would have made £110 million a year available for cash allowances in respect of children. The Government, believing that a substantial part of the benefit should be in kind, makes only £69 million available in cash, but states that school meals and milk services will be so extended that when they have reached their full development the cost will not be

much below the total for cash allowances. Before these services reach such full development, however, much time may elapse; there are large parts of the country where the services do not exist, and in any event they are only for school-children, or, rather, for children while attending school. Unless this provision is quickened the nutrition of children, especially in homes where there is sickness or misfortune, may not be improved to anything like the extent that advocates of family allowances had hoped. The dilemma of the social planner is, of course, to bestow benefits without encouraging the idler, the spendthrift, and the malingerer, and without sapping the initiative of the country's manhood: the free gift of *panem et circenses* to the Roman populace was a policy characteristic of the decline and not of the rise of the Roman Empire. It is held by the Government to be psychologically unwise to make sickness benefit of unlimited duration, and no one can complain that a benefit covering three years of continuous sickness is ungenerous. But the chronic invalid at the end of three years, returning to the lower scale of insurance benefit, is likely to be in the same or greater need of assistance. Indeed, in such cases it is not a question of a few shillings less or more, but of individual care, perhaps of institutional care, of which nothing is said in this White Paper. The Beveridge plan, though it dismissed the approved society system as such from the administration of compulsory cash benefits for sickness, allowed a possible field for friendly societies as agents. The Government bangs the door upon approved societies altogether. The Ministry of Social Insurance will itself administer sick pay. The approved societies are powerful bodies, and already the sharpening of battle axes is to be heard. The medical profession has had to criticize approved societies, but it seems a pity that their special experience in administration should go to waste. The friendly societies have maintained a sense of fellowship and a human touch which has been a distinctive contribution to social progress.

In the proposals to supersede workmen's compensation more marked departures have been made from the Beveridge scheme. Sir William Beveridge was less inspired in this part of his plan than in others. His proposals were unduly complicated, probably because he tried to reconcile the many different views put before his committee. The existing scheme finds no defender; it has proved costly and often contentious, and has not always brought to the workman the promised security. The Government has not accepted, among other Beveridge proposals, the recommendation to relate industrial pensions for long-term disability to pre-accident earnings. It has abandoned the principle of compensation according to earning capacity; compensation will be given according to the extent to which the workman has suffered disablement by comparison with a normal healthy person of the same age and sex. Thus the casualties of industry will be on the same footing as the casualties of war, and from that point of view there is something to be said for the proposal to entrust the medical assessment to the medical boards of the Ministry of Pensions, with the right of appeal to a special tribunal consisting of two medical practitioners and a chairman. The British Medical Association, in evidence which it submitted in 1939 to the Royal Commission on

<sup>1</sup> Cmd. 6550 and 6551. London: H.M. Stationery Office.

Workmen's Compensation, urged the replacement of the office of medical referee by the setting up of such a board consisting of three practitioners. The Association, of course, could not foresee at that time the removal of workmen's compensation from the law of employer's liability, and it directed its attention to the remedying of certain features which had proved objectionable in experience. One of these was the "lump-sum" payment, which it held responsible for the prolongation of disability in many cases. Under the new Government proposals the "lump-sum" payment, except in some cases of minor disability, will not replace pension. A matter on which the Association laid special stress five years ago was the need for rehabilitation centres. The most baffling problem in connexion with industrial disability is that of "light work," a term which has never been legally defined, while the medical side of the problem itself has never been fully explored. The Association suggested that the situation could be met by the establishment of rehabilitation units, and it devoted more than half its memorandum of evidence to this question. The new White Paper makes very scant reference to that side of the subject. Rehabilitation has been, if not ignored, at least overshadowed by the cash register. It is simply stated that it will be provided as part of the general medical and post-hospital services provided by Health Departments and by the Ministry of Labour and National Service, that there should be close contact between these Departments and the new Ministry of Social Insurance, and that there will be an obligation on the workman to undergo training. But one misses the accent on restoration and the improvement and promotion of health. Allowances and pensions, after all, are the flags of defeat. The ideal to aim at is a state of affairs in which they are never thought about.

It is evident that both these White Papers are, in a sense, interim documents. A bold map has been drawn, but many topographical details remain to be filled in. Nothing is said about the all-important role which the doctor will take as the guardian of many of these benefits. The integrity of the scheme so far as sickness, invalidity, and industrial injury benefits are concerned will depend upon his certification. No doubt it has been the anticipation of this which has inspired recent official and semi-official warnings about false and misleading certificates. It is acknowledged that the serious difficulty is to secure effective control over the payment of benefit, especially in the case of sickness benefit for persons working on their own account. Several problems in this field call for further consideration. The scheme may be modified by Parliamentary debate and public discussion, but from the "firm proposals," as they are called, the Government is not likely to be deflected—namely, the principle of comprehensiveness and of unification in a single administrative framework. After the usual acclamation which greets a White Paper dissentient voices are being heard. Some are disturbed at the cost of the proposals, which will place new burdens on employers and taxpayers. If the entire scheme were in force next year it would cost £673 million, including £148 million for the enlarged National Health Service, which is some £250 million more than the present expenditure, and of that extra amount £78 million would come

out of rates and taxes. Others—or perhaps the same people—fear that the British qualities of independence and self-help will deteriorate. They say with Hecate to the witches of *Macbeth*: "Security is mortal's chiefest enemy." But the same thing was said when National Health Insurance was born, and no doubt when the Poor Law, the oldest of our social services, and now in its final stages of liquidation, came into existence. Such critics, who are probably mostly of his party, might be reminded of Disraeli's dictum that individual security is the necessary foundation of national well-being. Those who can sense the coming time feel that these social security plans are as necessary in peace as victory in war, and that without them the fruits of victory will be soured. So long as security is looked upon as a right which the citizen has to deserve and earn, and so long as he makes an insurance payment for it, then such plans, fulfilled, may act as a stimulus and not as a deterrent to the effort this country will have to put forth in the years to come.

### TREATMENT OF CEREBROSPINAL FEVER

A report now published by the Department of Health for Scotland<sup>1</sup> entitled "Sulphonamides in the Treatment of Meningococcal Meningitis" reveals that a systematic study of this disease has been in progress in Scotland for some years past. All cases admitted during the years 1936 to 1941 inclusive to the infectious fever hospitals of Edinburgh, Glasgow, Dundee, and Lanark County have been made the subject of a detailed return, and particulars are thus available of 2,223 cases, representing about 40% of total cases notified in Scotland during this six-year period. The actual form used is not reproduced in this report, but the items of information required are mentioned, and they are comprehensive enough to enable the effect of different forms of treatment to be analysed and assessed from several points of view. This report is in a condensed form and intended only as a preliminary survey; greater detail is promised in a later publication. It begins by reviewing the history of cerebrospinal fever in Scotland during the past forty years. In frequency it has shown four peak years—1907 (2,115 cases); 1915 (409); 1931 (409); and 1940 (2,580). Each has been followed by a slow decline, the normal inter-epidemic level being reached only after three years. There has also been a rise in the inter-epidemic level from an annual average of 70 cases in 1911–14 to over 200 in 1929–39. Brief particulars are given of seasonal and age distribution: a notable difference between these and the English figures quoted by Beeson and Westerman<sup>2</sup> is that 66% of the patients in Scotland were under 15 years old, whereas the corresponding English figure is only 45.5%.

The number of cases in the 6 years covered by the report were successively 99, 120, 110, 100, 1,005, and 763; thus the great majority were those occurring in the first winter of the war and in the succeeding epidemic season. The over-all fatality rate was 16.7%, in contrast to a rate

<sup>1</sup> Report to the Scientific Advisory Committee, Department of Health for Scotland. Edinburgh: H.M. Stationery Office, 1944. (4d.)

<sup>2</sup> *British Medical Journal*, 1943, 1, 497.

of over 50% in the pre-sulphonamide era. The mortality at different ages shows the same general distribution both in the past and in the period under study, with maxima in infancy and in the highest age groups. The fatality rate among cases receiving different forms of treatment affords the main interest of the report, and may be stated briefly as follows, omitting deductions given in the tables for patients dying less than 24 hours after admission. Among 199 cases treated with "serum or antitoxin" alone the fatality rate was 51.7%. There is nothing surprising in this, but a rate of 31.2% among 250 cases treated with both serum and antitoxin and sulphonamides is unexpected. Reasons are given for concluding that these cases were not exceptionally severe, and inadequate dosage of the drug is not held accountable; the suggestion is made that the effect on the meninges of intrathecal serum injection may be responsible. Among cases treated with sulphonamides alone there are four categories, the numbers and fatality rates being as follows: sulphapyridine 1,468 (17.17%), sulphanilamide 128 (9.3%), sulphathiazole 75 (14.6%), and miscellaneous sulphonamides 91 (20.9%). It is unfortunate that these numbers are so unequal, and in particular that the cases treated with sulphanilamide were not more numerous, since, contrary to commonly accepted belief, this drug is shown to have been the most effective. It is said to have been used chiefly at one centre, which suggests that other non-specific factors in treatment may have influenced the results, but throughout the period of the study, which excludes any likelihood that a mild series of cases was treated in this way. It is clearly desirable that further comparative studies should be made on these lines, in which sulphanilamide is used in the same proportion of cases as are other now more popular drugs. These observations have at least reopened this question, and suggest the inadvisability of assessing the relative merits of closely similar drugs on any but an adequate statistical basis. In very many instances clinical impressions are in fact responsible for the choice of particular sulphonamides for various specific purposes, no adequate comparisons on which a firm judgment can be based having ever been made.

The sole demonstrated drawback of sulphanilamide treatment in cerebrospinal fever is a greater frequency of pneumonia as a complication; if the lung infection was pneumococcal (a point on which information is not available) this is to be expected. The fatality rate in sulphapyridine-treated cases appears unduly high, and since dosage was in general adequate it is concluded that the disease in Scotland has been of a more virulent nature than in the South of England, where treatment with this drug has given better results. An analysis of therapeutic effect in relation to the scale of dosage of sulphapyridine yields some peculiar findings. In infants the fatality rate declines as dosage increases, but in the 2-4 years group the lower doses gave the best results, and over 15 years a medium dosage. It is therefore hardly surprising that the authors of the report are disinclined to be dogmatic about optimum dosage. Presumably this study will be continued, and both in Scotland and elsewhere it is to be hoped that available clinical material may be used in a deliberate endeavour to define optimum lines of treatment.

## VITAMIN B<sub>1</sub> AND THE HEART

In a recent letter to the *Journal*<sup>1</sup> Dr. J. Drummond has affirmed the value of vitamin B<sub>1</sub> in high dosage as a "cardiac tonic" in heart failure and auricular fibrillation. On theoretical grounds benefit might well be expected, as we are reminded by a recent review.<sup>2</sup> Vitamin B<sub>1</sub>, or thiamin, is essential for the efficient combustion of the carbohydrate which provides energy for the metabolism of tissues, and the effects of B<sub>1</sub> deficiency are most likely to appear in organs continuously at work—namely, the brain, nervous system, heart, and kidneys.<sup>3</sup> In the cardiovascular system the main features are right ventricular failure with systemic venous congestion and oedema, capillary pulsation, and a low diastolic pressure. Usually there is a striking absence of orthopnoea, but cases may occur in which left-sided failure is present with dyspnoea and orthopnoea.<sup>4</sup> The cardiovascular symptoms may be associated with polyneuritis or other consequences of vitamin deficiencies. Electrocardiographic changes attributed to vitamin-B<sub>1</sub> deficiency have not always been consistent. The heart in beriberi shows typically, however, an inversion of T waves and a low amplitude in all complexes.<sup>5</sup> In human volunteers with induced thiamin deficiency Williams<sup>6</sup> observed a similar diminution in the amplitude of all waves, particularly the T waves. A comparable condition has been produced in pigs maintained on a thiamin-deficient diet.<sup>7</sup> Clinically some of these animals developed cyanosis, dyspnoea, and bradycardia, these signs being accompanied by electrocardiographic abnormalities. Pathologically there was cardiac dilatation without hypertrophy, and the myocardium showed focal and diffuse necroses.<sup>8</sup>

It is one thing, however, to agree that deficiency of vitamin B<sub>1</sub> may lead to heart failure, as in the classical form of wet beriberi, and quite another to claim that deficiency of vitamin B<sub>1</sub> plays a significant part in cardiac failure as seen in this country. There is no evidence that vitamin-B<sub>1</sub> deficiency is present to any appreciable extent in the normal population of this country, and our wartime diet is more than adequate in this respect. Nevertheless a "conditioned deficiency" of vitamin B<sub>1</sub> might occur in heart failure as a result of a long-restricted diet, deficient assimilation of food, or an increased need. The intake of food may be inadequate, assimilation may be deficient as the result of systemic venous congestion, and the requirements of B<sub>1</sub> are increased by the considerable rise in the metabolic rate which occurs in many persons with congestive heart failure.<sup>9</sup> It is possible, therefore, that a thiamin deficiency might occur as a complication of chronic heart disease. Although satisfactory biochemical methods of assessing thiamin deficiency are now available, there is at present no evidence that such a deficiency is common in heart failure. Finally, it is conceivable that vitamin B<sub>1</sub> might have a pharmacological action in heart failure which was quite independent of its action as a vitamin, in the same way that nicotinic acid (but not nicotinamide) relieves angina, migraine, vertigo, and neuralgia. The proof of the pudding must be in the eating, and it is probable that the majority of cardiologists would not agree with Dr. Drummond in his eulogy of vitamin B<sub>1</sub>. The few patients in whom it is effective usually give a history of long-standing alcoholism and gross dietary deficiency.

<sup>1</sup> *British Medical Journal*, 1944, 1, 771.

<sup>2</sup> *Nutrit. Rev.*, 1944, 2, 38.

<sup>3</sup> *Proc. roy. Soc. Med.*, 1939, 32, 807.

<sup>4</sup> *Ann. intern. Med.*, 1937, 11, 104.

<sup>5</sup> *Electrocardiography in Practice*, by A. Graybiel and P. D. White, Philadelphia, 1941.

<sup>6</sup> *Arch. Intern. Med.*, 1942, 69, 721.

<sup>7</sup> *Johns. Hopk. Hosp. Bull.*, 1943, 73, 169.

<sup>8</sup> *Amer. J. Pathol.*, 1943, 19, 341.

<sup>9</sup> *J. Clin. Invest.*, 1935, 14, 551.

They are, in fact, technically suffering from secondary beriberi. In 1939 Arthur Hurst<sup>10</sup> reminded us that R. T. Williamson of Manchester described this type of heart failure many years ago and advised testing the tendon reflexes in obscure cases of heart failure. With the exception of beriberi and the alcoholic heart, it is doubtful whether vitamin B<sub>1</sub> has an established place in cardiac therapeutics.

### THE MAKING OF BOOKS

Mr. Stanley Unwin's discourse at the Royal Institution on *Publishing in Peace and War*<sup>11</sup> will give pleasure and pain to all who love books. The pleasure will come from the pages which describe book production, because most readers will learn something new to them; the pain will be inflicted by that part of the pamphlet which discusses the state of book production now. The facts are these. Owing to wartime conditions the demand for books, not merely escapist fiction but solid textbooks and classical works, is greater than it has ever been, but the supply is wholly inadequate. We might add—scientific periodicals did not come within the scope of Mr. Unwin's lecture—that many valuable research papers accepted by editors are on a waiting list which grows every day longer, and that at least one director of a medical research department proposes to submit papers in future to American scientific journals. Mr. Unwin speaks with not unnatural bitterness of the attitude of some Ministers and some civil servants. Some Ministers may be illiterate or at least have that contempt for books which is supposed to characterize practical men—no doubt the practical men who, in Huxley's phrase, practise the errors of their forefathers—but most civil servants have at least shown in examination rooms a knowledge of the contents of many books. Perhaps the cynic would say that those who have books of their own and access to good libraries do not lose much sleep over the mental starvation of "the public." A more charitable explanation would be that decisions were taken at a time when the wiser heads among administrators were preoccupied with matters of life and death. Mr. Unwin notes that the allocation of paper for books in 1945 is less than 22,000 tons, a little more than one-fifth of the allocation to H.M. Stationery Office. One grows a little weary of the comic tales of civil service lust for useless forms; but many of them are true, and anybody who has worked in a temporary Government Department could give examples of waste. Very often there is a good defence in theory—or, shall we say?—on paper. Unless a complete documentation survives (the argument runs) it will be impossible to write a history of "the Department," and so, in the next war, mistakes will be repeated.

In America," Mr. Unwin writes, "the cult of the best-seller has reached such a pitch that a scholarly work stands little chance of acceptance by a commercial publisher unless it has mass appeal. Over here there is still far more long term non-commercial and prestige publishing than is usually credited, and this is as it should be. But if continuously discouraged it will disappear, and unfortunately in recent times discouragement has come to it from all sides."

It is surely true that in America assistance in the publication of scholarly works can be obtained at least as easily as here, and that the production of serious scholarly periodicals is great. The war has brought the scholars of America and Great Britain into still closer contact than in 1939, it may easily happen that our younger men will look to the other side of the Atlantic for vehicles of publication; from the point of view of making their results known to the learned world nothing will be lost. Still, one might regret this on sentimental grounds.

### A WINDOW ON SCOTTISH SLUMS

For many years to come stories of the wartime evacuation from Glasgow and Edinburgh and their outflow north and south will be told in the burghs, villages, and glens of Scotland. The authentic story of the woman quartered in a cottage on a Highland estate. "Ma weans were told they were to sleep in the King's bedroom. This'll no do." The children who, after a good dinner, were confronted with a plain tea with warm scones. "We're no takin' that. You're paid by Government. We're for ham and eggs." And as a sidelight on the habits of some, the mother's remark. "Johnnie, don't use the lady's carpet, use the surround." The publication early in 1943 of *Our Towns: A Close-up* administered a wholesome shock to the social conscience of England, and now a group of Scottish women—the editorial committee of the Scottish Women's Group of Public Welfare—have done the same for their own country.<sup>1</sup> They tell the story of the 180,000 children and their mothers who have been packed away in 500 trains from Scottish towns to rural places during the war. For the most part it is a melancholy tale. Complaint is made that many of the mothers had not the most elementary knowledge of plain and simple feeding. But the bitterest complaint concerned the uncleanness of the children. In one village which received its entire contingent from a slum school 50% were said to have dirty heads, 30% impetigo, and 20% to be incontinent in their habits. Drastic action was taken in this case by officials and housewives, with a resulting fall of four feet in the local reservoir and a dearth of disinfectants at the chemist's shop. As for enuresis, it is impossible to estimate in what proportion of cases this was temporary and brought on by excitement or nervousness and perhaps by the coldness of country houses, but many of the children seemed never to have been trained to make use of toilet conveniences. On the other hand, the strangeness and loneliness of the new environment to people who have been living 188 to the acre has to be remembered. Many of them had been transported from Glasgow slums to Highland shooting lodges, and the loneliness was too much for them. In one mansion several families were allotted a room each, but in the morning all the twenty-five women and children were found huddled in two rooms and they left within ten days. Amid so much filth and recklessness two very human touches stand out—the unity of the family and the fear of an institution. No Government circular was ever more tightly grappled to the breast than the official promise not to break up the family. They must literally touch one another at night. A husband with weary mothers and children drew up at the entrance to a huge square mansion where the eager kind hostess awaited her guests with every comfort. "No' me! No' me! I'm no' gaun into an institution!" they cried, and wild horses would not have dragged them up the steps. However social reconstruction is to come about, it is evident that the integrity of the family is a factor to be placed in the forefront.

The Committee of Privy Council for Medical Research has appointed Dr. Alan Nigel Drury, F.R.S. (Director of the Lister Institute of Preventive Medicine) and Prof. James Calvert Spence, M.D., F.R.C.P., of Newcastle-upon-Tyne to be members of the Medical Research Council from Oct. 1, 1944.

<sup>10</sup> *Quart. J. Med., Proc. Ass. Phys.*, 1939, 8, 350.  
<sup>11</sup> George Allen and Unwin. (6d.)

<sup>1</sup> *Our Scottish Towns: Evacuation and the Social Future*. Edinburgh, W. Hodge and Co., Ltd. (1s. 6d.)

## Correspondence

### Fracture-dislocation of Talus

SIR,—In his article on fracture-dislocation of the talus (*Journal*, Sept. 16, p. 372) Squad. Ldr. James draws attention to an unusual injury which is of particular importance to the Royal Air Force because it occurs with relative frequency in pilots and air-crews, and because it is potentially one of the most crippling of all lower-limb injuries. In the orthopaedic service of the Royal Air Force we have a larger series of cases than has ever been recorded in this or any other country, and careful analysis has led us to very different conclusions from those of Squad. Ldr. James. He writes: "Closed reduction of the dislocated body if at all feasible is extremely difficult. Reduction therefore, if attempted, should advisedly be open." On the contrary; manipulative reduction, which is occasionally very easy, should always be attempted with determination before embarking on the still more difficult and still more hazardous procedure of operative reduction. One of the major problems in the treatment of this injury is loss of blood supply to the body of the bone, and it is obvious that operative dissection and stripping of soft tissues, which may still further reduce the blood supply, is to be avoided if possible.

Again he writes: "Talectomy.—A comparatively satisfactory result may be obtained if it is performed with care and attention to detail. . . . The depreciation of this operation is in large measure due to inadequate surgical technique." This has not been our experience. No matter how carefully and skilfully the talus has been removed the results have been unsatisfactory. After this operation it is seldom possible for a patient to walk 10 or 15 miles, to run, or to jump from a height. Moreover, the aching pain which develops after exercise steadily increases as the years go by, and even when the early result seems excellent it may be almost impossible to walk after five years. For these reasons nearly every case where there had been a previous talectomy has been treated in the Service by tibio-calcaneal fusion. As Squad Ldr. James points out, this operation "is still on trial"; but it has been done long enough for one pilot to write last week from the Far East, where, two years after tibio-calcaneal fusion, he is engaged on full flying duties: "Sir, it is wonderful; my gait is absolutely natural. May I sincerely thank you."

In his final paragraph Squad. Ldr. James writes: "Arthrodesis.—This should be the treatment of choice. It is needless to prolong treatment by employing reduction first. Arthrodesis should be the only operation." As we have said, arthrodesis of both ankle and subtaloid joints (or tibio-calcaneal fusion after talectomy) gives surprisingly good results, but it is far from true to suggest that this should be the only treatment, and that it is useless to try preliminary reduction. A number of patients whose fracture-dislocations have been reduced have regained a completely normal range of movement and a foot which from every other point of view is indistinguishable from normal. It cannot be denied that a normal foot is better than an arthrodesed foot.—We are, etc.,

R. WATSON-JONES,

H. OSMOND CLARKE,

London. Royal Air Force Consultants in Orthopaedic Surgery.

### Artificial Respiration

SIR,—The recent discussions in the *Journal* concerning the most efficient method of artificial respiration and Dr. Tingley's article on the rate thereof prompt me to write in order to emphasize a fundamental point apparently neglected by lecturers and instructors in first aid—the importance of maintaining an efficient airway in the patient, without which any method of artificial respiration is valueless.

As a divisional surgeon to the Metropolitan Police it has been my duty to attend a considerable number of cases of asphyxia—mainly suicidal and the result of coal-gas poisoning. On my arrival I almost always find the victim in the open air receiving artificial respiration by Schäfer's method; but I cannot recall a single occasion on which I was satisfied that there was

any tidal exchange of air. Frequently the asphyxial element had caused such a degree of respiratory obstruction that efforts at artificial respiration have actually progressively reduced the residual air in the lungs. Perhaps the practical demonstrations which first-aiders have had, being, as they would be, on live and co-operative subjects, has misled them into thinking that artificial respiration is equally easy on the flaccid asphyxiated subject. In this respect I blame the Schäfer method (as opposed to the Silvester), as it assumes that because the patient is prone the tongue must fall forward and the airway is therefore assured.

I suggest that in teaching first aid: (1) Every possible emphasis should be laid on the importance of an adequate airway. Every breath should be heard, in both inspiration and expiration; and all other details of the "drill" such as timing and position of patient are secondary to this. (2) Every resuscitation outfit (such as the "Novox" apparatus carried in most accident ambulances) should have as an addition a set of pharyngeal airways of varied sizes of the type known to anaesthetists as Guedel's. These are all rubber and atraumatic (one can, in fact, be worn by a conscious patient without gagging), and five minutes' instruction would make an ambulance attendant competent to fit one of the appropriate size. The O/CO<sub>2</sub> mixture could then be administered or artificial respiration carried out with the confidence that an efficient airway had been provided and would require no supervision for its maintenance.—I am, etc.,

Ilford, Essex.

RONALD PETERS.

### The Metric System and Medicine

SIR,—One of the stumbling-blocks, possibly the largest, to the general use of the metric system in prescribing is the reluctance of examining boards to insist on the use of metric dosage by examinees. The personal responsibility for this lies, therefore, with the clinical teachers. Their reluctance to prescribe in terms of the metric system is based on the fact that they were brought up on imperial weights and measures; many of us would be hard put to supply a metric equivalent with any promptitude. A similar position arose in like manner during the change-over from the old to the new anatomical terminology. This inertia, though very human, is deplorable. Its early eradication can be achieved only by compulsion on the part of the examining bodies.

Although in many instances the metric dose is just as easy to learn as the imperial equivalent, this is by no means always the case. The *B.P.* frowns on the milligramme and uses fractions of a gramme; this method is consequently followed in most of the textbooks. One example will suffice to show why the other system is still so much in favour: physostigmine salicylate, 1/100 to 1/50 grain—0.0006 to 0.0012 g. It may be argued that it is perfectly simple to convert the latter to milligrammes; this is true, but the student's labours are unnecessarily increased if, whilst learning his posology, he has also to carry out a conversion with each metric dose. Examiners will much prefer to hear of milligrammes rather than fractions of a gramme. It would be a great help to the student if textbooks were to give metric doses in the manner that they are used in the wards, leaving the less easily memorized *B.P.* decimals in brackets.—I am, etc.,

London, W.1.

A. H. DOUTHWAITE.

SIR,—I fully agree with the opinions and reasons already expressed on the above topic. To my mind the ideal time has arrived to change over and prescribe in the metric system.

The apothecary system is clumsy and out of date, and a few examples should readily convince anyone who doubts. There is, of course, a definite relationship between grammes and cubic centimetres, but not correspondingly between grains and minims. The pharmacist, too, has often to distinguish between 1 oz. avoirdupois of 16 drachms which weighs 437½ grains and 1 oz. apothecary which contains 480 grains—i.e., 8 drachms of 60 grains; thus a difference of 42½ grains between the two ounces. Approximately 1 c.cm. of water weighs 1 gramme, but one minim of water does not weigh one grain, for in round figures 110 minims is the volume occupied by 100 grains or, to simplify this, for example, a 1% aqueous solution would contain 1 gramme in 100 c.cm., or 1 grain in 109.7142 minims. Consequently, many errors in calculations, some of which

might be dangerous, could be avoided by the introduction of a simple decimal system. Furthermore the contraction of  $\mu$  gr and  $\mu$  gm in writing might be easily confused, yet a grammie is  $15\frac{1}{2}$  times heavier than a grain. The mental arithmetic involved in first in reckoning and converting grains and minims into grammies and cubic centimetres would not be very difficult.

In conclusion it might be worth while to quote from page x of the preface to the *British Pharmacopoeia* of 1914—i.e., thirty years ago: "The metric system has been employed for the specification of doses, in the expectation that in the near future the system will be generally adopted by British prescribers"—I am etc.

Shebbear North Devon

S A W RUSHBROOKE

### Liver Function

SIR—In the annotation on tests of liver function (Sept 16, p 378) you deal with the relation between the liver and the serum proteins. Quoting J Post and A J Patek (1943) you state that "in chronic liver disease, notably cirrhosis of the liver, the serum albumin is generally reduced, whereas the serum globulin is normal or increased," and that a defect in the synthesis of serum albumin seems to be the underlying cause qualitative rather than quantitative alterations of the serum proteins being the decisive disturbance.

The full recognition of this important disturbance and of the role of the liver in protein synthesis is fairly recent. Impairment of this function may occur quite early in liver disease, is completely restorable, and is best tested for by means of one of the flocculation tests whose results depend upon the protein pattern of the serum.

When studying the factors which lead to the appearance of a positive Takata reaction I was able to demonstrate already in 1936 and in 1938<sup>1</sup> that, apart from quantitative alterations, changes of a qualitative nature existed in the serum albumin of liver cirrhotics, and I believe that these findings were the first to suggest the existence of such an alteration. Previous investigators had dealt only with alterations of the albumin-globulin ratio in liver disease.

The experiments in question consisted in separating the serum albumin and the serum globulins of normal persons and liver cirrhotics by fractional precipitation, in mixing the albumin fraction of the former with the globulin fraction of the latter, and vice versa, in varying proportions, and in testing the behaviour of these mixtures towards the Takata reagent (a mercury oxychloride formed by interaction of sodium carbonate and mercuric chloride). No differences in behaviour were observed between the two kinds of globulin. The precipitate formed on addition of the Takata reagent to a positive serum is serum globulin, while serum albumin protects the globulin from flocculation. It could, however, be shown that normal albumin affords a definitely greater degree of protection than an equal amount of albumin derived from liver cirrhotics, and also that pure solutions of the two kinds of albumin which can be precipitated by high concentrations of the Takata reagent differ in so far that the serum albumin of cirrhotics needs much less reagent for its flocculation than that of normal persons. The conclusions drawn from these experiments were (1) that a quantitative decrease of the serum albumin with a more or less marked increase of serum globulin occurs in liver cirrhosis, (2) that a physico-chemical alteration of the serum albumin is present, and that these changes are most likely due to an impairment of the protein synthesizing function of the liver.

In a more recent paper,<sup>2</sup> which dealt with the results obtained by means of a modified Takata reaction<sup>3</sup> by different authors on 2,600 cases, the assumption was made that also in certain non-hepatic diseases in which similar protein changes occur in the serum and positive flocculation tests have been encountered (certain cases of pneumonia, hyperthyroidism, rheumatoid arthritis, diabetes, pernicious anaemia, acute nephritis, lymphocarcinoma inguinale, Kahler's disease, etc.) a disturbed protein synthesis by the liver was likely to be responsible for these changes.

It may be argued that the beneficial effect produced by a highly nutritious diet, rich in protein but poor in fat, on experimental and clinical liver cirrhosis is partly due to the liberal supply of protein, which may be helpful in adjusting the protein metabolism deranged by the defect of the liver in protein synthesis.—I am, etc.,

H UCKO

### REFERENCES

- <sup>1</sup> Ucko H *Ann. Wschr.* 1936, 15, 1074
- <sup>2</sup> ——— *Acta med. scand.* 1943, 97, 557
- <sup>3</sup> ——— *J. Lab. clin. Med.* 1942, 28, 17
- <sup>4</sup> ——— *Guy's Hosp. Rep.* 1936, 86, 166

### Meeting of Whole-time Specialists

SIR,—A committee has been formed to consider the effect of the White Paper proposal on the consultant and specialist services of the country. The Royal Colleges, the specialist associations, the provincial teaching hospitals, the provincial non-teaching hospitals, and the British Medical Association are represented on the committee.

A large number of specialists attached to hospitals are employed as whole time officers of local authorities, and we think that they, as a group, should be represented on the committee. The President of the Royal College of Physicians as chairman of the committee, is sympathetic to this proposal, and is willing to submit it to the committee. It is therefore proposed to call a meeting of specialists employed whole-time by municipal authorities on Friday, Oct 20, at 5 p.m., at the Royal College of Physicians.

It is hoped that as many as possible will attend to make the meeting fully representative. No individual notices are being sent out, and we ask specialists to draw their colleagues' attention to this letter, and we hope that the medical officers of health will, so far as possible, enable the specialist members of their staffs to attend the meeting.—We are, etc.,

C ALLAN BIRCH	J E MCCARTNEY
ALLEN DALEY	GEORGE F STEBBING
HORACE JOULES	D M STERN

### Intramuscular Quinine

SIR—In the *Journal* of Sept 23 (p 413) Dr W L Peacock suggests the use of quinine lactate for intramuscular injection in malaria in place of the hydrochloride. Some years ago (*Lancet* 1934, 2, 1101) I introduced quinine lactate in the injection treatment of varicose veins, when I found it less liable to give rise to painful reactions than the commonly used hydrochloride of Genevrier's solution, and less liable to cause sloughing if it was deposited outside the vein. Since then I have often wondered why it is not in routine use when quinine is given parenterally. A saturated solution of the salt in water is about 16.6%.—I am, etc.,

Birmingham

J W RIDDOCH

### Functional Hypoglycaemia

SIR—I have read with interest Dr Prunty's article in the *Journal* of Sept 23 (p 398) and agree with him that the term "functional hyperinsulinism" is not a good one. His term "reactive hyperinsulinism" in my opinion is open to the same objection—namely, the use of the word "hyperinsulinism" in the group of cases he describes. In America and in this country the term "hyperinsulinism" has come to be associated with the presence of a tumour or diffuse hyperplasia of the islets, and its use in connexion with the condition more generally known as "functional hypoglycaemia" seems to me not only to be creating unnecessary confusion but also an impression that this disease is in fact due to the excessive production of insulin, of which there is nothing more than suggestive evidence.—I am, etc.,

London W 1

WILFRID OAKLEY

### London Medicine

SIR,—Dr Walshe's article in your issue of Sept 2 is one of the signs of the increasing attention now being paid to postgraduate education in this country, more particularly in London. For many years, as the Goodenough report reminds us, quoting Sir William Osler, London has failed to occupy the leading position as a postgraduate centre for which it has long had the potentialities. Dr Walshe's article adds to one's forebodings. The pendulum seems to be swinging back too far, with the dangers of over-interference and over-planning. It has, of course long been desirable that the lack of organization and cohesion characterizing London postgraduate facilities should be remedied, and, *pari passu*, that the great resources of the Metropolis in patients, hospitals, and expert medical men should be marshalled and constructively co-ordinated in such a way that all types of practitioner—the general practitioner, and rising consultants and specialists—shall find easily the advanced professional instruction or training which they may need in a



fullness and a form worthy of what should be the greatest school of medicine in the world. To obtain this generous end should be our ideal, but we must be wary of the danger of over-planning particular parts of it to the neglect and imperfection of the whole.

The Goodenough report recommends, as part of the innovations of the National Health Service, university supervision of postgraduate education in London, together with extensive subsidies. If Parliament agrees to this, what immense benefits may flow from wise investment of the grants, and what disappointment and failure of attainment could follow the maldistribution of funds, conditioned by restricted vision, prejudice, or undue sectional influence! To prevent the establishment of possibly obstructive vested interests on the one hand and a starvation of progress on the other, university supervision and financial assistance should be as widespread and inclusive as possible. Only in this way can the full development of the London School of Medicine, in the widest and wisest sense of the term, be assured. Any scheme which bolsters up part of this school (a part which, from the nature of things, would probably contain the more undesirably vociferous and own-trumpet-blowing sections) and neglects the rest might well produce a distorted, ill-balanced result falling far short of London's best. In this connexion, the Goodenough report, with its complicated play upon what are, and what are not, recognized schools of the University of London, causes one some anxiety that limited and destructive discrimination may be made. University recognition in London has hitherto been patchy and unsystematic. In future all voluntary hospitals in the London area staffed by consultants should be invited into the University postgraduate scheme. Those entering can be kept, with financial aid, up to the necessary standards—not that most of them are not clinically up to standard now. Postgraduate teaching in London should be as widely based as possible, and all available resources should be used in order that the highest cultural, as distinct from technical, standard—the importance of which Dr. Walshe rightly emphasizes—should be attained. This can only be done by the inclusive policy just described. Not only should the teaching be cultural in the professional sense; the more educational contacts London postgraduates can make with cultural influences in London outside medicine, so much the better.

Characteristic of London Medicine is its disunity—a state of affairs which detracts greatly from its dignity. It is no secret that high authorities, such as the Voluntary Hospitals Committee of London, King Edward's Fund, and many personalities of standing in the hospital world, have in recent years attempted to introduce some element of greater combination and co-operation between the voluntary hospitals in London. It is also no secret that most of the opposition to this sensible and progressive development has come from the narrow prejudices, jealousies, and dislikes of medical staffs, described to me by one experienced hospital secretary as "childish." The broader the general cultural outlook the less likely is this disunity to persist, and, conversely, the more general unity and co-operation that can be attained the better will be the cultural effect upon the medical men working in the hospitals. The best training for consultants and specialists, the expert clinicians, is surely one as broadly based as possible, taking the form of climbing the ladder of appointments in a number of different hospitals until the highest rank is reached. The contact with hospitals and teachers should be wide, giving the rising men the opportunity to observe contrasts and make comparisons, rather than restricted and confined to some single, highly rarified, and exclusive school. The culture of the latter (rather the type of culture extolled by Dr. Walshe, I am afraid) would be hard, narrow, and self-complacent, breeding consultants with the disdainful outlook of high-caste, humourless Brahmins, contemptuous of all the clinical untouchables trained elsewhere, however competent they might be.

Dr. Walshe seems unduly hard on the "refresher" and similar courses. Organized demonstrations and participation in the practice of hospitals, etc., need not be deadening or repetitive (any more than undergraduate teaching is), and are very valuable to men working for the higher general examinations, like the M.R.C.P., the cultural value of which Dr. Walshe rightly stresses. I agree that their value for general practitioners

is not so great, but it is far from being despicable. Such teaching does mean hard work, however, and I suspect that this has something to do with its unpopularity, although some more highfalutin reason has to be found for its overt condemnation. The enormous success and popularity of the Fellowship of Medicine since the last war is evidence of the value of such teaching. I am informed that by the end of 1943 over eleven thousand postgraduate students had made use of the Fellowship's facilities, and the moneys paid in fees by the Fellowship to hospitals and teachers had exceeded £50,000 since the end of the last war. Are not these figures astonishing, and do they not suggest that a real want was met by this organization, having Sir William Osler, Sir Arbuthnot Lane, Sir John McAllister, and Sir StClair Thomson as its fathers? Has it not earned more than the curt footnote that is its only mention in the Goodenough report, and which is a reflection upon the depth and judgment of this report itself?

A distinction needs drawing between the professional consultant practitioner of his subject and the whole-time research worker. Although the former may well make generous original contributions to knowledge, the essentials of training are different for the two. A training suitable for the research worker may well be too intensively narrow to be suitable for the practitioner. Subsidized institutes based on single hospitals would, I feel, suffer from this narrowness and tend to produce the Brahmin-like type of consultant I have described. In the training of specialists great evils lie in the artificial confining of higher education to single officially privileged schools. Apart from those already mentioned, training in a single school will tend to produce a snobbish rigidity of outlook and an artificial set of standards—that is to say, everything and everyone emanating from the privileged institution will necessarily be classified as of the best, like persons of the blood Royal in an age of Divine Right, because of their origin, irrespective of their intrinsic merits. In contrast, merit that is impertinent enough not to originate in the privileged institute (and merit, unfortunately, cannot be confined in or conjured at will, like genii, from any chosen academic bottle) will tend to be defamed and belittled. If a single institution gains official recognition as the sole training school in a subject, it will become, in the new schemes, a very definite financial interest, with all the undesirable temptations associated therewith.

There is clearly much that is attractive in the establishment under university supervision, of institutes in special subjects but there is much that is narrow and short-sighted in the suggestion that these should be based on one special hospital and one general hospital only. To take something less person than neurology, it is suggested in the Goodenough report that an Institute of Child Health be formed, based on Hammersmith and Great Ormond Street Hospitals. It is revealed that negotiations between these two hospitals have been going on for some time. How much more stimulating, full of broad possibilities and worthier of London would be, on the other hand, a London University Institute of Child Health, including not only Great Ormond Street but also the Belgrave, Victoria Queen Elizabeth, Evelina, Princess Louise, Paddington Green and the Infants' Hospitals, together with a relationship with possibly, several of the voluntary general hospitals in London not teaching undergraduates, such as the Royal Northern and the Prince of Wales's Hospitals, as well as with Hammersmith Hospital. This would, indeed, show the paediatric resources of London at their best, which the restricted proposal of the Goodenough report would not. Broader thinking for London as a whole is needed on this great issue, and sectional interests must not unwittingly be officially favoured.—I am, etc.,

T. ROWLAND HILL.

### Postgraduate Medicine

SIR.—The generous hospitality of your columns accorded me on a recent occasion to express some views upon undergraduate instruction encourages me to ask for an extension of your indulgence for some observations on postgraduate medicine, a topic which has stimulated the interest of several correspondents, particularly in regard to "refresher courses" for the general practitioner.

That wide differences of opinion have emerged, varying from unqualified approval to complete condemnation, is not surprising

to those of us who have participated in such courses, both as students and as teachers. The trouble is to satisfy the requirements, indeed the expectations, of such widely different participants. Here is the very old gentleman who has for over forty years been peacefully isolated in the heart of the country, and who desires a sort of Cook's tour which shall be, as comprehensively as possible, representative of all that has happened in the world of medicine and surgery in, say, the last quarter of a century. There is an ambitious youngster on the eve of his M.R.C.P., avid to absorb all the latest biochemical research of examination value. Next is a recently returned Service man intending a return to practice and to recover as rapidly as possible the clinical atmosphere obscured by several years of administrative activity. Then a successful provincial G.P., who has acquired a local reputation as a specialist, and demands the fullest exposition of his particular subject. And here is a breezy man from the Midlands (or elsewhere for that matter) who has no hesitation in admitting that he regards the whole affair as an opportunity for a binge. Clearly the preparation of a schedule on a *table d'hôte* system is going to please nobody, the alternative of an *a la carte* seems theoretically sound but is not so easy to arrange. Moreover, the fare provided may be right enough but the method of pre-entertainment is open to criticism. The more experienced object, and reasonably, to being treated as medical students the assumption by the lecturer of an established acquaintance with his subject brings a protest that he is right above the heads of most of his audience. And anything highly specialized will most probably appeal to nobody at all. I have seen an hour wasted on the elaborate description of vestibular tests which even the expert himself had to work up the night before. I have sat under a recognized leader in the world of pathology dealing with all the technical details of the performance of the Wassermann reaction, and—believe me or believe me not—on his appealing at its conclusion for any questions or remarks, an awkward silence was terminated by an assurance from an enthusiast in the front row that he now understood that the rabbit was a victim of congenital syphilis.

One of your correspondents, Dr Trevor Howell, approaches the "refresher course" from another angle in advocating a prolonged period of practice in hospital in the capacity of clinical assistant. With that I am in hearty agreement, but such a procedure would hardly recommend itself to the official promoters of a "refresher course" which embodies the somewhat pernicious idea of an intensive attempt to "be brought up to date." Comparisons are often made between post-graduate instruction in this country and on the Continent. I know how such instruction is organized in Vienna, or at least how it was organized thirty years ago, and I think that adverse criticism of our performance is not fair. The time and energy unavoidably dissipated by the vastness of the Metropolis and the difficulty of collecting and utilizing our material make adequate organization impossible. But this is outside the present consideration, the "refresher course" for the general practitioner, which we shall certainly be called upon to provide in post bellum reconstruction—I am, etc.,

ADOLPHE ABRAHAMS

### Psychological Medicine and the Family Doctor

SIR—Dr R. D. Gillespie (Aug. 26, p. 263), as a specialist himself of long standing, says in effect that the old family practitioner was in a much better position to understand, and therefore to deal with, the psychoneuroses of daily life than is the highly specialized modern expert, by whatever name he styles himself (and perhaps I might add, whether lay or medical). The fact is that in the palmy days of the old family doctor—particularly in the country—these psychoneuroses did not exist, or at least not to anything approaching the modern extent, and this precisely because the family itself still existed as the basis of social life, and self-respecting and sympathetic parents brought up their children intelligently, and so nipped such conditions in the bud. Where parents had difficulty in this they consulted the old and tried friend of the family, the local G.P., who knew every one of them "from father to son," and all their circumstances in space as well as time. Now, however, the family is disappearing swiftly, and never more so than at present, since this world war or unprecedented

brutality has set its seal on a long era of cut-throat "industrial" competition.

The outlook for sanity, let alone ordinary mental and moral equipoise, is black indeed. What, for example, is to be done with all the poor shattered psyches which the global war everywhere is leaving in its slimy train? This at least can be forecast. The problem will not be solved primarily by the psychological specialists, since they, as Dr Gillespie has shown clearly enough, are not in a position to evaluate duly all the factors.

It is just possible that our profession itself might solve the problem, but this only on condition that it foresees the further instalment of slavery which the State now proposes to foist upon it, and that it resolves to restore at once the family doctor to his rightful place as the driving wheel of the *Ars medendi*—I am, etc.,

North Queensferry Fife

A. J. BROCK

### Bureaucracy and Wet Babies

SIR—Although I have been engaged in busy medical practice for half a century I have found time to read my *B.M.J.* every week. But, although I am also a prolific writer, I rarely intrude on pages which are rightly handed over to my senior and junior professional pastors and masters.

This week, a moment's respite coinciding with a touch of the *cacoethes scribendi*, I feel a desire shortly to comment on three items in your issue of Sept. 23. One item is your review of Prof. Mackintosh's *The Nation's Health*, on which the only thing I have to say is that, basing my opinion on experience and first-hand observation, I think that nearly all Prof. Mackintosh says and hopes to do, or see done, is in my opinion sound. The second item is your leader titled "Medicine and Politics." I am an old admirer of Lord Dawson of Penn, and in the present instance intellectually in enthusiastic agreement with his "wise letter" published in the *Times* of Sept. 16. Doctors entered on dangerous ground when they began to play that national game known as party politics. The third item—possibly the most important of all—is Dr S. M. Halliday's letter on "Wet Babies," written from Zennor, a lovely bit of Cornwall, every yard of which bit I know and love. This letter gives us some common sense expressed in plain English. I hope it will act as a model for other letters dealing in a humorous honest way with problems which confront general practitioners every week, war or no war—I am, etc.,

Hawkesley Hants

HARRY ROBERTS

### Service Medicine

SIR—The letter in your issue of Aug. 19 (p. 255) under the above heading and over the signature "Temporary Serving Officer" seems to have a distinct flavour of "sour grapes." Your correspondent does not specify to which of the three Services he is at present attached, but by thus signing himself he makes it evident that he can have but a very limited knowledge of the many intricacies of administration inseparable from huge organizations such as the Navy, Army, or Air Force Medical Services.

His idea that administration consists of "signing redundant documents unread" may be dismissed as childish petulance. Does he seriously suggest that the enormous amount of work involved in organizing the medical and surgical units operating on all the various fronts can be "devised and operated for the most part by people whose training is far shorter than that required to graduate in medicine" or that this job can be done by men with no previous medical knowledge?

He is incorrect in stating that the Regular officers hold nearly all the key positions. They do hold a large number, of course. That is quite natural. But many non-Regular medical officers, both in the last and in the present war, have risen to high rank in the Army, not through any undue influence, but by virtue of their own outstanding abilities. For instance, the D.M.S. Egyptian Expeditionary Force in Palestine during the last war was a Territorial officer and a non-regular "Temporary Serving Officer" seems to be smarting under a sense of grievance that he has not attained high rank. At least, that is the impression one gains from his letter. But I can assure him that he will not

get very far if he adopts a self-righteous attitude by insinuating that he is one of their "professional betterers." Many Regular officers in the three Services are very well qualified professionally and have deservedly attained their present position by sound and honest work. Surely after the long years of service they are entitled to that rank.

That red tape and other faults exist in the Medical Services cannot be denied, but these will never be remedied by such biased attacks on the senior Regular medical officers, who are in no way responsible for the existing regulations. The spate of documents which have to be signed by all military and naval medical officers are often very irksome, but it should always be remembered that every medical certificate, however unimportant it may seem, may have an important bearing on the soldier's ultimate chances of a pension, and injustice to that soldier may very easily be inflicted by a carelessly worded or illegible certificate. To ensure that this does not occur is the essence of good administration which your correspondent "Temporary Serving Officer" so much derides.—I am, etc.,

J. R. POOLER,  
Lieut.-Col., R.A.M.C. (T.A.), retired.

### Medical Services—Home and Colonial

SIR,—May I congratulate you on some of the letters published in the current issue. After thirty years' experience, Civil Service, Army, and local government service, I would like Dr. Purcell (Sept. 23, p. 417) to know that it is not necessary to go to the Colonial Service to find a similar state of affairs. I feel that, where medical administrators are appointed by laymen, this kind of thing is likely to happen. If posts of this kind could be filled in some way through selection by one's colleagues a more satisfactory result might be obtained.—I am, etc.,

St Lawrence's Hospital, Caterham.

THOMAS LINDSAY,  
Medical Superintendent.

### Demobilization and the E.M.S.

SIR,—With the vexed question of demobilization now under open discussion the broad principle of age and years of service can reasonably be accepted as a basis in assessing priority for return to civilian life. I would also advance a plea for the inclusion of other forms of national service when applying such a scheme. In particular I would refer to whole-time E.M.S. service. If one recalls the days of Dunkirk, these hospitals were staffed by virtual conscription, mostly at a few days' notice, of senior residents and junior staff of the large voluntary and municipal hospitals, to meet a very grave national emergency. The Ministry of Health then required a contract to be signed, and at a later date refused to consider any release till a satisfactory substitute had been obtained. This situation continued throughout 1941, and not until the demands of the Services became insistent, at the beginning of 1942, was the situation eased. The E.M.S. Hospital Services during this time cared for the majority of the Service sick and wounded as well as the air-raid casualties, evacuated sick, and industrial accidents. It can be truthfully stated that whole-time service in an E.M.S. hospital was, at this time, of equal importance in prosecuting the war as service in the armed Forces. It is only fair that such service should be counted when assessing the priority of a medical officer for demobilization. It should also count towards the proposed increase in pay after three years' service. I would personally suggest that a year be added to the age for each three months' service in a B1 appointment and for each six months in a B2 post.—I am, etc.,

ROBERT J. RUTHERFORD.

### Tapeworm in Trout

SIR,—In his letter (Sept. 16, p. 385) Mr. K. Unsworth refers to the note by Mr. J. R. Harris and myself (Sept. 2, p. 310), and implies that we regard the Dublin outbreak and the outbreak in a South Wales reservoir, which was reported by Guguid and Sheppard, as being similar. The two outbreaks are undoubtedly similar in so far that a widespread mortality of reservoir trout has resulted from heavy infection with plerocercoids of the family Diphylobothriidae. Beyond this

any similarity which may exist remains a matter for demonstration, and it was for this very reason that we did not suggest that the same species of *Diphylobothrium* is involved in each case. Indeed our investigations so far point rather in the opposite direction, as we have failed to infect the dog, a mammal which was infected both by Guguid and Sheppard and by Unsworth when fed with plerocercoids from the South Wales fish.

Mr. Unsworth further states that we have not given sufficient evidence to show that the adult tapeworms found in the birds resulted from the ingestion of plerocercoids from the trout, but I feel that he has not attached sufficient importance to our statement that specimens showing all degrees of a gradual development from typical plerocercoids to the fully developed tapeworm were found in the infected birds. Thus in some of the birds a number of plerocercoids, a number of immature tapeworms of varying degrees of development, and a number of mature worms were present. Our article was, as stated, merely a preliminary note, and experimental details would have been out of place. To avoid any possible misunderstandings, however, it may be stated that we have succeeded in infecting black-backed and herring gulls and a shag by feeding them with plerocercoids from the trout. The details will be published in due course.—I am, etc.,

Dublin.

M. D. HICKEY.

### Why Vesalius chose Basle

SIR,—Your leading article of Sept. 23 states that "it is a puzzle why Vesalius, working at Padua and often visiting Venice, the great neighbouring printing centre, should risk wood-blocks and MSS. by sending them across the Alps on a journey of 350 miles, to have his work published at Basle." The suggestion that the situation of Basle made it a convenient distributing centre furnishes only a partial solution. There were other reasons for this selection.

From its association with Erasmus, intellectual dictator of his age, the Swiss university town had become something of a literary Mecca, and many famous theological works, the best-sellers of the period, had been published there. Calvin's *Institutio* (1536) and the collected Erasmus (1540) were products of the Basle printers, who had the necessary connexions with the countries to which Vesalius evidently looked for his readers.

Notwithstanding the quality of the Venetian craftsmen, whose skill in art reproduction and fine printings of the classics enjoyed such a high reputation, it is doubtful if Venice was the best centre for the international presentation of original scientific works—your article refers to the fact that Italian medical publications were apparently little known in Paris. The number of foreign copyists of the *Tabulae*, which were printed at Venice, indicated that, with the proper introductions, an illustrated anatomical work was assured of a large public outside Italy. Vesalius, who had already made use of the facilities offered by Basle, decided to have the *Fabrica* published at that centre.—I am, etc.,

Park Hospital, London, S.E.

G. W. RONALDSON.

### Early Days at Johns Hopkins

SIR,—Sir Charles Gordon-Watson complains that the article on "Early Days at Johns Hopkins" omits reference to Harvey Cushing. Apparently he forgets that the history so far published ends with 1893, eight years before Sir Charles tells us that he met Cushing when he was a young surgical resident officer. Doubtless ample justice to this distinguished man will be done in a subsequent volume.—I am, etc.,

THE WRITER OF THE ARTICLE.

The annual report for 1943 by the Curator of the Laboratory, Royal College of Physicians of Edinburgh, states that a reorganization of the work and scope of this institution will soon become imperative on account of changes in its relation with the Carnegie Trust. In the future the demand for laboratory verdicts may be expected to increase, and the large-scale reporting work involved will help the research department in two ways—by collecting useful information and by providing financial support. It is hoped that research work in the fields of haematology and statistics may be considerably extended.

## Obituary

### R HIGHAM COOPER, CBE, LSA

Dr. Robert Higham Cooper, formerly a well known radiologist in London and during latter years at Bournemouth, died on Sept 25 at Bournemouth aged 66. At the Annual Meeting of the B.M.A. in 1934 he was vice-president of the Section of Radiology and Electrotherapeutics. Educated at Macclesfield Grammar School, Owens College, Manchester, and at Charing Cross Hospital, he was for a year assistant to Sir James Mackenzie Davidson before qualifying L.S.A. in 1904. He served for 15 years as medical officer in charge of the electrical and x-ray department at University College Hospital and at Moorfields Eye Hospital, and he had been a member of the visiting staff at the Prince of Wales's General Hospital, Tottenham, the Evelina Hospital for Sick Children, the Royal Waterloo Hospital for Children and Women, and at the West End Hospital for Nervous Diseases, he was also for a time lecturer on radiology at the Seamen's Hospital, Greenwich. For the greater part of the last war he was consulting radiologist to the British Armies in France, with the temporary rank of lieutenant-colonel, R.A.M.C., and in the early part of 1919 became radiology adviser to the London Command. He was mentioned twice in despatches for his war work and awarded the C.B.E. After the war he held the post of radiologist to the Egyptian Government for three years and became a member of the War office X-ray Committee. Settling in Bournemouth, he was for some years medical officer in charge of the light department of the Royal Victoria and West Hants Hospital, and he served during the present war as radiologist to the E.M.S. at Christchurch. Dr. Higham Cooper wrote a small book in 1909 on *The Uses of X Rays in General Practice*, and contributed papers on his speciality to this and other journals.

### SIR HUMPHRY ROLLESTON

#### SIR EWEN J. MACLEAN WYTES

It was a great privilege to know Humphry Rolleston, and I appreciated this during his Presidency of the Royal College of Physicians, and more intimately during the twelve years I was chairman of the B.M.A. Science Committee. Sir Humphry was one of the most distinguished of the many distinguished men who have been elected members of that committee, and in its camaraderie there was never, on his part, the slightest trace of insistence on any deference to his status—one surely, which based on heredity and recognized achievement represents one of the very brilliant careers of our time.

The main purpose of this short note is to claim that much of the devoted service Sir Humphry rendered to the Association was effected through the medium of the Science Committee, and I recall in particular the weight of his advice and guidance in our conferences with representatives of the Pharmaceutical Society and of the chemical manufacturers regarding the difficult subject of proprietary medicines, then again his close attendance in the various contacts and subcommittees which have resulted in the establishment of a Diploma in Physical Medicine were of the greatest help, and he was an indispensable member of the committee for the allocation of the science scholarships, grants, and prizes. He took an especial interest in the award of the Sir Charles Hastings Clinical Prize for general practitioners, and it became the practice of the committee to refer the award to Sir Humphry in conjunction with Prof. (now Sir) Francis Fraser. The report with the analysis of the works submitted was a delight to read.

With his many commitments it was little short of amazing that Sir Humphry was so consistently regular, an attendant at committees, whether the agenda dealt with special or routine matters. The tragic death in Zanzibar in 1936 of his only surviving son was a great blow, and I remember his saying, somewhat quaintly, at a subsequent date that it must have been when he was with us quietly transacting our committee business that his son was succumbing to the rioters. The Association has lost a great friend and a great supporter in the difficult times ahead.

### FRANK DOUGLAS MARSH, F.R.C.S.

H. W. F. sends the following personal tribute, supplementing and correcting the notice printed on Sept. 20.

By the death, at the age of 55, of Douglas Marsh, the staff of the Birmingham Medical School has lost a valued colleague, and the Midlands of England has been deprived of the services of one of the leading consultants. In the 1914 war Marsh served four years, held a D.A.D.M.S. appointment, and received the M.C. After the war he took up the study of ear, nose, and throat surgery, and in due course became surgeon in the ear, nose, and throat departments of the Queen's Hospital, afterwards part of the Birmingham United Hospital, and of the Birmingham Children's Hospital. Marsh threw himself into these duties with energy, sound technical skill, and sane judgment, which was reminiscent of his father, the late Col. Frank Marsh, F.R.C.S., moreover, he rapidly acquired a very large private practice. He sustained, throughout his exceptionally busy life, a high reputation for reliability as a surgeon, and for perfect time-keeping. He remained on the Territorial Reserve of Officers, and in September, 1939, he was called to serve as major, R.A.M.C. For the next three years he was stationed at the Royal Victoria Hospital, Netley, as ear, nose, and throat specialist. In this capacity he soon acquired a reputation for hard work and sound practice, which was as high as in civil life. About two years ago arthritis compelled him to return to civil life. He resumed his Birmingham work, and notwithstanding his desire to reduce his labours, the demand for his services was so great that he could obtain but little respite. During the earlier part of this summer his health failed.

Such is the outline of the life work of a remarkable man. Tall, erect, grave, courteous, and rather shy, Douglas Marsh was a man of few words but strong ideals. His admiration for his father, who was a Victorian, and in his day a model of energy and shrewdness, encouraged his own steadfast application to his profession, and consequently he had little time for relaxation—although at golf in his youth he had been more than good. He loved good pictures, good furniture, pleasant people, and a quiet chat. He wrote little, though his articles were characterized by balance of judgment and care in the choice of words. But as a practising surgeon he developed carefully selected and highly polished methods, both in the operating theatre and in the consulting room, which enabled him to carry out an enormous amount of work of a uniform high grade without hurry, and apparently without fatigue. His calm manner betrayed neither weariness nor anxiety nor signs of irritation. This characteristic attitude was well known to a wide circle of patients, doctors, and fellow workers. His intimate friends, however, were fully aware that underlying this achievement of professional skill and manner there was a sensitive man who felt both fatigue and depth of anxiety, and, moreover, a sense of humour which his reticence seldom permitted him to exhibit. To Mrs. Marsh, formerly a brilliant student of the Birmingham Medical School, and to their son our warm sympathy is extended in the loss of a husband and a father, who was not only an invaluable doctor to others but a staunch and beloved comrade to them.

### G. FOSTER BARHAM, M.D.

Sir Hubert Bond sends the following tribute to the memory of Dr. Guy Foster Barham, whose career was briefly recorded in the *Journal* of Sept. 23.

For 27 years Foster Barham filled the onerous post of superintendent and physician-in-chief of Claybury Hospital, which, when opened in 1893, was the fifth of the County of London's mental hospitals. After some resident general hospital experience he joined the staff at Claybury, of which Dr. (afterwards Sir Robert) Armstrong Jones then was superintendent. There his interest in psychological medicine was aroused every year deepened it, and it was to his great satisfaction when in 1907 he was appointed deputy superintendent of Long Grove, the north and newest of the L.C.C.'s mental hospitals, which then was just about to receive patients. Here for the next ten years he found wide scope for his great talents, and though as senior medical officer of the women's division with its 100 beds his administrative duties were many, it was ever towards the clinical side of his work that his main interests lay. Those were the days when the effect of Freud's work tended to be dominant; they were the days, too, when mental hospitals were far less well equipped than now with x-rays and other means of physical investigation really thorough in character, nor was there attached to any of them an active team of visiting specialists. Barham, while never losing his foothold in the bodily organism as a whole, was attracted strongly towards psychotherapy and spared himself no pains, often with striking success, in using it in accessible psychotic states. This attraction can be seen in the thesis for his Cambridge doctorate—*"The Influence of Emotional Conflicts and of Repressed Emotion in the Causation of Abnormal States of Mind"*—and in many of his case studies. August, 1917, saw him back again at Claybury, this time as superintendent. There, in response

to the ever-increasing demands for further facilities in the treatment of mental disorders, he was able to initiate many improvements. One was the erection of Forest House, to which his name deservedly some time might be given; for, designed with scrupulous care to meet the needs of early and sensitive cases, for whom he felt the large building was unsuitable, it truly was his child. He took, too, an ardent interest in efforts to improve the status and training of mental nurses, and was an active member of the 1922-4 departmental committee on that subject.

An accomplished physician in the best sense of those words, Barham possessed a fastidiousness of taste which led him always to seek the best. He had, too, a tidiness of mind which characterized all his work. These attributes were reflected in his bearing and person and gave the impression, which indeed was true, of some one able to bear responsibility and to direct. These are no mean assets in the control and administration of a big hospital with its 2,300 beds and some 500 staff; likewise of no small value in the handling of patients whose illness, when long continued, tends to neglect of person and deterioration in habits. Perhaps in no other mental hospital in the country were more pains taken in the arrangement of pictures and of other objects of interest to make its wards well kept and attractive.

## Medical Notes in Parliament

### Pneumoconiosis Report

Mr. J. GRIFFITHS on Sept. 26 asked the Minister of Fuel and Power what action he proposed on the report of the committee on the problem of pneumoconiosis in the South Wales coalfield. Major LLOYD GEORGE replied: The committee's recommendations with regard to the establishment and equipment of a treatment and rehabilitation research centre require discussion with other Departments than my own. These discussions are already proceeding. Concurrently I am examining, and propose to put into effect as soon as the necessary arrangements can be made, other recommendations which can be implemented by strengthening existing machinery. These, I hope, will include the initial radiographic examination of all new entrants into the industry in South Wales; the periodical examinations of selected groups of miners in relation to concurrent assessments of the dust conditions of their employment; and, in association with the Ministry of Labour, an investigation into the present and progressive medical condition of miners who, because of the disease, have left the industry and have taken up other employment, the object being to provide guidance as to what other occupations are best for such cases. The machinery of my Department is to be strengthened for this work by appointing a second mines medical officer in South Wales, and by adding to the testing station a new section of staff to concentrate on the work of dust assessments. I am doing everything possible to deal with this problem within the limits imposed by wartime conditions. It is my intention to pursue the subject vigorously, and to spare no effort in tackling the problems created by this disease.

### Penicillin for P.O.W.

Mr. KENDALL asked on Sept 28 whether the Minister of Health, in view of the fact that penicillin was available to German prisoners, would take immediate steps to make it available for British civilians in those cases where death would otherwise result. Mr. WILLINK replied that the Government was required by the Geneva Convention to care for wounded prisoners of war, without distinction of nationality, equally with our own personnel. The bulk of the penicillin at present available was required for Service cases, and the amount which could be released for the treatment of civilians was not sufficient to enable penicillin to be given to every case which might conceivably benefit from it. It was necessary to reserve this small amount for the treatment of cases in which it might be the only means of saving life or of effecting recovery from grave illness and in which the prospects of recovery were high.

### Evacuation from London

On Sept. 26 Dr. HADEN GUEST asked the Prime Minister if he would state the Government's present policy in respect of the evacuation from London and Southern England of mothers with infant children, school-children, aged and disabled persons, and in-patients in hospitals. Mr. WILLINK, who replied, said that, as announced on September 7, the Government had decided to suspend further evacuation under the Government evacuation scheme from London and Southern England; it had also suspended the evacuation of hospital in-patients. On the other hand, he had already said on several occasions that the Govern-

ment's advice to those already evacuated from London and Southern England was, "Do not come back."

### Battle Casualties and Sickness in Allied Armies

Reviewing the war on Sept. 28 Mr. CHURCHILL said there were now between 2,000,000 and 3,000,000 men in France of the British and American Armies. The British had lost upwards of 90,000 men killed, wounded, and missing, and the United States, including Gen. Patch's Army, over 145,000. Along the eastern frontier of India the 14th British Imperial Army amounted to between 250,000 and 300,000 men. In the first six months of the present year this Army sustained 237,000 cases of sickness which had to be evacuated to the rear and tended in hospital. More than 90% of these cases returned within six months. In addition, there were over 40,000 battle casualties within the same six months. He trusted the inordinately heavy toll of disease would be markedly reduced in future operations. Many preventives of tropical disease had been discovered and safeguards against the onslaught of insects of all kinds. The D.D.T. powder, which had been fully tested and found to yield astonishing results, would henceforward be used on a great scale by the British Forces in Burma and by American and Australian Forces in the Pacific and indeed in all theatres, together with other remedies constantly improving. The Japanese also suffered from jungle diseases, and malaria. Eradication of lice from Naples by strict hygienic measures could be held to have averted a typhus epidemic in the city and neighbourhood when the Allies occupied them.

Col. WICKHAM spoke of the fighting in New Guinea, where even open country was covered with grass infested with the dreaded typhus mite. Even in the hospital tents there the men were cheerful, though in some cases suffering from painful skin affections. A friendly informality existed between doctors, nurses, and patients, but medical discipline and precautions were enforced and observed. It was irksome in that climate to wear long trousers and gaiters, to button wristbands and to take regular doses of atabrin. But the results had been remarkable. Even in fighting conditions, the incidence of malaria had been reduced from 100 per 1,000 per week to 2 per 1,000. Prophylactic measures were almost omitted from the Japanese medical programme, and the Japanese were less resistant to tropical diseases such as malaria and dysentery than were men of the white races.

## Medical News

The recently formed Edinburgh Branch of the Polish Medical Association in the United Kingdom will hold its first meeting on Sunday, Oct. 8, at 3.15 p.m. at Scottish-Polish House, Greenhill Gardens, Edinburgh. It will be addressed by Dr. G. De Swiet.

The annual meeting and conference of the Tuberculosis Association is being held on Oct. 12 (afternoon, at the London School of Hygiene and Tropical Medicine), Oct. 13 (clinical meeting and discussion at Harefield Sanatorium), Oct. 14 (morning, at Manson House, Portland Place, W.). The annual general meeting will be held on Oct. 12 and Prof. Major Greenwood will deliver an address, "A Retrospect," on Oct. 14.

The Association of Austrian Doctors in Great Britain (14, Craven House, 121, Kingsway, W.C.2) makes the following announcements: A meeting on Friday, Oct. 13, at 6.45 p.m. to discuss jointly with the Austrian Pharmacists Group "Therapeutics in Austria and Great Britain"; Sunday, Oct. 29, 11.30 a.m., jointly with the Association of Austrian Chemists and Scientific Workers, a lecture on life-saving and life-preserving plants (vitamins, alkaloids, penicillin). The meetings will be held at the Austrian Centre, 69, Eton Avenue, N.W.3 (near Swiss Cottage Tube station).

A meeting of the Council of the Medical Superintendents' Society will be held at the Queen's (L.M.S.) Hotel, Birmingham, on Saturday, Oct. 14, at 2.30 p.m., and Sunday, Oct. 15, at 10 a.m.

The Association for Scientific Photography (Tavistock House North, Tavistock Square, W.C.1) announces the following meetings to be held this year: Saturday, Oct. 14, Caxton Hall, Westminster, 2.30 p.m., papers on cinematography. Saturday, Nov. 25, 16, Princes Gate, S.W., 3 p.m., electron microscopy. Saturday, Dec. 30, Caxton Hall, 2.30 p.m., choice of materials for scientific photography.

An autumn series of lectures on medical and allied subjects will be given at the Royal Institute of Public Health and Hygiene, 28, Portland Place, W., on Wednesdays, Oct. 18 to Nov. 22, at 3.30 p.m. Seats are reserved for Fellows, Members and Associates of the Institute, but accommodation is provided for others who are interested in health problems. The Museum of Hygiene may be viewed before or after the lectures.



## EPIDEMIOLOGICAL NOTES

## Discussion of Table

In England and Wales during the week notifications of scarlet fever exceeded those of last week by 340 and those of diphtheria by 60; there were 271 fewer cases of dysentery, and 140 of whooping-cough.

Scarlet fever is prevalent in the north; Yorks West Riding recorded 105 more cases than last week, and Lancashire 35 more. Whooping-cough showed a lower incidence except in the north midlands, where notifications rose by 30. Although the total notifications of measles went up by only 17, there were local fluctuations: in the combined south-eastern and south-western areas the notifications fell by 93, but there was a rise of 38 in Lancashire.

For the fourth week the notifications of diphtheria have increased, and the total is now 38% higher than a month ago. Gloucestershire notified 25 more cases than last week, Durham 15, and Yorks West Riding 14.

Although there were 271 fewer cases of dysentery than last week the incidence remains at the very high level of 351. The largest returns were Glamorganshire 43 (Cardiff C.B. 41), Essex 30, London 24, Derbyshire 23, Staffordshire 21, Lancashire 21, Hertfordshire 20, Southampton 14, Durham 13, Surrey 12, Dorset 12, Suffolk 10, Kent 10.

In Scotland measles notifications went up by 44, scarlet fever by 29, and diphtheria by 25, while those for whooping-cough fell by 39. The notifications of dysentery were 7 lower than last week, three-quarters of the total cases being returned from the two cities of Edinburgh and Glasgow, which reported 30 and 50 cases respectively. There were 39 deaths from infantile diarrhoea in the large towns, still over twice as many as during the corresponding period last year: 32 of these deaths were registered in Glasgow.

In Eire the incidence of diphtheria rose by 21 cases. Thirty-seven registration areas were involved. 148 cases of diarrhoea and enteritis were recorded in Dublin C.B.

## Diphtheria Immunization

A survey by the medical officers of the Ministry of Health, based on the returns made by local authorities published in the monthly bulletin of the Ministry of Health and the E.P.H.L.S., show that mass immunization has affected the prevalence of diphtheria and in particular the mortality. In 1943 the incidence at ages under 15 was 1.16 per 1,000 among the immunized and 4.06 among the non-immunized, while the mortality per 1,000 children was 0.0104 and 0.260 respectively. In other words, the incidence of diphtheria during 1943 among children under 15 was 3½ times greater in the non-immunized group than in the immunized group and the chance of dying from diphtheria was 25 times as great.

The deaths from diphtheria in England and Wales at all ages in successive half years 1938-44 were:

	1938	1939	1940	1941	1942	1943	1944
Jan-June	1,622	1,142	995	1,476	989	801	503
Jul-Dec	1,238	990	1,483	1,165	838	559	—
Year	2,860	2,132	2,480	2,641	1,827	1,370	—

The greatest fall in the number of deaths occurred, as would be expected, in the age groups in which immunization was concentrated. The death rates per 100,000 of the estimated population were:

	Ages								
	0—	1—	2—	3—	4—	5—	10—	15+	
Average rate 1931-41	10	24	40	53	59	41	10	0.6	
1942	7	17	24	38	41	26	6	0.6	
1943	8	11	19	26	29	17	5	0.7	

## Week Ending September 23

The notifications of infectious disease in England and Wales during the week included: scarlet fever 1,696, whooping-cough 1,059, diphtheria 566, measles 1,509, acute pneumonia 435, cerebrospinal fever 33, dysentery 365, paratyphoid 8, typhoid 12, poliomyelitis 16, polio-encephalitis 1.

## INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended Sept. 16.

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year, for: (a) England and Wales (London included), (b) London (administrative county), (c) Scotland, (d) Eire, (e) Northern Ireland.

Figures of Births and Deaths, and of Deaths recorded under each infectious disease, are for: (a) The 126 great towns in England and Wales (including London), (b) London (administrative county), (c) The 16 principal towns in Scotland, (d) The 13 principal towns in Eire, (e) The 10 principal towns in Northern Ireland.

A dash — denotes no cases; a blank space denotes disease not notifiable or no return available

Disease	1944					1943 (Corresponding Week)				
	(a)	(b)	(c)	(d)	(e)	(a)	(b)	(c)	(d)	(e)
Cerebrospinal fever ..	37	2	15	4	1	44	2	19	4	—
Deaths ..	—	—	—	—	—	—	—	—	—	—
Diphtheria ..	541	13	183	100	15	723	33	176	64	21
Deaths ..	12	—	3	3	—	9	—	3	2	—
Dysentery ..	351	24	104	—	—	268	33	88	—	—
Deaths ..	—	—	—	—	—	—	—	—	—	—
Encephalitis lethargica, acute ..	—	—	—	—	—	2	—	—	—	—
Deaths ..	—	—	—	—	—	—	—	—	—	—
Erysipelas ..	—	—	53	10	2	—	—	55	9	—
Deaths ..	—	—	—	—	—	—	—	—	—	—
Infective enteritis or diarrhoea under 2 years ..	91	7	39	185	9	69	13	18	30	11
Deaths ..	—	—	—	31	—	—	—	—	—	—
Measles* ..	1,155	29	128	18	24	491	45	36	10	2
Deaths ..	1	—	—	—	—	39	—	—	—	—
Ophthalmia neonatorum ..	71	3	21	—	1	81	5	19	—	—
Deaths ..	—	—	—	—	—	—	—	—	—	—
Paratyphoid fever ..	8	—	—	1(A)	—	8	—	1	—	—
Deaths ..	—	—	—	—	—	1	—	—	—	—
Pneumonia, influenza† ..	291	7	2	1	—	365	15	5	—	—
Deaths (from influenza) ..	11	—	—	—	—	9	—	2	1	—
Pneumonia, primary ..	—	14	168	12	5	—	21	167	14	10
Deaths ..	—	—	8	—	—	—	—	2	—	—
Polio-encephalitis, acute ..	2	1	—	—	—	2	—	—	—	—
Deaths ..	—	—	—	—	—	—	—	—	—	—
Poliomyelitis, acute ..	14	—	4	2	—	16	—	—	1	1
Deaths ..	—	—	—	—	—	—	—	—	—	—
Puerperal fever ..	—	1	16	—	—	—	19	—	—	—
Deaths ..	—	—	—	—	—	—	—	—	—	—
Puerperal pyrexia‡ ..	130	3	9	5	2	198	10	17	1	1
Deaths ..	—	—	—	—	—	—	—	—	—	—
Relapsing fever ..	—	—	—	—	—	—	—	—	—	—
Deaths ..	—	—	—	—	—	—	—	—	—	—
Scarlet fever ..	1,591	28	253	31	59	2,639	231	339	36	65
Deaths ..	—	—	—	—	—	—	—	—	—	—
Smallpox ..	—	—	—	—	—	—	—	—	—	—
Deaths ..	—	—	—	—	—	—	—	—	—	—
Typhoid fever ..	5	—	6	14	3	7	—	3	5	1
Deaths ..	—	—	1	—	—	—	—	—	—	—
Typhus fever ..	—	—	—	—	—	—	—	—	—	—
Deaths ..	—	—	—	—	—	—	—	—	—	—
Whooping-cough* ..	1,083	52	91	61	7	1,531	117	221	63	17
Deaths ..	10	4	2	—	—	12	1	1	—	—
Deaths (0-1 year) ..	355	30	94	46	28	314	48	70	52	27
Infant mortality rate (per 1,000 live births) ..	—	—	—	—	—	—	—	—	—	—
Deaths (excluding stillbirths) ..	3,931	435	650	181	131	3,655	590	536	198	113
Annual death rate (per 1,000 persons living) ..	—	—	—	—	—	—	—	—	—	—
Live births ..	6,271	413	822	373	304	5,902	758	858	417	257
Annual rate per 1,000 persons living ..	—	—	—	—	—	—	—	—	—	—
Stillbirths ..	191	15	40	—	—	197	28	41	—	—
Rate per 1,000 total births (including stillborn) ..	—	—	—	—	—	—	—	—	—	—

\* Measles and whooping-cough are not notifiable in Scotland, and the returns are therefore an approximation only.

† Includes primary form for England and Wales, London (administrative county), and Northern Ireland.

‡ Includes puerperal fever for England and Wales and Eire.

§ Owing to evacuation schemes and other movements of population, birth and death rates for Northern Ireland are no longer available.



## The Services

### CASUALTIES IN THE MEDICAL SERVICES

*Killed in action in Italy.*—Capt. David Halpern, R.A.M.C.

*Missing, presumed killed on active service.*—Surg. Lieut. Richard Leslie Hall, R.N.V.R.

### DEATHS IN THE SERVICES

Lieut.-Col. JOHN TELFER CALVERT, C.I.E., died, aged 80, on Sept. 20 at Eastbourne, where he had lived since retiring, after a distinguished career in the Indian Medical Service. He was educated at St. Thomas's Hospital, graduated M.B.Lond. in 1887, and took the Cambridge D.P.H. in 1889. During leave home he passed the M.R.C.P. in 1906, and was elected a Fellow of the Royal College of Physicians of London in 1917. He gained a high place at the entrance examination to the I.M.S. in 1889, and saw active service at Manipur on the N.E. Frontier in 1891, and on the N.W. Frontier in the Tirah Campaign in 1897, with medals and clasps. Soon after, he joined the Bengal Civil Medical Department and held civil surgeonships, including that of Cuttack, with much surgical experience and charge of a medical school. Later he was appointed physician and professor of materia medica at the Calcutta Medical College and edited the 4th edition of Ghosh's *Materia Medica*. He was subsequently promoted to be Principal of the Medical College and professor of medicine, a very onerous post in which he proved to be a good administrator and teacher. He was a Fellow of the Calcutta University, and became Dean of the Medical Faculty and President of the Board of Health, Calcutta. Col. Calvert was awarded the C.I.E. in 1919 shortly before his retirement. He was a popular officer and had a great fund of good stories, and contributed papers to the *Indian Medical Gazette*. He joined the British Medical Association in 1891 and became vice-president of the Section of Medicine at the Annual Meeting of 1931. He leaves a wife, three sons, one of whom is in the Naval Medical Service and another in the British Army, and a daughter to mourn his loss.

## Universities and Colleges

### UNIVERSITY OF LONDON

Prof. Frank Goldby, M.D.Camb., has accepted the appointment to the University Chair of Anatomy tenable at St. Mary's Hospital Medical School and hopes to take up his post during the session 1945. Since 1937 he has been Elder Professor of Anatomy in the University of Adelaide.

The following appointments, both tenable at the College of the Pharmaceutical Society, have been made: H. Berry, B.Sc., Ph.C., F.R.I.C., to be Professor of Pharmaceutics; W. H. Linnell, D.Sc., M.Sc., Ph.D., Ph.C., to be Professor of Pharmaceutical Chemistry

### UNIVERSITY OF LIVERPOOL

The following candidates have been successful in the Final Examination for the degrees of M.B., Ch.B.:

Part I: Cyril N. Broster, G. B. Brown, J. H. E. Carmichael, P. Hampson, Vivien P. Helate, Maureen M. Hoey, D. T. L. Hughes, J. C. Humber, G. C. Hunter, Olive R. Rodgers, L. Rosenbloom, K. S. Shaw, D. R. Wallace-Jones.

Part II: M. M. I. et Haddad, P. R. B. Jones, R. D. B. Williams.

### UNIVERSITY OF SHEFFIELD

The following have passed the recent Final Examinations in the Faculty of Medicine:

M.D.—F. Ellis (with distinction); P. M. Inman.  
M.B., Ch.B.—Parts II and III: \*Marjorie Hallatt, \*M. H. Oliver, \*L. L. Ralph, \*W. J. W. Sharard; \*Isabella M. Almond, B. R. Eaton, D. P. Greaves, G. K. E. Inman, J. W. Laws, J. D. Simpson, D. R. Thompson.  
\* Second-class honours.

### UNIVERSITY OF DURHAM

The Court of the University of Durham resolved, on July 31, that Mr. John Hamilton Barelay, M.D., M.S.Dunelm, F.R.C.S., be appointed to the part-time Chair of Surgery as from Aug. 1, 1944.

### ROYAL COLLEGE OF SURGEONS OF ENGLAND

The following demonstrations will be given at the College in Lincoln's Inn Fields at 4 p.m. on each day: Monday, Oct. 16, Prof. A. J. E. Cave, Anatomy of the Pituitary Gland; Tuesday, Oct. 17, Mr. L. E. C. Norbury, Simple Tumours of the Rectum and Colon; Wednesday, Oct. 18, Prof. Cave, Anatomy of the Adrenal Gland; Thursday, Oct. 19, Mr. R. Davies-Colley, Diseases of the Stomach and Intestines; Friday, Oct. 20, Prof. Cave, Anatomy of the Thyroid Gland. The demonstrations are open to advanced students and medical practitioners.

## Letters, Notes, and Answers

All communications with regard to editorial business should be addressed to THE EDITOR, BRITISH MEDICAL JOURNAL, B.M.A. HOUSE, TAVISTOCK SQUARE, LONDON, W.C.1. TELEPHONE: EUSTON 2111. TELEGRAMS: *Attilage Westcent*, London. ORIGINAL ARTICLES AND LETTERS forwarded for publication are understood to be offered to the *British Medical Journal* alone unless the contrary be stated.

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B.M.A. SCOTTISH OFFICE: 7, Drumsheugh Gardens, Edinburgh.

### ANY QUESTIONS?

#### Whooping-cough Prophylaxis

Q.—What is the duration of the immunity that may reasonably be expected from prophylactic inoculation against whooping-cough?

A.—Probably nobody has sufficient data to say much with confidence about the duration of protection from inoculation against whooping-cough. The present position, briefly, seems to run thus. Bell (*Publ. Hlth., Rep. Wash.*, Aug., 1941) and Kendrick (*Amer. J. Hyg.*, 1943, 38, 193) published highly encouraging results of work in the U.S.A. running from 1938 to 1943; vaccination is not yet in general use in America. These authors used alum-precipitated vaccine; this is not yet generally available here. Further experience and evidence is obviously much needed. (See also answer to question on "Mixing Pertussis Vaccine and Diphtheria Prophylaxis" in the *Journal* of Feb. 12, 1944, p. 243).

#### Snoring in the Shelter

Q.—Can you suggest any cure or alleviation of a patient, male, aged 55, who, by his snoring habits, disturbs all the other shelterers? His upper respiratory organs are quite clear, and there is no nasal obstruction. Sleeping on his back or side makes no difference.

A.—With the conditions as set out in the question the next step in treatment is to ensure nasal breathing by using a mouth shield. This is fitted by a dental surgeon, rests between the lips and teeth, and is more efficient and better tolerated than other mechanical means of preventing mouth breathing.

#### Otitis Media and Otitis Externa

Q.—Can an external otitis cause an otitis media? A patient had an external otitis which flared up suddenly. The drum was previously intact—no old scars or atrophic patches. Following this acute flare-up there was a small central perforation—discharging pus. The pain during the flare-up, which lasted little more than one day, was that of an external otitis—no mastoid tenderness. The patient had no coryza and no otitis media. The following day the canal tended to widen and was discharging. The drum was not seen, and the perforation found about a week after the flare-up.

A.—Except in cases in which the infection passes through a pre-existing dry perforation, otitis media secondary to otitis externa is of the utmost rarity. When it does occur, it is generally associated with fungus infections.

#### Vulval Warts

Q.—A married woman, pregnant, had a vaginal discharge, frequent and painful micturition, warts on the vulva. Wassermann reaction was negative and smears of pus did not have gonococci. These findings were confirmed by a specialist on venereal disease. However, she was given a course of treatment with "sulpha" drugs. The question is, What percentage of cases of purulent vaginal discharge with vulval warts are venereal? Was the infection in this case gonococcal in spite of the absence of gonococci? What is the best treatment for these warts in cases of gonorrhoea and, secondly, in cases where gonorrhoea cannot be established?

A.—It is quite impossible to say with anything approaching accuracy what percentage of cases of purulent vaginal discharge with vulval warts is venereal; much depends on what is meant by the term "venereal"; at a guess, perhaps 60% is due to the gonococcus. It is equally impossible to say whether the case in question was gonococcal; if it reacted well to chemotherapy, the betting is that it was because gonococci are more susceptible to "sulpha" drugs than most organisms. The converse does not necessarily hold because there are many resistant strains of gonococci. The fact that gonococci were not found does not rule out gonorrhoea; these organisms are often very difficult to find.

especially in females, and repeated smears and cultures are necessary before their presence can be excluded. The treatment of vulval warts is the same whether they accompany gonorrhoea or not, except that the treatment of the discharge, which is essential, varies with the cause. The most effective local treatment is removal with the electrocautery. See also the answer published on Nov 13, 1943 (p 631).

#### Pyretotherapy for Gonorrhoea

**Q.**—Please describe the T.A.B. shock treatment for gonorrhoea. To what extent is this effective for non-venereal infections of the urethral tract and chronic non-venereal prostates?

**A.**—It is assumed that the patient is sulphonamide resistant and that two courses of sulphathiazole or sulphadiazine have failed to establish cure. In the first place it is essential to examine the patient and to exclude serious heart or other visceral disease which would contraindicate T.A.B. therapy. The technique is described in the *Journal* of Aug 28, 1943 (p 288). A different "sulpha" preparation from the original one—e.g., sulphadiazine if sulphathiazole was used first, may be given immediately before, during, or immediately after the pyrexial therapy in doses of about 4 g daily for five or six days. Pyrexial therapy is often effective in non-gonococcal infections of the urinary tract and in chronic non-gonococcal prostatitis, but should be combined with other measures, especially in the latter—e.g., irrigations and prostatic massage. It should be remembered that this form of therapy involves some, if a very slight, risk to life, it should, therefore, be undertaken lightly or in the absence of full medical and nursing facilities.

#### Joss-sticks and Mosquitoes

**Q.**—In the East before the war it was possible to procure a "mosquito coil" made in Japan, which burnt very slowly, giving off a faint smoke and a pleasant incense like aroma. The burning of a coil for even a few hours in the evening would drive away every mosquito or at least make them so drowsy that they could easily be caught in the hands and destroyed. Is it possible to procure such things in this country now? Alternatively, what is the composition and how are they made? When so many people sleep in shelters—the abode of these night hummers—it would be a boon to be rid of these pests.

**A.**—Several kinds of pastilles for domestic use as fumigants against mosquitoes are not uncommonly seen in use in India and probably other places in the East. One is in the form of taper-like sticks (Chinese joss sticks they are often called), another is moulded into a coil, or they may be small cones like miniature volcanoes, which can be lighted at the top to burn slowly, giving off an incense like smoke. Probably all are dependent for their effectiveness on pyrethrum, the powdered flowers of one or two species of *Chrysanthemum* (*C. cinerariaefolium* or other species containing the active principle), now very difficult to obtain owing to shortage of this material, which formerly came chiefly from Japan and Dalmatia. How far such pastilles are obtainable in this country, or even now elsewhere, is unknown to the writer, but they could easily be home made if the necessary pyrethrum—e.g., Keating—could be obtained.

Howard and Bishop (*Mosquito Remedies and Preventives* U.S. Farmer's Bull No 1570) give the following: "The powder (pyrethrum) is heaped up into a little pyramid which is lighted at the top and burns slowly, giving out a dense and pungent smoke. Often the powder is moistened and moulded roughly into small cones, and after drying it burns readily and perhaps with less waste than does the dry powder." Another substance used in the same way is *Datura stramonium* made up with nitre in the proportion of 1 to 3 of datura. Probably some nitre would improve the first mentioned recipe. It is important that the pyrethrum powder should not be too old. Pastilles of this kind are also made from the dry powdered pellitory root (*Pyrethri radix*, the dried root of *Anacyclus pyrethrum*). Such joss sticks, cones, etc., are often effective to a certain extent in clearing living rooms of mosquitoes or keeping them at bay, but they are more a domestic palliative than a serious means of dealing with mosquitoes for public health purposes or in the Army, where spraying with some insecticide of the "fit" type or special insecticide is the usual method employed. Nevertheless, the joss stick enjoys considerable popularity as a domestic adjunct, and it might possibly be developed and used more. The difficulty at present is to obtain pyrethrum or an effective substitute. In Russia anabasine (obtained from the plant *Anabasis aphilla* and its hybrids), usually in the form of the sulphate, has been found very effective as a fumigant against mosquitoes. But again it is doubtful if this substance could be obtained in this country.

#### Dipsomania

**Q.**—Can increased cerebrospinal fluid pressure be reduced by any simpler procedure than a lumbar puncture? An American neurologist maintains that this increased pressure, resulting from an allergic reaction to alcohol is the pathological basis of dipsomania.

**A.**—It would be well to comment upon the second part of this question first. The statement that dipsomania is caused by high

intracranial pressure resulting from allergic reaction to alcohol is not only novel, but is really, so far as one knows, founded upon no definite evidence. I do not think that this statement should guide one in the treatment of dipsomania. If, however, cerebrospinal fluid pressure is to be reduced for other reasons this may be achieved by medical methods. The simplest of these is to give magnesium sulphate enemas. Use of sodium chloride or sucrose in hypertonic solution intravenously is more rapidly effective. These methods of reducing pressure have the disadvantage that they lead ultimately to reactionary increase in pressure so that the patient's latter state is liable to be worse than the first. It is consequently the practice to reserve medical methods of reducing high intracranial pressure for the immediate pre-operative period where there is structural cause for the high pressure. Because of the reasons already given, these methods are not likely to benefit dipsomania.

#### Heredity and Involutional Depression

**Q.**—How far does heredity play a part in the production of involutional depression? A patient whose father has been in a mental home for two years with this condition wishes to know whether he should limit his family in view of the possible transmission of the disease. His father was a normal clever man until the age of 55 when he broke down with profound melancholia. What would you advise?

**A.**—Heredity is certainly an important factor in involutional depression. A more exact diagnosis is, however, desirable. If the psychosis is of the recurrent type, with evidence of previous depressive phases, even if not of such a degree as to lead to hospital treatment, the hereditary influence is strong, and approximately one fifth of the children of persons suffering from these psychoses may be expected to develop similar trouble. If, however, it is not of this type, the eugenic prognosis is better, and the latest work gives 3% as the expectation of psychosis in the children of the original patient. The actual advice to be given to the son who is now asking advice will depend on his age and mental constitution. If he is very young, one will not be able to assess his constitution very satisfactorily, if he is, say, 35, one will be able to have a fair notion as to whether he is himself unstable. If he is an ordinary sort of man, then we can assess his own predisposition to psychosis as, say, 3%—i.e., not so much greater than the expectation of the average man. The expectation of psychosis for his hypothetical children will be negligibly greater than the average. If, however, he is an odd, psychopathic, neurotic, or otherwise unstable person, and still more if his wife is also unstable, then the outlook for the children would not be so good, and some restriction of the size of the family would be desirable. The Eugenics Society, 69, Eccleston Square, London, SW 1, has a panel of experts who are prepared to give free advice on problems of this type when the relevant facts are presented, confidentially of course.

#### Milroy's Disease

**Q.**—A patient aged 34 has suffered from Milroy's disease since she was 17—hereditary oedema of the legs. An aunt of hers also has "swollen legs." What is the aetiology, prognosis and treatment of this disease? Is it an allergic condition? My patient has fairly frequent attacks of indigestion for which there is no apparent organic cause. Is it possible that these attacks are due to congestion of the gastric lymphatics? Her general health is otherwise good except for slight dyspnoea on exertion—e.g. cycling. No signs of cardiac disease. Urine normal. Elastic stockings and rest give only temporary relief.

**A.**—The aetiology of Milroy's disease is unknown. Some have suggested that it may be due to an abnormality in the structure of the lymphatics, others favour the view that it is a vasomotor disturbance. Allergy does not appear to play a part in the condition. Only the legs are affected, and this patient's indigestion is probably unrelated to the Milroy's disease. The swelling, once established, persists, and tends to increase, but the duration of life is not affected. No treatment is likely to be of permanent benefit, but massage and bandaging may be recommended. Care should be taken to avoid trauma and infection. The acute erysipelatous attacks which sometimes occur in swollen legs of this type are often associated with fungus infections between the toes and the formation of cracks and fissures which allow the entrance of streptococci.

#### Postponement of Menstrual Period

**Q.**—A patient of mine is anxious to know if there is any way in which her menstrual period might be postponed for a few days, as her husband is due for 7 days' leave just when her period is expected. Would progesterone or testosterone be of any use in delaying the onset, and, if so, what is the dosage and method of administration? Is pregnancy likely to result from intercourse during the time?

**A.**—Ovulation might be inhibited by testosterone or progesterone if given in sufficiently large quantities several days before ovulation is expected—that is, beginning a few days after the end of the menstrual period. Oestradiol or hexoestrol has a similar action,

and is preferable. Probably 5 mg. of hexoestrol by mouth, three times daily, would be a dose sufficiently large to inhibit the pituitary-ovulatory mechanism, and the next menstruation would follow some 7 to 10 days after cessation of this therapy. This method of contraception might be justifiable in special circumstances, but is not advisable as a routine; nor could its efficacy be guaranteed. If, however, it does succeed in preventing ovulation, then pregnancy would not result from intercourse during the time the hexoestrol was being given.

#### Bactericidal Action of Lactic Acid

**Q.**—When cow's milk is prepared with lactic acid B.P. (45 to 60 drops to the pint) for infant feeding, has the lactic acid any bactericidal action?

**A.**—The reaction of fresh cow's milk is slightly on the acid side of neutrality—about pH 6.6. If 60 drops of lactic acid B.P. are added to a pint of milk (taking 1 drop as containing 1/20 c.cm.), the pH will be lowered to about 5.4. Though this degree of acidity might have a bacteriostatic effect on some pathogenic species of bacteria—i.e., inhibit their growth—it would probably have no more than a minimal bactericidal action at room temperature, unless the exposure was prolonged for some hours. Many pathogenic organisms produce this, or an even greater, degree of acidity when growing in the presence of a fermentable sugar. If the milk was left at a temperature favourable for bacterial multiplication, the presence of the acid would encourage the growth of lactic streptococci and of lactobacilli at the expense of other organisms.

#### X-ray Diagnosis of Appendicitis

**Q.**—If an appendix is not shown up by bariun meal and x-ray examination, does it mean that the organ is pathological? The patient, aged 49, has for some years had attacks (lasting from 3 to 6 weeks) of slight pain in the lower abdomen with marked discomfort in the epigastrium 3 to 4 hours after food. The discomfort is eased by food and alkalis. All investigations proved negative except for some gastroptosis and enteroptosis and non-filling of the appendix. The abdominal symptoms have sometimes wakened the patient during the night, which looks as if the visceroptosis is not the cause of the trouble. For some time she has had also general rheumatic pains, and now signs of rheumatism of the arthritic type are appearing—the fingers swelling after gardening, etc. The patient is very active both mentally and physically, and apart from the above enjoys excellent health.

**A.**—An appendix which is blocked at its base obviously cannot be visualized on the x-ray film, but it would nevertheless be very unwise to accept non-visualization as evidence that the appendix is pathological unless the clinical signs and symptoms are highly suggestive. It must be recognized that a transient muscle spasm may prevent the appendix filling with barium; furthermore, a retrocaecal appendix may fill and empty at the same time as the caecum, and so be completely invisible since obscured by the caecal shadow. Even oblique views may not overcome the difficulty. On the whole, it is the writer's opinion that the x-ray diagnosis of appendicular trouble is not to be trusted, and, further, that large numbers of unnecessary operations are being performed on the basis of an x-ray diagnosis. The ultimate decision should be made on clinical grounds. An x-ray (often nowadays demanded by an "enlightened public") is as likely to mislead as to be of any help. It is advised, therefore, in the case under consideration, that the x-ray findings be ignored and the diagnosis made from clinical findings. While some of the symptoms would fit in with an appendicular colic, the relief afforded by food and alkalis is not common in appendicular cases, nor is the particular periodicity of the attacks. Insufficient data are given to make a tentative diagnosis, but further investigation—e.g., cholecystogram—should be carried out before it is assumed that the visceroptosis explains the symptoms.

#### Constitutional Obesity

**Q.**—A patient aged 40 is suffering from obesity. He weighs 16 stone, has large breasts, female in type and extremely hirsute, and has testicles slightly smaller than the average; penis also slightly smaller. Sexual interest is normal; he is married, has two children who are quite healthy, is of more than average intelligence, and is not by any means sluggish in his movements. He has never been ill, except for minor ailments. He does not overeat but drinks, perhaps, abnormal quantities of water. What treatment would bring his weight to normal?

**A.**—No indication is given as to the duration of the obesity. If it were of recent origin, and if potency had diminished or disappeared and genital size decreased, one would have to consider the possibility of an adrenal tumour, or possibly Cushing's syndrome if other features were present.

Taking the case as described, it is more probably a constitutional adiposity, with a hypothalamic-pituitary basis. If so, there is no specific treatment, but a low calorie diet and thyroid might be helpful. Further, if there is an element of water retention, mercurial

diuretics—e.g., injectio mersalyli B.P., 1 to 2 c.cm. injected intramuscularly, twice weekly, for one month, and repeated after an interval of two weeks, are of benefit. The mercurial diuretic should be preceded the day before by 1 g. of ammonium chloride, in capsule, t.d.s.

#### Streptococcal Throat Carriers

**Q.**—A girl aged 13 on returning from boarding school brought a report that all the girls had throat swabs taken at the end of term, and that hers and many others showed a growth of haemolytic streptococci. She was required, before returning to school, to obtain two consecutive negative swabs, with an interval of at least five days between. I should like to know—(1) Does the presence of the organisms in the throat warrant this ruling on the part of the school authorities? (2) What treatment is likely to produce the negative swabs required?

**A.**—Wholesale swabbing of throats in a boarding school is usually undertaken after an outbreak of diphtheria or scarlet fever or sore throat. In this instance it may have been either of the latter two infections, and apparently a goodly proportion of the symptomless contacts were found to be streptococcal throat carriers. The school authorities have probably no legal power to insist on two consecutive negative throat swabs before the pupil returns to school, but in asking for this evidence of freedom from infection they were doubtless anxious to avoid a recrudescence of the original outbreak. The chances of such an occurrence are slight, for the pupils would already have some specific immunity as a result of the epidemic spread of the infecting streptococcus, and the proportion of streptococcal carriers after a summer vacation of, say, eight weeks would likely be small. The practitioner could therefore ignore the request for negative swabs in his school-girl. If he does have throat swabs bacteriologically examined and if haemolytic streptococci are still present in considerable numbers, the girl must be regarded as a persistent carrier; in which case, nose and throat must be carefully examined, preferably by a specialist, for any pathological abnormality such as septic tonsils or sinusitis. Treatment will depend on the findings.

## LETTERS, NOTES, ETC.

#### Midwifery and Housing

Dr. NINIAN FALKNER writes from the Master's House, Rotunda Hospital, Dublin: As domiciliary midwifery still occupies a most important position in the British Isles, it seems obvious that the homes in which confinements will take place should be planned accordingly. I would, therefore, respectfully suggest that any plans for housing on a large scale should not overlook this aspect of public health.

#### Wooden Bullets

Dr. L. H. TAYLOR (Maidstone) writes: I was talking over Major Pollard's recent letter (Sept. 23, p. 424) with a combatant officer, and he assured me that in an exercise last summer an officer was hit in the abdomen with one of these "bulleted blanks" and died in hospital as a result of perforation of his intestine. The range was 5 to 10 yards. So perhaps a grain of salt should be taken with Major Pollard's remarks!

#### Wasp and Bee Stings

Dr. J. BARR STEVENS writes: Regarding the question and answer in the *Journal* of Aug. 26 (p. 295), in 1889 there were some notes in the (June 1, p. 1226, and June 8, p. 1323) *Journal* on the treatment of snake bite with permanganate of potash. That summer I received a very painful sting, presumably from a bee, as the sting was left in my skin. I removed the sting and, inspired by the *B.M.J.* articles, rubbed into the small but obvious aperture a crystal of permanganate, with immediate and complete relief. I have frequently relieved people who have just been stung in the same way. About 1922 Dr. H. Muir Evans of Lowestoft read a paper on the treatment of stings by weavers (a stinging fish) by the injection with a hypodermic syringe of a strong solution of permanganate of potash into the spot stung. Since hearing his paper I have always used the syringe.

#### Sodium Morrhuate for Injection

ALLEN AND HANBURY LTD., write: The answer under the heading "Varicose Veins" on Sept. 9 (p. 360), mentions that sodium morrhuate has a variable composition. We should like to point out that injection solution of sodium morrhuate A. and H. is prepared from a selected fraction of the fatty acids of cod-liver oil—namely, those fatty acids which are so highly unsaturated that they have an iodine value not less than 300. This preparation is therefore practically free from sodium oleate. As R. T. M. Haines (*Lancet*, April 8, 1933, p. 748) has pointed out, there is reason to believe that sodium oleate is more toxic and also a less active sclerosing agent than are the sodium salts of the more highly unsaturated fatty acids. "Moramin," our preparation of ethanolamine morrhuate, also is prepared from the fatty acids of iodine value not less than 300.

A solution to the problem was not, however, forthcoming. Flexner and Sonne strains behaved in a comparable manner throughout; succinyl-sulphathiazole exercised a definite inhibitory activity on both organisms, but sulphaguanidine proved relatively ineffective; while evidence was not obtained that the persistence of infection was due to the development of sulphonamide-resistant strains of *Bact. sonnei* (Beemer and Fairbrother, 1944). A probable explanation of the uncertain action of the

sequently little doubt that a number of carriers will have developed and that such individuals will be a potential source of infection on return to Great Britain. This has already proved to be the case. *Bact. dysenteriae* has been isolated not infrequently from men returning and giving a history of dysentery some time previously but not at the time showing actual symptoms of the disease. A routine check of all persons returning from abroad is not practicable. It is therefore necessary that

## THE CONTROL OF BACILLARY DYSENTERY

BY

R. W. FAIRBROTHER, M.D., D.Sc., F.R.C.P.

Lieut.-Col., R.A.M.C.

Bacillary dysentery is an important endemic disease of this country, and is characterized by frequent localized outbreaks which are usually unrelated in origin and are caused almost exclusively by the Sonne and Flexner organisms. Its incidence has increased considerably since the outbreak of the war, but this is not unexpected, as under wartime conditions it is often necessary to accept relatively low standards of hygiene; this applies particularly to troops under active-service conditions.

The failure to control bacillary dysentery in this and other countries has not been satisfactorily explained, but, following recent developments in laboratory technique, evidence is now accumulating which may provide a solution to this problem. The isolation of *Bact. dysenteriae* has been greatly facilitated, and as a result it has been possible to establish several facts which indicate that the procedures at present adopted to control the disease require careful and critical examination. Knowledge of the epidemiology of dysentery was previously derived from media with little, if any, selective action for *Bact. dysenteriae*, and was consequently often inaccurate, owing to the frequent failures to isolate the causative organisms not only from convalescents but also from actual cases of the disease. By the use of the highly selective desoxycholate-citrate medium the following points have been firmly established by many independent workers: symptomless carriers are common during an outbreak of dysentery; convalescent and symptomless carriers may excrete intermittently the organisms for long periods; sulphonamide therapy has proved satisfactory in Flexner infections, but not particularly successful in clearing Sonne infections (*E.P.H.L.S. Bull.*, 1942, 1943; Watt, Hardy, and De Capito, 1942; Fairbrother, 1943; Hardy and Watt, 1944).

The epidemiology of bacillary dysentery is thus a complex problem, but considerable progress has been made during the past two years. It is now clear that rigorous control measures and a long-term policy are necessary if the disease is to be eradicated from this country. In dealing with outbreaks it is essential that a thorough bacteriological investigation should be carried out on all clinical cases and close contacts, particularly persons concerned with the handling of food, and that all infected persons should be treated and, if possible, segregated until free from infection.

Several important questions, however, remain unanswered: one is the number and frequency of negative faecal examinations required before an individual can be declared free from infection; the second is the treatment of Sonne dysentery. The results given below confirm previous observations about the persistent but intermittent excretion of *Bact. dysenteriae* and provide further data for consideration in discussing these problems.

### Technique

Samples of faeces, usually received within one or two hours of collection, were thoroughly suspended by means of sterile glass rods in small amounts of physiological saline. The thick suspensions were then plated on to desoxycholate-citrate (D-C) plates: in the case of fluid faeces, cultures were prepared directly with flakes of mucus. After overnight incubation at

37° C. suspicious colonies were selected for biochemical and serological tests; all plates were then reincubated for a further 24 hours, after which, if suspicious colonies had not been found, a negative result was reported.

The results of this investigation will be considered in two sections: (1) the carrier rate in bacillary dysentery; (2) the treatment of Sonne dysentery.

### 1. The Carrier Rate in Bacillary Dysentery

A favourable opportunity of studying the incidence of dysentery carriers was afforded by the arrival in this country of Italian P.O.W. from the Middle East campaign. In order to provide some sort of hygienic control the faeces of all giving a history of dysentery or enteric fever during the past three or four years were subjected to bacteriological investigation. Many samples of faeces were consequently examined, and, rather contrary to accepted opinion, it was found that the carrier state was not infrequent. From some 2,500 individuals *Bact. dysenteriae* was isolated on 245 occasions—i.e. the carrier state existed in approximately 10% of those with a recent history of bacillary dysentery. Even this figure must be considered a low estimate, since in many instances it was only possible to examine one sample of faeces from each man; as it is well established that the excretion of *Bact. dysenteriae* by carriers is intermittent, some carriers were almost certainly missed because of the limited scope of the examinations. The types of *Bact. dysenteriae* isolated from the 245 carriers are given in Table I.

TABLE I—Types of *Bact. dysenteriae* isolated from 245 Italian Carriers

Flexner ..	170	Schmitz	11
Shiga	57	Sonne	7

The majority of these carriers did not show any dysenteric symptoms, looseness of the bowels was uncommon, while the presence of blood and mucus was exceptional. There was thus no clinical indication of the infection in most of the carriers. Cultures prepared on MacConkey plates from these cases were almost invariably negative.

All carriers were given a routine course of sulphaguanidine—6 g. three times on the first day, and then 3 g. three times a day for the next five days, making a total dosage of 63 g. in six days. In order to ensure the complete elimination of the drug clearance tests were not started until five days after completion of the course, and consisted originally of three successive negative examinations of the faeces (*A.M.D. Bull.*, 1942; *E.P.H.L.S. Bull.*, 1943). During later stages of this investigation abundant evidence was, however, forthcoming that 3 successive negative results did not constitute a reliable criterion of freedom from infection: *Bact. flexneri* was isolated on one occasion after 8 successive negative results, *Bact. shigae* after 6 successive negatives, while *Bact. sonnei* was frequently isolated after 3 and on one occasion even after 10 previous negative results. In consequence, more rigorous tests consisting of 12 successive negative results were introduced to determine clearance of the infection. It follows from these observations that the earlier results of sulphaguanidine therapy in this series were not adequately controlled. However, according to the different standards used, the treatment appeared to





A solution to the problem was not, however, forthcoming. Flexner and Sonne strains behaved in a comparable manner throughout, succinyl-sulphathiazole exercised a definite inhibitory activity on both organisms, but sulphaguanidine proved relatively ineffective; while evidence was not obtained that the persistence of infection was due to the development of sulphonamide-resistant strains of *Bact sonnei* (Beemer and Fairbrother, 1944). A probable explanation of the uncertain action of the sulphonamides in Sonne infections is that, as Sonne dysentery is usually a mild disease, the organisms multiply on, rather than in the mucous membrane and do not produce the severe ulceration which is usual in the other types of bacillary dysentery. The Sonne organisms thus tend to lead a more saprophytic existence than the other members of the dysentery group, this biological variation is probably reflected in the biochemical activity of *Bact sonnei*, which is the only pathogenic member of the genus *Bacterium* to ferment lactose. In consequence of its relatively saprophytic existence, contact with the organisms by the drug is more difficult to effect than in the case of the more parasitic members, which multiply in the damaged mucosa. During sulphonamide therapy most of the organisms are eliminated, but a few, perhaps protected by faeces, escape the action of the drug and propagate when the inhibitory action of the sulphonamide is removed. There appears to be an analogy between Sonne dysentery and streptococcal tonsillitis: in both conditions the clinical response to sulphonamide therapy is often good, while the bacteriological response is poor. In neither case is the failure to effect a bacteriological cure essentially due to the development of drug resistance by the organisms.

### Discussion

These results confirm previous observations and indicate that in order to control bacillary dysentery it is essential that (1) all outbreaks of the disease must be subjected to thorough bacteriological investigations, and (2) stringent clearance tests must be satisfied before a case can be considered free from infection.

The eradication of the disease from this country requires the detection and treatment of all carriers of *Bact dysenteriae*. The important part played by the carrier in the persistence and spread of bacillary dysentery in the community is now firmly established and is well illustrated in the epidemic reported by Hailwood (1944). In this outbreak 292 cases of diarrhoea occurred in a unit of some 900 men while at a practice camp. The faeces from only 81 cases were positive for *Bact sonnei* but bacteriological investigations were not started until some 14 days after the onset of the outbreak, by which time the infection would have cleared spontaneously in many cases. The source of the infection was proved to be a chronic symptomless carrier who had had no symptoms of dysentery since a moderately severe attack some 12 months previously, but whose stools still yielded a heavy growth of *Bact sonnei*. This man had been mainly employed in cutting bread-and-butter.

The detection of carriers is unfortunately a matter of considerable difficulty, as many exist and some have never shown the symptoms of the disease and can only be discovered by laboratory methods which should consequently be widely applied as soon as an outbreak is reported. The introduction of highly selective media, such as desoxycholate citrate, has greatly simplified the isolation of *Bact dysenteriae* and has revealed an unexpectedly high incidence of carriers. Results obtained by the use of old media such as MacConkey's, are completely valueless in dealing with convalescent or symptomless carriers, and it is doubtful if these media fulfil any useful function in the examination of faeces.

The high incidence of carriers particularly of Flexner strains, found in Italian soldiers indicates that the development of the carrier state in bacillary dysentery is a common feature of the disease. This raises a hygiene problem of great importance. Bacillary dysentery has been widespread among our troops in N Africa, and in some 70% of cases in which bacteriological investigations were carried out (incidentally only a small percentage of the total number) *Bact flexneri* was the responsible organism. Sulphaguanidine therapy was not universally applied, little or no attempt was made to discover symptomless carriers, and in the majority of cases bacteriological control in the form of clearance tests was not possible. There is con-

sequently little doubt that a number of carriers will have developed and that such individuals will be a potential source of infection on return to Great Britain. This has already proved to be the case. *Bact dysenteriae* has been isolated not infrequently from men returning and giving a history of dysentery some time previously but not at the time showing actual symptoms of the disease. A routine check of all persons returning from abroad is not practicable. It is therefore necessary that if such individuals are involved in any outbreak they should be subjected to rigorous tests before being considered free from infection.

Another essential factor in the control of dysentery is the establishment of a satisfactory standard for the clearance tests. It is obvious that the criterion of freedom from infection at present generally accepted—i.e., three successive negative results—is quite unreliable. During this investigation positive results have been obtained in Shiga, Flexner, and Sonne infections after as many as 6, 8, and 10 successive negatives respectively, while positive results after 3 successive negatives have been encountered with great frequency in Sonne infections. Stringent measures must therefore be adopted in order to provide a satisfactory criterion of bacteriological cure, and it is recommended that (i) where laboratory facilities are readily available at least 12 successive daily negative results should be obtained, and (ii) where laboratory facilities are poor 12 successive negatives should be obtained over a period of at least 3 weeks, in all cases tests should not be started until 6 days after cessation of treatment if sulphonamides have been used. The need for a more exacting criterion of freedom from infection in cases of Sonne dysentery was pointed out by the Emergency Public Health Laboratory at Oxford (*EPHLS Bull.*, 1942) during an investigation of a small outbreak in children; they required 8 consecutive negative stools in 4 weeks or at least 6 negatives in 6 weeks before a case was discharged from isolation hospital. A few carriers may still be missed by these exacting tests, but less rigorous standards are certain to produce erroneous results and a position of false security owing to the intermittency of excretion of *Bact dysenteriae* by carriers, particularly in the case of Sonne infections. It is admitted that the segregation of apparently healthy individuals for relatively long periods is a serious proposition, but such a measure is unfortunately essential in the case of any person involved in the handling or preparation of food, or in dealing with the disease in nurseries, schools, and mental institutions where minor epidemics are prevalent and difficult to control.

The intermittency of excretion of *Bact dysenteriae* also presents difficulties in the detection of carriers during an investigation of an outbreak. Unless several faecal examinations are made from each close contact it is possible for a carrier to escape detection. Therefore, when individuals are strongly suspected of being carriers, repeated tests must be carried out before a final opinion can be given.

The control of bacillary dysentery is thus a formidable proposition. The disease is widespread and, while many carriers already exist in the community, the number is likely to increase when troops return from service overseas. Recent epidemiological studies clearly indicate that, unless the problem is tackled rigorously and a long term policy adopted, hygienic control will have little effect on the incidence of the condition. Efforts to limit the disease by directing attention to personal hygiene and sanitation have not proved particularly successful, for, while these measures are simple and fundamental, they are difficult to enforce. These factors are without question of great importance in restricting transmission, but as long as the causative organisms are prevalent in a community they constitute a potential source of danger. Hardy and Watt (1944), during an extensive investigation of acute diarrhoeal disease in the USA, found that dysentery bacilli could be isolated with ease from the fingers and from under the finger nails of culturally positive cases and carriers.

Under active-service conditions overseas the control of dysentery presents a much more difficult problem. The disease is often widespread in the native population, flies are abundant, hospitals are soon filled with cases, and, as laboratory facilities are relatively meagre, bacteriological control of the disease is impossible and is no longer attempted. In this country, particularly under normal conditions, the problem is much less



complex, but nevertheless careful consideration is necessary in deciding whether bacteriological control of bacillary dysentery is a practical proposition, because only thorough and intensive measures are likely to be successful. The main objections to embarking on an energetic campaign to control bacillary dysentery are: In this country the disease in adults is usually trivial, perhaps of comparable incapacitating value to the common cold, and many cases do not report for medical attention; many carriers exist; apparently healthy people may be segregated for relatively long periods; and the clinical course of the disease is readily controlled by sulphonamide therapy. It is, however, recognized that dysentery in infants, particularly undernourished infants, may be a serious and even fatal disease. Moreover, recent developments in laboratory technique have provided valuable information on the epidemiology of the disease and the detection of carriers has been greatly simplified; while the sulphonamides have proved extremely valuable in clearing all types of infection except Sonne. It should therefore be possible for us eventually to control bacillary dysentery provided all outbreaks are subjected to strict bacteriological control. Dramatic results must not be expected, as, in view of the wide distribution of the disease, its elimination from this country will undoubtedly prove a slow process.

### Summary

The frequency of the carrier in bacillary dysentery and the intermittent excretion of *Bact. dysenteriae* have been readily demonstrated by the use of the desoxycholate-citrate medium.

Sulphaguanidine and succinyl-sulphathiazole have not proved successful in clearing persistent carriers of *Bact. dysenteriae* (Sonne).

The control of dysentery has been discussed and more stringent criteria recommended to determine freedom from infection—viz., 12 successive negative results.

I wish to thank the many persons who have provided valuable assistance during this investigation, particularly in the collection of the numerous specimens and the administration of the sulphonamides, and also Col. J. S. K. Boyd for much helpful criticism.

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## PLASMA ACID PHOSPHATASE IN CARCINOMA OF THE PROSTATE AND THE EFFECT OF TREATMENT WITH STILBOESTROL

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Kutscher and Wolbergs (1935) found large amounts of a phosphatase, having an optimum activity in the region of pH 5.0, in normal human prostate tissue and seminal fluid. Pursuing this investigation, Gutman, Sproul, and Gutman (1936) detected the enzyme in carcinomatous prostatic tissue and at the site of skeletal metastases secondary to carcinoma of the prostate.

Gutman and Gutman (1938) further observed an increase of "acid" phosphatase in the serum of patients with metastatic carcinoma of the prostate gland, and suggested that its estimation was of diagnostic value: patients with carcinoma of the prostate without bone metastases did not show an increase of acid phosphatase. Huggins and his collaborators (1941, a, b, c), at the University of Chicago then gave evidence that carcinoma of the prostate, in common with adult prostatic epithelium, is responsive to alterations in the level

of androgenic hormones in the organism. Injection of androgen caused a rise, and castration or injection of oestrogen a fall, in the plasma acid phosphatase. A study of the effect of castration and of oestrogen administration as a means of clinical management of advanced prostatic carcinoma showed that the improvement obtained was more than a palliation. Only 5% of the cases treated derived no benefit. Of the remainder, half showed a pronounced improvement, which was not, however, sustained for longer than 18 months. The others showed a more prolonged improvement.

The above work has been amply confirmed by other American authors: Sullivan *et al.* (1942) on the effect of castration; Kahle, Ogden, and Getzoff (1942) on the effect of stilboestrol; and Munger (1941) on that of x-irradiation of the testes. A review of the whole field has recently been given by Haddow (1943).

In preliminary investigations in these laboratories acid phosphatase estimations were performed on the plasma of normal controls, of patients with conditions other than carcinoma of the prostate, and of cases of carcinoma of the prostate with and without metastases in bone. Estimation were also carried out on normal human seminal fluid and in a case of eunuchoidism. In later work at the Royal Cancer Hospital more detailed investigations have been made on cases of carcinoma of the prostate and the effect of treatment with stilboestrol.

The cases now presented are unselected, although in one respect atypical in that they include a high proportion with osseous spread. No case was treated by x-irradiation of the testes or by castration, and in order to obtain clear results in cases in which the prostate had been irradiated previously, time was allowed for the full effect of this procedure to be assessed before oestrogen therapy was begun.

### Method of Estimation of Acid Phosphatase: Principle

The pH optimum of acid phosphatase is between 4.5 and 5.0; that of alkaline phosphatase is between pH 8.4 and 10.0, depending upon the substrate used. Because of this great difference it is possible to estimate one phosphatase in the presence of the other merely by allowing it to act upon the substrate at its characteristic optimum pH. Thus the alkaline phosphatase in blood plasma is inactive at the reaction at which acid phosphatase operates best, and vice versa.

### Method

The procedure for acid phosphatase determination is identical (and the solutions are the same, with the exception of the buffer) with that for alkaline phosphatase (see King, Haslewood, Delory, and Beall, 1942). An incubation time of 1 hour at 37° C. is normally used. The results are expressed in terms of units which are equal to mg. of phenol liberated in 1 hour. The calculation is carried out in the same way as for alkaline phosphatase. There are normally 1 to 5 arbitrary acid phosphatase units in 100 ml. of serum or plasma.

The colours are somewhat pale in the case of normal blood and in cases of carcinoma of the prostate in which the acid phosphatase is not greatly elevated, and it may be preferable in these instances to use a longer incubation period—e.g., 3 hours. If this is done the weight of phenol liberated (in mg.) is divided by 3 to reduce the figure to 1-hour unitage.

### Solutions

*Citric Acid-Sodium Citrate Buffer*, pH 4.9—21 g. of crystalline citric acid are dissolved in water, 188 ml. of N NaOH added, and the solution made up to 500 ml. The pH should be checked, and adjusted to pH 4.9, if necessary, by dropwise addition of N NaOH or N HCl. This solution should be preserved with a few drops of chloroform and kept in the ice-chest. The other solutions are identical with those described by King *et al.* (1942).

### Results

*Acid Phosphatase in Plasma*.—The values (Table I) for normal controls are somewhat higher than those given by Gutman and Gutman (1938), which range from 0.5 to 2.5 units per 100 ml. This may be explained by the fact that these authors prefer to employ a 3–5 hours' hydrolysis, and obtain a figure for 1 hour's hydrolysis by division.

TABLE I.—Plasma Acid and Alkaline Phosphatase in Various Clinical Conditions (Average Values)

	No. of Cases	King-Armstrong Units per 100 ml. *	
		Acid	Alkaline
Normal controls .. .. .	9	2.8 (1 to 5)	7.3 (3 to 10)
Heart disease .. .. .	5	3.4 (1 to 5)	7.2 (5 to 12)
Anaemia .. .. .	4	2.0 (2)	8.8 (5 to 13)
Cholecystitis .. .. .	2	3.0 (2 to 4)	9.0 (8 to 9)
Catarrhal jaundice and hepatitis .. .. .	15	3.8 (1 to 5)	16.1 (8 to 31)
Obstructive jaundice .. .. .	20	3.5 (1 to 5)	56.9 (10 to 163)
Primary carcinoma (stomach) .. .. .	4	4.0 (2 to 5)	10.3 (6 to 14)
Enlarged prostate .. .. .	12	3.3 (1 to 5)	6.1 (3 to 9)
Carcinoma of prostate (without bone metastases)	8	3.1 (1 to 6)	8.0 (4 to 11)
" " (with bone metastases) .. .. .	7	11.5 (6 to 19)	43.0 (7 to 87)

\* Range in parentheses.

**Acid Phosphatase in Seminal Fluid.**—The method used was that described, except that the seminal fluid needed to be suitably diluted with normal saline. The results for 12 normal persons are given in Table II, which also includes two est-

TABLE II.—Acid Phosphatase of Human Seminal Fluid

Case	Units per ml.	Case	Units per ml.
1	2,100	8	2,100
2	2,100	9	1,900
3	1,950	10	1,800
4	3,300	11	2,600
5	1,500	12	2,200
6	2,700	Eunuchoid case	24
7	870	"	20

mations on a case of eunuchoidism. They are in good agreement with those of Gutman and Gutman (1941), who reported figures varying from 570 to 3,700 units per ml. in 10 normal specimens. The eunuchoid specimens contained relatively negligible amounts of acid phosphatase. These results are expressed as units per ml., while the plasma results are as units per 100 ml., so that the quantities in the seminal fluid are relatively enormous—i.e., about 100,000 times greater.

**Plasma Acid Phosphatase in Cases of Prostatic Carcinoma treated with Stilboestrol.**—Table III shows the initial values.

TABLE III.—Plasma Phosphatases in Cases of Prostatic Carcinoma before Treatment with Stilboestrol

Case No.	Age	Initial Plasma Phosphatase Value (King-Armstrong Units)		Basis for Diagnosis	Site of Bone Metastases
		Acid	Alkaline		
1	66	12.2	8.9	Section	Pelvis and spine
2	68	41.0	15.0	Clinical, X-ray	Pelvis
3	72	21.6	24.0	Section	Ribs and pelvis
4	62	5.3	—	"	Spine and pelvis
5	70	37.0	25.0	"	Osteitis deformans in pelvis and spine
6	60	17.0	—	"	Ribs, spine, pelvis, and femora
7	71	2.0	—	"	Osteitis deformans in pelvis and spine
8	57	1.3	—	"	Nil
9	77	2.9	5.5	Clinical	Nil
10	61	3.9	10.0	"	Nil (abnormal opacity ischium)

Six of the cases had a raised acid phosphatase content, and in 5 of these there was radiographic evidence of metastases in bone. Although Case 5 had an initial value of 37 units, we have as yet found no evidence of skeletal metastases, detection of which was made difficult here, as in Case 7, by the presence of osteitis deformans in pelvis and spine.

Several of the results do not show any marked distinction between prostatic carcinoma and Paget's disease. Gutman, Gutman, and Robinson (1940) also found that some cases of advanced Paget's disease had high acid phosphatase values, but in their whole series 26 sera, from a total of 32 cases of Paget's disease, gave normal readings. It is therefore possible that the few results given here are not truly representative of Paget's disease. Gutman considered the possibility that the high acid phosphatase results in Paget's disease were due to

the incomplete inactivation of the alkaline phosphatase at pH 4.9, but excluded this possibility because of the lack of proportionality between the values of the two pH's.

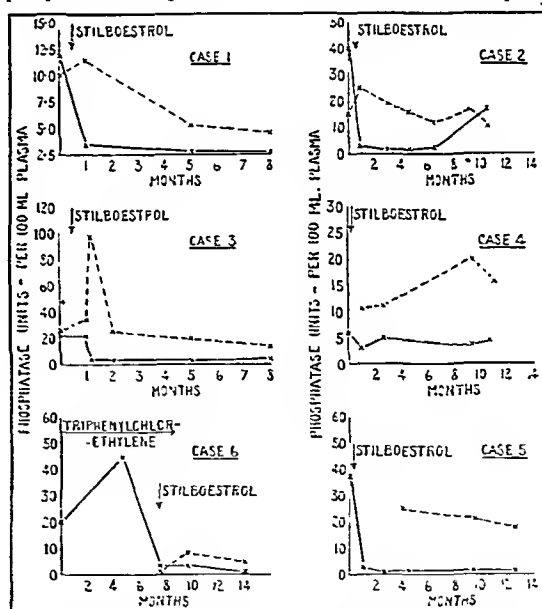
For comparative purposes 3 cases of malignant disease, other than carcinoma of the prostate, are shown in Table IV.

TABLE IV.—Plasma Phosphatases in Bone Diseases other than Carcinoma of the Prostate with Metastases

Case No.	Age	Initial Plasma Phosphatase Value (King-Armstrong Units)		Diagnosis	Site of Bone Metastases
		Acid	Alkaline		
1	65	4.3	29.0	Osteitis deformans	—
2	65	1.3	45.0	"	—
3	—	8.0	25.0	"	—
4	—	11.0	87.0	"	—
5	—	5.0	42.0	"	—
6	—	2.7	71.0	"	—
7	—	2.2	245.0	"	—
8	—	2.5	43.0	"	—
9	—	4.0	43.0	"	—
10	65	6.3	34.0	Carcinoma of breast	Ribs and vertebrae
11	68	2.1	23.2	Site of primary uncertain	Pelvis, long bones, vertebrae, and skull
12	32	1.7	10.3	Osteitis fibrosa cystica	—
13	58	1.7	42.0	Osteitis fibrosa cystica	—

The acid phosphatase value of one case of carcinoma of the breast is higher than those recorded by the Gutmans, in which values did not exceed 4.2 units (normal taken as 2.5 units).

The accompanying graphs show the behaviour of the plasma phosphatases during treatment with stilboestrol. The acid phos-



Graphs of cases in which the plasma acid phosphatase was originally raised —, acid; ---, alkaline.

phatase falls abruptly to a normal value, which is then maintained for considerable periods, with a rise in alkaline phosphatase followed by a gradual fall. In Case 3 the phosphatases were estimated 1 week after stilboestrol therapy began, by which time 35 mg. had been given. No change had then occurred in the acid phosphatase level, but the alkaline phosphatase had begun to rise. The next set of values was obtained 10 days later, by which time 75 mg. of stilboestrol had been given and the characteristic fall in acid phosphatase had taken place.

Intramuscular administration was employed initially to obviate variations in absorption and because it gave an accurate record of the quantity administered. Dosage was very high in the first few cases treated and was reduced in

cases treated later. In spite of high dosage it appears to take an appreciable time for symptoms to improve and for a change in the prostate to be detected. The earliest improvement in back pain occurred on the 5th day of treatment, and no case showed a palpable change in the prostate before the 9th day. A full 6 months elapsed before secondary glandular masses diminished in size in Case 5. Since no case has been studied for more than 18 months (under stilboestrol therapy) it is not possible to say to what extent the dose may be reduced without detriment. There seems to be no advantage, other than that already stated, in giving the drug by intramuscular injection.

### Case Records: Carcinoma of Prostate

**Case 1.**—Aged 66; when first seen in May, 1943, complained of backache of some years' duration and frequency of micturition for 9 months. The general condition was fair, and haemoglobin level and blood picture were normal. The prostate was coarsely nodular, enlarged, and hard, extending laterally, chiefly on the right. Firm lymph nodes were present in both groins. The right lower limb was oedematous. Biopsy of an inguinal node was compatible with a metastatic deposit of prostatic carcinoma. X-ray examination of the pelvis and lumbar spine showed osteoplastic deposits. The initial plasma phosphatase values were: acid phosphatase 12.2 units, alkaline phosphatase 8.9 units. A total of 525 mg. of stilboestrol was given by intramuscular injection in 21 days and thereafter 5 mg. t.i.d. orally. During the first three weeks of treatment a progressive oedema of lower limbs, scrotum, penis, and abdominal wall developed, with an increase of weight of 14 lb. Injections were discontinued, and in two weeks the body weight had decreased by 12 lb., with disappearance of most of the oedema. A palpable shrinking and softening of the prostate was first noticed on the 9th day of treatment, while back pain was almost completely relieved in 1 month. Nocturnal frequency lessened from 3 times to once. The case was last seen in March, 1944, when improvement was maintained, although the x-ray appearances in the bony pelvis showed an increase in the number and size of secondary deposits.

**Case 2.**—Aged 58; first seen in April, 1943, when he complained of back pain, dysuria, and frequency of micturition for 2 years, with a loss of weight of 2 st. in 6 months. The general condition was poor, with a haemoglobin value of 46%. Blood films showed occasional nucleated red cells. The prostate was hard, irregular, and fixed. No regional lymph nodes were palpable. X-ray examination of the pelvis revealed early osteoplastic deposits. The initial plasma phosphatase values were: acid phosphatase 41 units, alkaline phosphatase 15 units. A total of 828 mg. of stilboestrol was given by intramuscular injection in 5 weeks, and thereafter 5 mg. t.i.d. orally. Back pain was improved on the fifth day and shrinking and softening of the prostate took place in 1 month. Frequency was less in 2½ months. At the end of June, 1943, the haemoglobin level was 64% and the prostate showed a further reduction in size. In Oct., 1943, the haemoglobin was 78%. Improvement in the back pain and in the condition of the prostate was maintained, and the patient returned to his work. He was last seen in March, 1944, when he was still at work and symptom-free, although the plasma acid phosphatase had risen and there had been a progressive increase in the number of bone deposits.

**Case 3.**—Aged 72; first seen in Oct., 1942, when he had acute retention. Treatment was by suprapubic cystostomy and high-voltage therapy to the prostate, biopsy of which showed an alveolar adenocarcinoma of a high degree of malignancy. Early osteoplastic deposits were present in the ribs. Stilboestrol therapy was begun in June, 1943, when there were no symptoms referable to the prostate. The general condition was very poor, the haemoglobin value being 37%. Suprapubic cystostomy was satisfactory, but the urine was thick and offensive. The initial plasma phosphatase values were: acid phosphatase 21.6 units, alkaline phosphatase 24 units. The prostate was hard and fixed but not greatly enlarged. A total of 75 mg. of stilboestrol was given by intramuscular injection in 19 days and thereafter 5 mg. t.i.d. by mouth. In July, 1943, the patient was readmitted complaining of intense pain in the left calf and shoulder, of sudden onset 2 days before. The temperature was 104° F., the pulse rate 130 a minute. The left calf showed a firm tender swelling, the overlying skin being reddened and hot. The left shoulder was held fixed and was tender to palpation over a wide area. One week later a similar swelling appeared over the left deltoid. The general condition improved gradually and both swellings subsided with symptomatic treatment: they were thought to be embolic in origin. In Nov., 1943, the haemoglobin level was 72% and the general condition was still improving. No alteration was detected either in the size or in the consistency of the prostate. When the patient was last seen in Jan., 1944, the haemoglobin had fallen to 58%. The condition otherwise appeared unchanged.

**Case 4.**—Aged 62; first attended hospital in May, 1940, for a course of high-voltage therapy after an incomplete prostatectomy, performed elsewhere. Section of the prostate gland showed an

adenocarcinoma. In April, 1942, a firm mass appeared in the abdomen, and a further course of high-voltage therapy was given. At this time the patient complained of back pain, but x-ray examination of spine and pelvis failed to reveal secondary deposits. By Feb., 1943, back pain was constant, and radiographs now showed early osteoplastic deposits in the vertebrae. The general condition was fair, with a normal blood picture. A hard fixed residual mass was present in the prostatic bed. Frequency of micturition was pronounced. The initial acid phosphatase value was 5.3 units. A total of 315 mg. of stilboestrol was given by intramuscular injection in 14 days, and thereafter 5 mg. t.i.d. by mouth. After one month back pain had lessened, and there appeared to be some improvement in diurnal frequency. The local findings remained unchanged throughout. The patient returned to light work, but after 9 months back pain recurred, and x-ray examination of the lumbar spine and pelvis showed the secondary deposits to have increased in number and size in all areas. When last heard of he had been admitted to a local hospital on account of retention of urine.

**Case 5.**—Aged 70; first seen in Nov., 1942. Suprapubic cystostomy has been performed one month previously on account of acute retention. The general condition was fairly good. Haemoglobin values and blood picture were normal. The prostate was hard and moderately enlarged, with an ill-defined margin on the right. There were firm enlarged lymph nodes in both groins, with oedema of the lower limbs. Biopsy of the prostate showed an adenocarcinoma. X-ray examination of pelvis and spine revealed advanced osteitis deformans but no definite evidence of secondary deposits. The initial phosphatase values were: acid phosphatase 37 units, alkaline phosphatase 25 units. A total of 34 mg. of stilboestrol was given by intramuscular injection in 28 days, and thereafter 1 mg. t.i.d. by mouth. No change was detected in this case for 4 months, when some urine was passed per urethram (for the first time since the beginning of treatment). The prostate was slightly smaller and softer, but the change was not marked. At the end of 6 months the inguinal nodes were smaller. One year after the beginning of treatment this condition was maintained.

**Case 6.**—Aged 60; when first seen in April, 1941, complained of frequency of micturition. The general condition was good, with haemoglobin level and blood picture normal. Rectal examination showed a prostate of normal size, although possibly firmer than is usual, and with a suggestion of ill-defined borders. X-ray examination of the pelvis suggested secondary deposits. Diagnosis at this time was uncertain. In Sept., 1941, a biopsy of the prostate showed a columnar-cell adenocarcinoma. The plasma acid phosphatase was 17 units. The condition remained stationary for some 18 months under treatment with triphenylchloroethylene (see Haddow *et al.*, 1944), when generalized pain in the chest developed. X-ray examination showed multiple osteoplastic deposits in ribs, spine, pelvis, humeri, and femora. Stilboestrol was first given in March, 1943, in doses of 5 mg. t.i.d. orally. This was later reduced to 10 mg. daily. In 2 months pain in the chest was much less troublesome, and has remained so. The prostate has gradually become softer and smaller, although there is still lack of definition of the right lateral border.

**Case 7.**—Aged 71; when first seen in Jan., 1943, complained of backache for 4 months and frequency and slowing of the urinary stream for 2 months. The general condition was good. A hard nodular mass continuous with the right lobe of the prostate was detected by rectal examination. A freely mobile firm lymph node was present in the left groin and was excised. Section showed a highly cellular carcinoma, the appearances being consistent with a metastatic deposit from a primary prostatic carcinoma. X-ray examination of the pelvis revealed osteitis deformans but no secondary deposits. The initial acid phosphatase level was 2 units. A total of 117 mg. of stilboestrol was given intramuscularly in 4 weeks. After 2 weeks slight regression of the prostatic tumour was thought to have taken place. Backache had disappeared in 1 month. No further observations could be made, as the patient died at his home 2 months after treatment began.

**Case 8.**—Aged 37; first seen in Aug., 1942, when he complained of frequency and incontinence of urine for 5 months and intermittent haematuria for 5 weeks. The general condition was fair. The prostate was enlarged and hard. A clinical diagnosis of carcinoma of the prostate was made and a course of high-voltage therapy given in Aug. and Sept., 1942. In Feb., 1943, the patient was readmitted complaining of diarrhoea and anorexia. The general condition was now poor. A large and indurated prostate projected into the rectum, causing partial occlusion and spreading laterally into the pelvis. The lower abdomen was filled by a hard mass. Punch biopsy of the prostate showed a well-differentiated carcinoma. X-ray examination of the pelvis revealed no secondary deposits. The plasma acid phosphatase value was 1.3 units. A total of 450 mg. of stilboestrol was given by intramuscular injection in 4 weeks. Within 12 days there was a slight palpable decrease in the size of the prostate, but apart from this the general condition deteriorated rapidly. The patient died 2 weeks later. Necropsy was not performed.

Case 9.—Aged 77; first seen in Dec., 1942, complaining of frequency of micturition and haematuria. The general condition was good. The prostate was indurated, with extension to the right pelvic wall. X-ray examination of the pelvis showed no abnormality. A course of high-voltage therapy was given in Jan., 1943. By July, 1943, the prostate was still hard and fixed and enlarged to the right. The plasma phosphatase values were: acid phosphatase 2.9 units, alkaline phosphatase 5.5 units. Stilboestrol dipropionate was administered from the end of July, 1943, in doses of 5 mg. daily by mouth. After one month frequency was less, but no change was observed on rectal examination. This was the condition when the patient was last seen in March, 1944.

Case 10.—Aged 61; first seen in Sept., 1942. A suprapubic cystostomy had been performed elsewhere 20 months previously. The general condition was good. On rectal palpation the prostate was found to be enlarged and extremely hard. A clinical diagnosis of carcinoma of the prostate was made, and a course of high-voltage therapy given in Nov. and Dec., 1942. X-ray examination of the pelvis was normal. By Aug., 1943, there was little change in the size and consistency of the prostate. Radiographs showed an abnormal opacity in the left ischium, but plasma phosphatase values were: acid phosphatase 1.2 units, alkaline phosphatase 3 units. Stilboestrol was given in doses of 5 mg. b.d. orally. On re-examination at monthly intervals the condition remained unchanged.

### Discussion of Clinical Results

Palpable changes in the prostate were not produced in all cases. In Cases 1 and 2, in which the original condition was that of an enlarged hard nodular gland, both softening and shrinkage took place, the changes being well marked. The same type of alteration occurred in Cases 5 and 6, but to a less striking degree. No change whatever took place in Case 8—in which the disease rapidly proved fatal—and the findings were equivocal in Case 7. The remaining patients (Cases 3, 4, 9, and 10) had all been treated by high-voltage therapy previously, and in them no definite alteration in the prostate was detected. Hence of the 10 cases only 4 have so far shown definite regression of the primary tumour.

Palpable lymphatic spread was present in 3 of the series (Cases 1, 4, and 5), in each instance with an attendant swelling of the lower limbs. In all three cases a regression of the secondary masses took place, together with a reduction in the oedema.

Metastases to bone, in all 5 cases in which they occurred, were of the osteoplastic type. The appearance of radiographs taken at three-monthly intervals showed in some cases a progressive increase in density, while in others the deposits seemed to become more numerous during treatment, or increased in size.

Pain referable to bone occurred as a symptom in 4 of the series. In 3 cases it was a presenting symptom, while in the fourth it arose after the patient had been attending hospital for 2 years but before there was radiographic evidence of skeletal deposits. It was noted that some amelioration of such pain occurred in hospital with rest alone. Final assessment of the influence of stilboestrol on such pain is therefore best made when the patient returns to his normal routine. These four cases all secured a partial or complete relief from pain, and this has so far been maintained in three of them.

With the exception of Case 8 all showed some measure of betterment in general condition. This revealed itself in an improvement in appetite, a gain in weight, and, in the two cases with severe anaemia, by a gradual increase in haemoglobin. At the onset of treatment the haemoglobin values were 46% in Case 2 and 37% in Case 3. It required between 5 and 6 months for the haemoglobin values to reach 78% and 72% respectively. As each patient was given ferrous sulphate during the earlier period of his treatment the part played by stilboestrol in bringing about this improvement is not known.

Of all the symptoms associated with carcinoma of the prostate, frequency of micturition is likely to be the most uncertain in its response to any form of therapy. Even if a shrinking and softening of the prostate takes place, the extent to which micturition returns to normal must depend finally upon the degree of secondary changes in the bladder. Clearly it is only rarely that these changes will be so slight as to allow of a return to normal function. On the whole there appeared to be some measure of improvement in all the cases in which frequency was a symptom.

### Summary

Details are provided of the method employed for estimation of acid phosphatase, and of the values obtained for plasma acid and alkaline phosphatase in various clinical conditions and in normal controls, and for acid phosphatase in seminal fluid. Two specimens of seminal fluid from a case of eunuchoidism contained relatively negligible amounts of acid phosphatase.

Of 10 cases of prostatic carcinoma, 6 showed a raised acid phosphatase content in the plasma: in 5 of these there was radiographic evidence of metastases in bone. Several of the results do not show any marked distinction between prostatic carcinoma with metastases and Paget's disease.

The behaviour of the plasma phosphatases, in cases of carcinoma of the prostate in which the plasma acid phosphatase was originally raised, was followed during treatment with stilboestrol. The response shows a uniformity of pattern, the acid phosphatase falling abruptly to a normal level, which is then maintained for considerable periods, with a rise in alkaline phosphatase followed by a gradual fall.

Of 10 cases of carcinoma of the prostate 4 showed some degree of regression of the primary tumour under treatment with stilboestrol, and secondary deposits in lymph nodes underwent regression in 3 cases. X-ray examination at 3-monthly intervals in those cases with metastasis to bone revealed in some a progressive increase in density, while in others the deposits became more numerous during treatment or increased in size.

With one exception all cases showed some measure of symptomatic and general improvement, in relief from pain, lessening of frequency of micturition, or gradual increase in haemoglobin level, and in improvement in appetite and gain in weight.

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## MEDICAL EXPERIENCES IN NORTH AFRICA, 1943-4\*

BY

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At the time of El Alamein the hospital sick rates, largely due to infective hepatitis, were at least as high as the battle casualties, and during the Sicilian campaign more men went down with malaria than from enemy action. In my experience at general hospitals in North Africa during almost exactly a year from the Tunisian fighting in March, 1943, till after the Anzio landing in 1944, hepatitis and malaria were again the two most serious medical problems. Bacillary dysentery was on the whole mild, and, though on occasion I had over 300 cases in hospital at a time, most of the men responded at once to sulphaguanidine, and were back on duty very quickly. The average stay in hospital was only ten days.

### Infective Hepatitis

Infective hepatitis was at its worst in the autumn months of 1943 and dropped rapidly with the frosts in Jan., 1944. It was a serious problem in the spring among both our own and enemy forces, and I had in hospital a number of German prisoners who had been still fighting while suffering from jaundice. During Oct., Nov., and Dec., 1943, there passed

\* A lecture read to the Teheran Medical Association, June 24, 1944.

through my division of 1,100 beds well over 1,000 cases of infective hepatitis. This compared with just over 1,000 cases of respiratory diseases—mainly "coughs and colds"—some 600 cases of malaria, and an almost equal number of cases of dysentery. During the same period some 300 skin cases were admitted, and nearly 250 cases of faucial and skin diphtheria. These figures, of course, give only an idea of the work done at my own particular hospital near Algiers. Among all the cases of infective hepatitis there was not a single death. Though it was possible to discharge many from hospital, often after only 15 days, even while the skin was still yellow, in most cases the illness lasted considerably longer; at the same time, only two or three were really critically ill, and none required invaliding home.

The *prodromal period* was variable, the average time elapsing between the onset of symptoms and the appearance of jaundice being 5½ days. In some cases, however, this period was as long as three to four weeks, the longest occurring in a case in which the first signs of jaundice took 42 days to appear. A number of cases never showed jaundice at all, and these are perhaps the most interesting and the most important. We were able to make an almost certain diagnosis of hepatitis without jaundice in over 30 cases, and I have no doubt that many mild abortive cases occurred and remained unrecognized. The clinical picture is, however, often highly characteristic, with pyrexia, nausea, vomiting, constipation, and extreme anorexia, so that in an epidemic the suspicion of hepatitis should be at once aroused, though in such cases proof of the diagnosis may be impossible. Hepatitis without jaundice may well be a major cause of the spread of the disease, and some observers have made the guess that for every case with jaundice there is at least one without. When jaundice does develop, its appearance is often coincident with great general improvement in the symptoms, and if the serum bilirubin is estimated daily a rapid fall is usually found soon after, followed then by a much more gradual drop to normal levels.

Infective hepatitis is, at its onset, one of the important causes of "P.U.O."—sometimes resembling malaria, sometimes like typhoid, or sometimes with severe headache, rigors, and intense vomiting, even suggesting a meningitis. Just under 10% of my cases began with severe coryzal symptoms, and this mode of onset is recorded as occurring in over 30% of cases in other epidemics.

In some cases the fever may be only slight, but in others it is severe. Constipation occurred in 70% of my cases, while diarrhoea was present at the onset in 8%. It was an interesting observation, which may be of no significance at all, that several patients recorded attacks of severe and unexplained abdominal pain with vomiting lasting for one to two days, occurring almost exactly four weeks before the onset of their illness. Itching of the skin was very rare, but urticarial rashes occurred at the onset in four cases.

I can give no good indication as to the mode of infection. Though hepatitis is to some extent a wartime disease, there is not yet any clear proof of its mode of transmission. I have no doubt that droplet infection does not account for the whole story. In our hospital, where over 1,500 cases were nursed, the incidence among the staff of the medical division was nil. The only members of the unit as a whole (about 300 in number) who contracted the disease were the theatre sister, one of the surgeons, two surgical medical officers, two operating-room assistants, three clerks, and four orderlies working in the surgical wards. I could not help having a suspicion that actual contact with blood had some causal relationship in these cases, and the transmission of hepatitis by blood transmission, as well as by infected syringes, would suggest this as a possibility.

Many interesting tests have shown that the virus of infective hepatitis in blood is able to survive most simple measures of disinfection, and that nothing short of careful boiling of syringes, for example, is effective in preventing possible transmission by such procedures as intravenous therapy. Here traces of blood drawn into the syringe at a first injection may subsequently be injected with the next and thus infect the patient. This accounts for at least some of the cases of "arsenical" jaundice in syphilitics, in which the cause is not in fact the arsenic but the virus given with it. In some clinics

with imperfect sterilization the incidence of jaundice has been as high as 40 to 50%, and in these cases the incubation period has seemed to be about 100 days; a similar period has been suggested from a study of cases of jaundice following serial blood-sedimentation-rate tests.

*Inoculation* of animals and human volunteers has not yet given conclusive results. Canaries, pigs, and other animals have been tried without success, but suggestive experiments in man have indicated that blood, duodenal juice, and faeces probably contain the virus up to some time after the appearance of jaundice. It has, of course, been the hepatitis virus in the serum—either given for treatment or used for the preparation of vaccines—which has been responsible for the occurrence of jaundice following inoculations of convalescent serum for measles and mumps and of yellow fever vaccine, after which over 28,000 cases occurred in the American Army in 1942; here again the incubation period varied between 40 and 150 days.

Among my own cases the *incubation period*, so far as I can judge, seemed to be from 21 to 28 days, though others have thought it to be as long as 6 to 12 weeks.

In one interesting incident two officers admitted to my division under Major Keele, R.A.M.C., had escaped from a P.O.W. camp in Italy, and had wandered for several weeks in the countryside, keeping hidden and avoiding all contacts with human beings, barely even meeting or speaking to a soul. Their only real contact during this time had been on Nov. 10, when they were joined for one night by a partisan who was feeling ill and for warmth slept between them in a barn. They noticed that he looked a little yellow when he left them in the morning, and exactly 22 and 23 days later respectively the two officers went sick with infective hepatitis.

There is no definite proof yet of *transmission* by faeces-contaminated food or water, or of any insect vector, and flies, fleas, and bed-bugs have not yet been incriminated. Officers in general show a higher incidence of hepatitis than do other ranks—this was so in my cases—and it has been suggested that this is because officers' mess kitchens have more flies than anywhere else, though not, I think, that officers have more bed-bugs than other ranks!

*Treatment*.—Though I feel confident that it will not be very long before the mode of transmission of infective hepatitis is demonstrated and that prevention may then soon follow, I am more doubtful how far successful treatment of the established disease is likely to result. Up to now the hoped-for benefits from the administration of cystine, methionine, casein digests, choline, or other amino-acids have not developed, though at least it seems certain that adequate protein, as well as carbohydrate is important during and after the illness. Restriction of diet may be necessary symptomatically owing to anorexia and nausea, but as soon as possible full allowance of all constituents in the diet, including protein and fats, is, in my opinion, advisable.

### Malaria

Nothing surprised me more about malaria in North Africa than its difference from malaria in West Africa. In North Africa we saw both benign tertian and malignant tertian. There were many relapse cases—some severe, persistent, and resistant to treatment—but in over 1,000 patients admitted to my division there was not a single death. This was certainly better than in West Africa, where I had one death from cerebral malaria and one from blackwater fever in roughly the same number of cases, but for clinical severity the M.T. malaria of North Africa was unquestionably the more alarming. In North Africa the condition was more polysymptomatic, the need for treatment more urgent, and the response often less satisfactory; here intravenous quinine injections became a frequent and almost usual procedure, while in West Africa it was rare. During the malaria season over 1,000 injections were given in my hospital with only minor symptoms on two or three occasions. This timely intravenous quinine no doubt saved many lives among desperate cases, even though a considerable number would almost certainly have recovered with oral treatment alone. Of the many well-known and important lessons about malaria—often learnt, perhaps, at a price—these were some that we learnt once more in North Africa.

1. In a malarious country headache is not to be regarded as due to psychoneurosis until malaria has been excluded.



2. Malaria with low fever may be more dangerous than with high, because it is more easily missed.

3. To wait for a positive blood slide or a palpable spleen costs more lives than to treat a suspicious case on an unproved diagnosis.

4. The exact date of onset of malaria is not the same thing as the date of admission to a medical unit where a man lives may be much more important than what he does.

5. To transfer a case of active malaria without treatment and without full precautions for continuation of treatment is a medical crime.

6. Other diseases do not exclude malaria, and malaria, especially relapsing malaria, has often some complicating disease.

7. Diarrhoea with blood and fever is not always due to dysentery, jaundice with fever is not always infective hepatitis, malaria may mimic both. Asthma, fibrositis, neuritis, urticaria, and nephritis are only some of the less well recognized conditions that malaria may cause, while it may simulate at least a dozen others.

### Diphtheria

Both in the Middle East and in North Africa, faucial, nasal, and cutaneous diphtheria were important causes of sickness, prolonged stay in hospital, serious complications, and deaths.

The diagnosis of faucial diphtheria was, as always, easily missed, and a number of cases appeared clinically to be merely simple quinsy or tonsillitis with no definite membrane that could be seen. Among my own unselected cases the incidence of complications was low—only 5%, out of 35 cases with complications 16 showed peripheral neuritis, the average time of onset being 64 weeks from the time of the sore throat. One faucial case ended fatally, this in spite of receiving 216,000 units of serum within the first three days of the infection. The average dose of serum used in throat cases was 85,000 units, but the complicated cases, on analysis, were found to have had serum considerably later in the disease than the uncomplicated. Massive dosage seemed in these cases to be undoubtedly less important than early dosage—at least in preventing complications. One fifth of all the cases showing complications received no serum at all, and among uncomplicated cases 56% received serum within the first two days of their illness, as compared with only 29% among the complicated cases.

Cutaneous diphtheria is a most interesting and important condition. In my own cases it was not always possible, for various reasons, to distinguish between skin lesions infected with avirulent organisms and those infected with true *C. diphtheriae*. An analysis of over 76 lesions from which organisms morphologically resembling *C. diphtheriae* were cultured gives some interesting findings. Only a few of the lesions show characteristic features; they may be in the form of ulcers, superficial weeping or crusting "dermatitis," or purulent infections of wounds, abrasions, burns, or superficial injuries. They all show a notable chronicity and failure to heal, the average duration of the cases before diagnosis was 50 days and the average stay in hospital before healing 35 days. Of the lesions 40% were on the legs, 25% on face or ears, only 10% on hands or arms, and the remaining 25% either generalized over the body or on isolated parts such as scrotum, groin, or buttock. The lesions were frequently multiple, in one case as many as 31 separate ulcers, varying in size from 1 in to 3 10 in diameter, being present all over the body.

Diphtheritic ulceration sometimes shows a black crust or slough which leaves a bleeding surface if removed, and these cases often clear up rapidly and completely after injection of quite small doses of serum such as 24,000 units. The chronic desert sores so common in the Middle East and North Africa are more common on hands and arms, and rarely show the dark crusting of diphtheritic ulceration, seborrhoeic or eczematous lesions present few characteristic signs when infected with *C. diphtheriae*.

Complications—In 12 of my cases there was coincident infection of skin and of the throat or nose, and in 9 of these the skin infection definitely preceded that of the throat or nose. Auto-infection from "hand to mouth" thus appeared to be a frequent occurrence, arising in approximately 10% of the cases, though the reverse process—from nose or throat to skin—also of course, occur. The virulence of the organisms could not always be tested, but infection of ward personnel is an appreciable risk, one sister and one orderly in the skin

wards contracting faucial and the medical officer in charge contracting a cutaneous diphtheria. The incidence of complications, too, is not low—probably due, in part, to the long time-interval often elapsing between infection and recognition of the organism. Five proved cases showed complications, 2 patients died, and 19 cases of polyneuritis were almost certainly due to skin diphtheria, though they were not proved bacteriologically. These cases were, however, too selected to afford an accurate estimate of the percentage incidence of complications, which probably lay between 5% and 10% of all cases.

The lesions associated with complications were in the main large, and involved soft tissues, both deaths occurred in patients with extensive infection in regions with considerable areolar tissue—buttock and neck. In the first of these, infection apparently arose spontaneously as a boil on the buttock, which rapidly developed into an abscess and was incised. No suspicion of diphtheritic infection was aroused and, of course, no serum was given. The patient was first seen on the 34th day of the lesion, when a marked triple rhythm was heard at the apex of the heart and the pulse rate was persistently rapid—100 to 120, I at once suspected a diphtheritic myocarditis, and cultures of the abscess showed *C. diphtheriae*. On the 36th day diplopia developed, and 12 days later a palatal palsy and peripheral neuritis of arms and legs. Death occurred on the 60th day, post mortem examination showing an intense toxic degeneration of the heart muscle. The second patient showed similar changes at necropsy, death occurring on the 43rd day of illness. In this case a long-standing seborrhoeic dermatitis was secondarily infected with *C. diphtheriae*, and an extensive brawny cellulitis of the neck developed, from which the organisms were cultured.

Severe polyneuritis following chronic cutaneous ulceration was often seen, though some cases showed only paraesthesiae, loss of reflexes, and very slight weakness. In most cases the polyneuritic symptoms began between 6 and 10 weeks after the skin lesions were noticed, a typical case history is as follows.

*Pre M*, aged 37. Whitlow on right toe noticed Nov 18, incised Nov 22. Small ulcer formed with black adherent slough—resistant to treatment. Dec 18. Ulcer swab showed *C. diphtheriae*, 32,000 units antidiphtheritic serum given Jan 1. Ulcer healed Jan 20. Blurring of vision followed 32,000 units given Jan 28. Paraesthesiae of hands and legs noticed Feb 20. Gross paralysis of both legs, with loss of reflexes, arms weak, marked loss of sensation. Heart good. Skin lesions healed. Routine throat and nose swabs negative for *C. diphtheriae* throughout.

### Peripheral Neuritis

Peripheral neuritis occurred relatively often in North Africa, either as a symmetrical polyneuritis or as isolated individual lesions, such as winged scapula, foot drop, or a brachial neuritis. Many cases undoubtedly followed skin diphtheria. Some seemed to be due to malaria or dysentery, in others treatment with such drugs as emetine possibly played a part. Cases of sudden acute infective polyneuritis also occurred, often resembling poliomyelitis, but with gross sensory changes. This disease was also seen in the war of 1914–18. In North Africa it began with severe backache, headache, and fever, weakness and sensory loss in the limbs, both proximal and distal, appeared within a few days or a week. It is interesting that German writers (Wilke, 1944) report a high incidence of polyneuritis among their troops on the Russian front, similarly involving muscles such as serratus, deltoid, or quadriceps, as well as peripheral types, and attribute the conditions almost entirely to infection with the Flexner or Shiga-Kruse bacillus. Though this is certainly a cause in some cases, it is doubtful whether it is quite as frequent as they maintain.

### Immersion Foot

Most of the men coming to my hospital for trench or immersion foot had not had their boots off for over 10 days, having been forced, as at the Sangro River, to remain almost stationary in mud and rain for many days owing to constant shelling.

In immersion foot the initial signs are of coldness of the foot and leg, followed by hyperaemia and severe oedema, with loss of most forms of skin sensation. It is vital not to provoke



hyperaemia by warming the leg up in any way; the worst cases occurred among those who, against instructions, had put their feet by a fire as soon as they took off their boots. The damage caused by the wet and chill leads to stagnation of the circulation and then hyperaemia, with oozing of fluid from the capillaries and diminished vitality of nerves, skin, and muscle; in severe cases irreparable loss of function may result, but in the milder cases the tingling, pains, and oedema subside in one or two weeks. The hyperaemic stage may last many weeks with sometimes intense hyperaesthesia, but in most of my cases full recovery occurred within 6 weeks. In some men there had been a lifelong tendency to cold hands or feet; and in the worst cases lasting sequelae, including hyperhidrosis and extreme sensitivity to cold, may persist.

As a rule immersion for periods of many days is necessary to produce symptoms, as has been the case with numbers of men torpedoed at sea and remaining afloat for a long time in open boats; but sometimes minor degrees follow shorter periods. This occurred, for example, in the case of an officer who fell into the sea during the glider landings in Sicily and had to stand in the water hidden under a cliff for about 10 hours, after which he walked some 18 miles in a hot sun; later his feet swelled and became anaesthetic—symptoms which still persisted when I saw him 8 days later.

No specific treatment was given, but strict avoidance of any artificial heat, as by hot-water bottles, was essential, and cooling by fans has often been adopted. Careful Buerger's exercises seemed to do good.

#### Anxiety States

In the fighting in North Africa, as in other theatres, many acute anxiety states and conditions of severe physical exhaustion or terror occurred, as well as gross sensory and motor manifestations of hysteria. Few things in the future may be of more far-reaching importance than the development of personnel selection and the attempt to prevent psychological breakdowns under stress and strain. How far the art of selection of men and women may go in education, industry, or social life no one can foretell, but war psychiatry has certainly shown the way in its insistence upon the testing of a man's personality and intelligence, as well as his physique, before choosing him for any special appointment.

To me, however, it was almost more remarkable to see, not how many men broke down in battle, but how much the human mind and body were able to stand without collapse. A soldier lay under a truck with his friend while being bombed; his friend crawled half out to look around, and when, a little later, the first man pulled him back, his head had completely disappeared. Is it surprising that the survivor developed an intense hysterical blindness?

Most breakdowns at or near the battle-front occurred in the psychologically predisposed, and it should therefore be possible to some extent to detect the mentally unfit by careful selection before they get so far. War is teaching us more and more just how much we are able to select and judge in advance, and just how near the real thing methods of trial and training have got to be before we can eliminate early the psychologically unfit.

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The *Housing Manual*, 1944 (H.M. Stationery Office; 2s), which has been prepared by the Ministry of Health and the Ministry of Works and sent to all local authorities in England and Wales, gives technical guidance to local authorities, architects, builders, manufacturers, and others on the lay-out, planning, construction, and equipment of permanent houses to be built under the Government short-term housing programme covering the first two years after the end of the war in Europe. In the light of this technical guidance local authorities will now prepare their own plans. In general, the standards recommended are those proposed by the Design of Dwellings Subcommittee of the Minister of Health's Central Housing Advisory Committee (the Dudley Report). The ground covered in detail by the manual includes: Site planning and lay-out, plans of houses and flats, plans for special occupants—e.g., old people—efficiency in building, new materials and methods, services and equipment. The great majority of houses built by local authorities under the short-term programme are likely to be of the three-bedroom type.

## ANALGESIA IN LABOUR

### A RECORD OF 102 CASES TREATED WITH PETHIDINE

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It is now nearly a century since Simpson discovered the use of chloroform as an anaesthetic and advocated it as an analgesic in labour. At that time there was a public outcry against a drug being used for the relief of labour pains, and it was on one might say, by a Royal Warrant, that chloroform was accepted as an analgesic in labour. Times have changed, and there is now a growing tendency in this country for the expectant mother almost to demand that her doctor arrange that she should not feel pain during her delivery. In the United States of America this public demand has been so great that the use of analgesics in labour has been considered one of the causes of the high maternal mortality and morbidity rate from which that country suffered some years ago, as uterine contractions were interfered with to such an extent that operative deliveries were very often required. Since Simpson's advocacy of chloroform many other drugs have been tried, and up to now, though each has had its advocates, none has been found acceptable to all authorities; this is because the ideal analgesic has not yet been discovered. In 1906 Gauss, Freiburg, advocated "twilight sleep,"—with a combination of morphine and hyoscine—and, though this was widely used for a number of years, reports of its apparent bad effect on the baby came from different sources, and for this reason it fell into partial disuse. We doubt, however, if all the allegations against twilight sleep are true, for it is common knowledge that not every baby cries immediately it is delivered; but, if twilight sleep was used and the babe was a little difficult to bring round after birth, this was immediately attributed to the analgesic. Series of cases have been reported from Edinburgh (Johnstone, 1917; Haultain, 1920-1; Greenwood and Hirschman, 1922) and elsewhere (*Proc. roy. Soc. Med.*, 1918) of excellent results with twilight sleep in the accomplishment of amnesia and analgesia without any really bad effect on the baby. As with many other treatments, there is a right and many a wrong way of administration, and if the correct rules as formulated by Gauss are observed, then the results, in our opinion, are good, whereas if they are departed from accidents may occur, and with twilight sleep it is the baby who may suffer. There is little doubt that if twilight sleep is employed properly it is a most useful and safe analgesic in the long tedious labour.

Nearly 20 years after Gauss's discovery Gwathmey (Gwathmey *et al.*, 1923) described his synergistic method, but though it has its advocates it has never found much favour in this country. In 1924 a barbiturate—somniafene (Cleisz, 1924)—was first tried in labour as an analgesic, and since that time a large number of derivatives of barbituric acid have been used, especially in the United States of America (Gould and Hirst, 1935), and each separate hospital and clinic which was visited there in 1939 seemed to be enthusiastic over its own special barbiturate, or combination; but this enthusiasm was usually confined to its sponsors, and was not shared by other hospitals.

#### Conditions for the Ideal Analgesic

A most comprehensive treatise on the relief of pain in labour was read before the eleventh British Congress of Obstetrics and Gynaecology by Sturrock (1939), showing, as well as does this short preamble, that the ideal analgesic in labour has still to make its appearance. That being so, one is always on the look out for any new preparation that might fulfil the conditions essential for the ideal analgesic. These conditions might be summarized as follows:

1. That the analgesic does not endanger the life of the mother or have any harmful effect upon her.
2. That it does not harm the child.

3. That the strength of the uterine pains are not diminished by administration and that labour is not delayed by its use.
4. That there is no effect on the expected co-operation of the patient in the second stage of labour, and that operative intervention is not increased by its use.
5. That the third stage of labour is not prolonged after its use, or is there any undue tendency to post-partum haemorrhage.
6. That the analgesic is easy to give and that no risks are associated with its administration.
7. That the analgesic is always successful in its action.

This standard is indeed a high one, but the perfect analgesic could fulfil all these conditions.

It was with great interest, therefore, that we learnt that a new analgesic had been discovered in 1939—namely, pethidine hydrochloride—and that it was found by various scientific workers to have an analgesic effect comparable to morphine and also to have a spasmolytic and sedative effect as well. On account of these properties there seemed to be a good chance that this analgesic might prove to be of great value during labour and might even approach the ideal. It was thus with some gratification that we were afforded liberal supplies of ethidine hydrochloride with which to carry out a preliminary investigation on its action in labour.

It would be superfluous to go into the chemistry and pharmacology of pethidine, as this has already been done adequately by Gallen and Prescott (1944), who also published their results in a series of 150 obstetrical cases; and Spitzer (1944) recorded results in a series of 80 cases, the drug being given entirely by mouth in his series, whereas it was administered chiefly intramuscularly in the former. Previous to this, several observers in America (Gilbert and Dixon, 1943; Roby and Schumann, 1943; Schumann, 1944) had reported promising results of its analgesic action in labour; but as it is only by means of different series of results published by several observers that the full value of a drug can be assessed, we make no apology for adding a further account of the use of ethidine in 102 cases in which it was given intramuscularly during labour.

In this series 91 of the women were primigravidae and 11 multiparae, all having been admitted under our charge during period of eight months; each was observed carefully by one of us, who made notes regarding the strength of the pains and the dilatation of the cervix, and decided when pethidine injections should be started and when further doses were required. After labour each case was assessed not only by a consideration of the observations made but also by conversation with the patient, so as to discover her evaluation and appreciation of the drug.

#### Dosage of Pethidine Hydrochloride

The first dose of 100 mg. was usually given intramuscularly when the os was 3 to 4 fingers dilated and the pains were coming on about every four to five minutes. The second dose of 100 mg., when required, was given 45 to 60 minutes later. In all, 44 cases received no injection and 40 two injections. A third injection of 100 mg. was necessary two hours later in 10 cases, and a fourth after another two hours in 2 cases. Pethidine was combined with hyoscine—r. 1/150 with the first injection and gr. 1/450 with each succeeding injection in 6 cases.

#### Effect on the Mother

Of the primiparous patients 66 had normal spontaneous labours, whereas 22 babies were delivered by forceps and 4 by the breech (Table I). This would seem to be a high forceps rate (21.6%), but can be explained by the fact that the patients were primigravidae, and also that the hospital where the investigation was carried out

TABLE I.—Deliveries

Primiparae (91)			Multiparae (11)		
Spont.	Forceps	Breech	Spont.	Forceps	Breech
66	22*	4*	10	1	Nil

\* One patient was delivered of twins.

takes practically all the emergency and difficult cases from the vicinity, and therefore the average forceps rate for all cases is always inclined to be high (13.6% for 1941). Among these 22 cases the forceps were indicated for occipito-posterior positions in 9 cases, or contracted pelvis in 3 cases, and for deep transverse arrest of

the head in 1 case. In 4 cases forceps were applied to lift the head over the perineum, and in 5 for maternal or foetal distress. Among the multiparae 10 had normal deliveries and 1 was delivered by forceps for an occipito-posterior position.

In only 2 cases did the mother present any abnormality after delivery; 1 had a slight post-partum haemorrhage, and 1 suffered from marked tachycardia, which came on 30 minutes after labour and lasted for several hours. The latter patient had 4 doses of pethidine, the final dose being given 4½ hours before a difficult forceps delivery for an occipito-posterior position. There was no maternal mortality, and none of the patients suffered any toxic effects from the injections either during labour or subsequently. Thus it can be stated that, from this series, conditions 1 and 5 for an ideal analgesic, mentioned above, have been fulfilled, but that the fulfilment of condition 4 is doubtful.

#### Effect on Child

As regards the effect on the infant, there were no stillbirths in the 103 babies born (Table II). In only 4 cases was there any marked asphyxia; in two of them the asphyxia could be accounted for by a difficult forceps delivery, in one to eclampsia and a forceps delivery, and in another to the cord being held tightly round the baby's neck; all these babies responded to treatment and survived without giving any further cause for anxiety. In 22 cases the child did not cry immediately on delivery but responded in a few minutes; in only 8 of these cases was there no other possible reason found for the slight oligopnoea. None of these babies gave any cause for anxiety at birth or later. Thus it can be stated quite definitely from this series of cases, which includes many complications that might have caused asphyxia and possibly stillbirth, that pethidine had no deleterious effect on the infant; condition 2 was therefore fulfilled.

TABLE II.—Effect on Babies

Cried on Delivery	Sl. Oligo;pnoea	Asphyxia	Total	Mortality
77 (1 set of twins)	22	4	103	Nil

#### Effect on Labour Pains

With regard to its effect on labour pains, the administration of pethidine would seem definitely to have hastened delivery in 33 cases (Table III), the average time from the first dose to delivery in these

TABLE III.—Acceleration of Labour (33 Cases)

Primiparae . . . . . 25	Multiparae . . . . . 8
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being 2.6 hours. The clinical explanation for this effect seemed to be, that the "edge" was taken off the pains, thus allowing them to be more effective and the patient to co-operate more easily in the second stage of labour; these were the statements that we obtained from interrogation of many of the patients, given quite on their own initiative without any prompting or suggestions by us. To these views of the patients themselves might be added another—namely, that the injections seemed in many cases to relieve spasm of the cervix and to enhance uterine polarity. The cervix therefore dilated more easily and the uterine contractions seemed to be accentuated, but were not so painful. On the other hand, the pains stopped in 9 cases, and in some of these did not return for several hours, the patient having apparently gone completely out of labour, even when she had evidently been in good labour previously. This was probably due to pethidine being given before the os was dilated sufficiently (2 to 3 fingers), but it is interesting to note as well that 6 out of the 9 cases had some abnormality present: 1 was a breech, 2 were occipito-posterior positions, 2 had contracted pelvis, and 1 was a case of twins. Therefore there might have been some disharmony of uterine action, as tends to happen in such cases. On the other hand, such abnormalities occurred in successful cases when pethidine was given with the cervix slightly more dilated, and the uterine contractions were not interfered with in any way. In a few cases uterine contractions did not seem to be affected by the drug, although in most there was some improvement in the efficacy of uterine action. Thus condition 3 is not invariably fulfilled, although it usually is, especially when no abnormality is present.

#### Analgesic Effect

The analgesic effect of pethidine was assessed under four separate headings:

(i) *Good*.—The result was considered good if pain was relieved, the contractions regular and efficient, dilatation of the cervix quick, and the patient rested well (usually slept) between the pains. (Amnesia was not an expected result with pethidine alone, and though it was obtained in some cases it was not considered as an essential to be achieved.)

(ii) *Satisfactory*.—The analgesia was considered satisfactory if the strength of the contractions was not interfered with, the cervix

dilated normally, and the patient rested well between pains which were bearable.

(iii) *Poor*.—Analgesia was considered poor when only slight analgesia was obtained and there was little rest between pains.

(iv) *Unsatisfactory*.—The result was considered to be unsatisfactory when the drug gave no benefit at all or caused the uterine contractions to cease.

Under these headings (Table IV) 47 results were considered to be good, 33 satisfactory, 11 poor, and 11 unsatisfactory. Thus 78.4% were definitely benefited by pethidine, and in 46.1% the result achieved was really good. Of the 47 cases classed as "good," 41 had spontaneous deliveries, 4 had occipito-posterior positions, 1 was a breech, and 1 a face presentation; only 4 of these patients required forceps. Among the 33 "satisfactory" cases 22 were spontaneous, 6 had occipito-posterior positions; 1 was a breech presentation; 1 had eclampsia; 1 had a contracted pelvis, and there was one set of twins; forceps were used in 10 cases. Among the 11 "poor" cases 8 were spontaneous, 1 had an occipito-posterior position, and 3 were delivered by the forceps. In the "unsatisfactory" cases, as previously detailed, 6 were normal.

TABLE IV.—Analgesic Effect on Mother

	Cases	Prim.	Mult.	Spont.	Abnormal
Good .. ..	47	40	7	42	5
Satisfactory ..	33	30	3	22	11
Poor .. ..	11	11	0	8	3
Unsatisfactory ..	11	10	1	5	6

### Dosage Required

With regard to dosage the figures in Table V would seem to show that one injection of pethidine is very often sufficient to produce a good result, but if it does not then a second injection, given about an hour later, is usually all that is required. Of the "good" and "satisfactory" cases 72 required only two injections at the most; on the other hand, in cases in which, for some reason or other, labour is slow, the effect may be continued by third and fourth injections.

TABLE V.—Number of Injections Given

	Good				Satisfactory				Poor				Unsatisfactory			
No. of Injections	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Cases .. ..	20	21	3	—	17	13	3	1	3	6	1	1	1	6	4	—

### Hyoscine and Pethidine Combination

Of the six cases which received hyoscine in addition, to try to produce a degree of amnesia as well as analgesia, two were classed as "good," one as "satisfactory," one as "poor," and two as "unsatisfactory." These cases were treated fairly early in the investigation, and as very little benefit seemed to result from the addition of hyoscine its use was not continued. Possibly, however, we were wrong in not giving hyoscine a more extended trial, as, theoretically, the addition of hyoscine should increase the benefit, and, as will be shown later, pethidine and hyoscine together would seem to be very efficacious in producing amnesia for Caesarean section performed under local anaesthesia.

### General Conclusions

Summing up the facts obtained from the treatment of these 102 patients with pethidine, we can state that the ideal analgesic drug for labour has not yet been found, but that pethidine fulfils the conditions quoted comparatively well. It has apparently no harmful effect on either mother or child; there is no tendency to produce post-partum haemorrhage; and it usually does not retard uterine contractions—in fact, in one-third of the cases it seemed to enhance uterine action appreciably. It is not always successful in producing analgesia, but it did so in enough cases (78.4%) to make it a valuable drug to use in labour. Its administration involves no difficult routine, any slight deviation from which might be dangerous, as is so definitely the case with twilight sleep. It is possible that the forceps rate is slightly increased by its use.

In comparison with twilight sleep, analgesia is obtained in approximately the same number of cases as those quoted by observers of that form of treatment, but twilight sleep has the advantage in that it produces amnesia as well in a larger proportion of cases; the forceps rate is, however, higher with twilight sleep owing to the fact that the co-operation of the patient in the second stage of labour is not so satisfactory as with pethidine.

There is apparently no undue excitability under pethidine, such as may occur with twilight sleep or the barbiturates.

### Premedication with Pethidine and Hyoscine

For a number of years one of us (W. F. T. H.) has been trying to find a really efficient drug or combination of drugs to employ in the premedication of a patient before carrying out a Caesarean section under local anaesthesia. Caesarean sections under local anaesthesia are associated with less risk than under a general anaesthetic, and for women suffering from cardiac lesions, pre-eclampsia, chest conditions, etc., it is certainly the ideal method. Under local anaesthesia the operation is as a rule most satisfactory provided the woman receives adequate premedication; but often patients awaiting a Caesarean section are very alert, being unduly excitable because of the immediate prospect of having a baby, and even strong doses of hypnotics and sedatives have not the usual effect. Premedication with morphine and hyoscine in the accepted dosage before an operation under local or spinal anaesthesia is contraindicated, as such a dose may have a bad effect on the baby, making it difficult to resuscitate, and in some cases might cause stillbirth. We considered, therefore, that pethidine and hyoscine should be given a trial in such cases, and up to now we have used it in 6 cases, with excellent results. 100 mg. of pethidine and 1/150 gr. of hyoscine are injected 45 minutes before the operation, and just before the patient is taken into the theatre she is given another 100 mg. of pethidine and 1/450 gr. of hyoscine. In all cases this premedication has acted well and analgesia and amnesia were perfect, the patient usually sleeping throughout the operation and remembering nothing about it when she woke up. In each case the baby cried as soon as it was delivered, and the uterus contracted down excellently, as it always does when local anaesthesia is being used alone. These cases may be just the "fortunate first" that often occur with any new therapy, but it would seem to be worth while to give this form of premedication an extended trial in such cases.

We desire to thank Messrs. Burroughs Wellcome for the supply of pethidine, and Messrs. Bayer Products Ltd. for the supply of dolantol—the two preparations used in this investigation. We also thank Sister Anderson and Sister Mackenzie, the day and the night labour ward sisters, for their great help and co-operation.

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## SPONTANEOUS OBECTOMY

BY—

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During recent years it has become increasingly difficult to differentiate between a lung abscess and an empyema. There is no doubt that in many cases the infection is primarily in the lung tissue and only secondarily invades the pleural cavity. This has given rise to the term "pleuro-pulmonary abscess." In the following case the infection was so great that a complete upper-lobe lung slough became free in an empyema cavity.

### Case Record

A man aged 43 was admitted to the General Infirmary at Leeds on Dec. 14, 1942, under the care of Mr. P. R. Allison. He gave the following history. On Oct. 17, 1942, he was seized with a sudden acute pain in the middle of the back while at work and rapidly developed a severe cough. He became so ill that he had to be taken home and put to bed. He was febrile, and on Oct. 20 was removed to a nursing home with a diagnosis of lobar pneumonia. A course of sulphonylpyridine was given: 2 g. stat. and 1 g. four-hourly.

for 48 hours, and then 0.5 g. four-hourly for 24 hours—a total of 17 g. in 3 days. His temperature fell to normal on the second day, and on Nov. 3 he was discharged apparently cured.

The man improved for about a fortnight; then his cough returned with added severity and he brought up much foul-smelling greenish-yellow sputum. Cough was his main symptom at this time. Vomiting occurred on several occasions, and his cough became almost incessant. A noticeable feature was that the cough was made worse by movement: he was more free from the paroxysms of coughing when supine than when in an upright position. His temperature varied from 99° to 101°, and clinical examination on Dec. 8 showed that there was an effusion at the right apex. X-ray examination on Dec. 10 confirmed this. Aspiration of the right chest in the sixth interspace in the mid-axillary line produced pus which on culture gave a profuse, nearly pure growth of *B. friedländeri*. The patient was admitted as a case of post-pneumonic empyema on Dec. 14: temperature 99.6°, pulse 84, and respirations 26.

**Operation Notes.**—Premedication consisted of morphine gr. 1/4, atropine gr. 1/100, and scopolamine gr. 1/150. The skin and sub-cutaneous tissue in the right upper chest were infiltrated with 0.5% plain cocaine, and aspiration of the chest in the sixth interspace in the mid-axillary line produced pus. A portion of the sixth rib was removed and the parietal pleura was opened. A large apical cavity was entered and 45 oz. of thick green pus was withdrawn. During a violent fit of coughing a slough of the whole of the right upper lobe was expelled from the wound, being followed by a gush of foul-smelling pus. A large drainage-tube was inserted into the cavity, and the skin lightly sutured and a light dressing applied. The lung slough measured 20 by 8 by 6 cm. It had a grey ragged appearance and was pitted with small holes.

**Post-operative Progress.**—On return from the theatre the patient's general condition was good: temperature 99.6°, pulse 96, and respirations 32. Cough, which was spasmodic, was relieved with linctus heroin 2 dr. t.d.s. Drainage was profuse, and his temperature, pulse, and respirations reached normal levels on the third post-operative day. X-ray examination at this time showed that the tube was in good position and that there was no fluid level in the cavity. Satisfactory progress was maintained, and on Dec. 22 a thoracoscope was passed into the cavity. Clean pink pleura could be seen all round except on the lower and posterior part, where the dappled surface of the lower and middle lobes could be made out. The root structures were plainly visible, and at least three large bronchial openings could be seen. There was a polypoidal projection from what seemed to be the pulmonary artery, which was presumably organizing blood-clot.

Convalescence continued to be satisfactory and drainage gradually decreased. Apart from a slight morning cough the patient was now entirely free. On Jan. 23, 1945, he was allowed to get up, and on Feb. 19 was discharged from the hospital with a self-retaining catheter in position in the cavity. The tube was changed frequently, and x-ray examinations were made at intervals of about three weeks. The tube was finally removed on June 2, and the sinus rapidly closed. X-ray examination showed that there was then still a cavity at the right apex, with at least one patent bronchus at its lower end. The patient is now (June 20) quite well, free from cough and dyspnoea, is gaining weight, and has started work.

### Comment

The illness began with an attack of lobar pneumonia, which was followed by a period of recovery. This was interrupted by the appearance of excessive cough, which was productive of thick greenish-yellow sputum, with attendant symptoms of malaise and pyrexia. Cloical examination some two months later suggested an empyema, and drainage was indicated. At this time the cough was noted to be positional: the patient coughed more when he was upright than when flat in bed. The presence of *B. friedländeri* in the pus from the cavity was a rare and unexpected finding. Removal of the tube six months after drainage was started still left a cavity in the right upper zone. This cavity is draining into a patent bronchus on its lower and medial aspect. Up to now the presence of a cavity has not given rise to any symptoms. The question of an apical thoracoplasty must, however, be kept in mind, so that the cavity may be closed completely if it should again give rise to any symptoms.

### Summary

One case of spontaneous lobectomy is described. The finding of a nearly pure culture of *B. friedländeri* in the pus from an empyema is noted as a rare event.

For permission to describe this case I have to thank Mr. P. R. Allison, under whose supervision it was while in hospital.

## Medical Memoranda

### "Spinning the Occipito-posterior"

In a fairly concentrated experience of obstetric practice (hospital, consulting, and private) spread over 25 years, at least 500 cases of occipito-posterior presentation, at a very moderate estimate, must have been treated (probably many more). During this period a method of treatment, feasible in a limited number of cases only, has been thrust upon me by Nature's own ordinance rather than by any skill or genius on my own part. I have termed this method, perhaps rather fancifully, "spinning the occipito-posterior."

The method depends upon the combination of several favourable circumstances, some of which are partly under medical control. These are as follows:

1. The membranes must be intact.
2. The head must not be absolutely jammed in the lower strait.
3. There must be at least two to three fingers dilatation.
4. There must be no disproportion between the head and the pelvis.
5. The attempt should be made within 24 hours (probably) of the onset of "painful contractions of poor quality" so characteristic of occipito-posterior presentations.

In such cases the usual approved method of treatment is by analgesics and psychological control of the patient.

There is an alternative. In the course of examination, to determine position and progress, a two-finger vaginal examination should, if possible, be made. With a knowledge of "intact membranes," the head may be pushed upwards, between pains, possibly half an inch or more into the cavity of the pelvis. The result is that liquor amnii can pass down on all sides of the head, so that, for practical purposes, it again floats in the lower part of the amniotic sac. Should the pressure upwards be timed to coincide with the onset of a contraction, the head will sometimes spin completely round to occipito-anterior practically instantaneously. Retaining this position by fundal pressure and promptly rupturing the membranes and letting off liquor will lead to a reasonably rapid and normal delivery.

It is obvious that this method has a limited application, but might possibly be used much more often if the necessary conditions were looked for and the attempt made.

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### Fracture of the Neck of the Femur after Amputation

Fracture through the neck of the femur due to hyperaemic decalcification—the fatigue type of fracture—is allied architecturally to the lesion described below. A search of the literature being fruitless, it was thought worth while to record the following case both as a matter of interest and as a warning.

#### CASE RECORD

A shunter aged 43 was admitted to the orthopaedic department of Peterborough Memorial Hospital on July 24, 1943, an express train having run over his right foot, amputating it close to the ankle-joint. After resuscitation, as he was profoundly shocked, an amputation was performed 4 in. from the inner side of his knee-joint. Three weeks later he was discharged from hospital, but attended for a considerable time for stump and hip exercises. In due course he was measured for his artificial limb by one of the best makers. On Dec. 8 this arrived, and on the following day he walked over to the hospital to show me his prowess. On Dec. 11, when some miles outside Peterborough, he felt something give in his hip-joint while stepping from a high pavement to the road. As he could not move he was brought to hospital again by ambulance. Radiographs showed a typical transverse fracture and also the typical appearance of a disuse atrophy. A few days later a vitallium nail was driven across the fracture. After three months, as there was sound bony union, weight-bearing was started—this time very gradually. Now he is doing everything a modern artificial limb permits.

#### COMMENT

This case, in my opinion, is a mixture between the fatigue type of fracture and that due to disuse atrophy, the precipitating factor no doubt being the latter, the hyperaemia caused by the unaccustomed activity helping to decalcify still further the weakened bony structure. This case serves as a warning—to me, at any rate—that weight-bearing should be given in graduated doses after an amputation, and no such warning or similar cases to this has been recorded.

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## Reviews

### SYPHILOLOGY

*Essentials of Syphilology.* By Rudolph H. Kampmeier, M.D. With chapters by Alvin E. Keller, M.D., and J. Cyril Peterson, M.D. (Pp. 518; illustrated, 25s) Oxford: Blackwell Scientific Publications, Ltd.

Kampmeier's *Essentials of Syphilology* is exactly what it claims to be—a complete account of the commoner aspects of syphilis, leaving out or saying little about its rarer manifestations. As such we can say without hesitation that it is just the sort of book the average practitioner wants—and this is what gives it value, as apparently much more syphilis is treated by the general practitioner in the U.S.A. than in Great Britain. Readers will do well to study the preface, since there Dr. Kampmeier sets out his principal aims, which are to present a concept of syphilis as a systemic disease, to insist that every diagnosis of early syphilis must be verified by pathological examination, to raise the index of suspicion of syphilis, to improve methods of treatment, and to stress the need for regarding every case as part of a public health problem.

The book deals first with the biology of syphilis, examination of the patient, and therapy; then primary, secondary, latent, and late benign syphilis are followed by a consideration of the disease as it affects the various systems and organs of the body; finally, syphilis and pregnancy and congenital syphilis complete the clinical section. There follows a chapter on marriage and syphilis and a discussion of the various aspects of the disease as a public health problem, by Dr. Keller; this latter adds considerably to the value of the book, because if there is one disease more than another which should, theoretically, be capable of control by epidemiological methods it is syphilis. Only if those who see the disease in its early stages take a broad view and realize that at least two, and often many more, persons are involved in every case can the problem be tackled with any hope of success.

The subject-matter is clearly set out, there are numerous illustrations—most of which are quite first-class—and case summaries with comments which will prove helpful. Treatment of early syphilis is on the usual lines employed in the U.S.A.—i.e., alternating-continuous—but the necessity for employing adequate bismuth in the early stages is very wisely stressed; there can be no doubt that reliance on arsenic only at first has in the past been the cause of many relapses. Neoarsphenamine and mapharsen are named as arsenicals of choice without any particular preference being shown for either, and bismuth subsalicylate in oil is the routine heavy-metal preparation. Incidentally the individual doses of bismuth recommended seem to be on the small side.

If the literary standard is not as high as could be wished, and if a better knowledge of the classics would have precluded such expressions as "labium minor or majus," "condyloma accuminata (venereal warts)," "many *T. pallidum*," "vena cavae." These are venial errors, and are more than off-set by such gems, which appear here and there, as: "No method [of staining *T. pall.*] is of practical value in the accurate diagnosis of syphilis"; "The diagnosis of a syphilitic chancre on the basis of its clinical characteristics is inexcusable"; "No technician no matter how experienced is superhuman, and no laboratory no matter how good is infallible"; "Nor can it be estimated how many families have been broken up nor how many affianced couples have been estranged through lack of the proper interpretation of reports of a test. . . ."

### PSYCHOLOGY IN TERMS OF ANIMISM

*Food for Thought. A Treatise on Memory, Dreams and Hallucinations.* By Bernard J. Duffy, M.A. (Pp. 160. 10s. 6d.) London: Longmans Green and Co. 1944.

This is a plea for an animistic approach to psychology. The author is quite certain he is right and expects the reader to accept his convictions with the same ardent faith as he himself enjoys. He states: "The more honestly science is applied to psychology, the more unassailable becomes the animist position. Mechanistic theories are many, and their very variety is proof of their individual inadequacy. The materialist is constantly

shifting his ground, but the animist stands fast to what introspection, science, and common sense tell him is the truth of the matter." Mr. Duffy begins by recording the unsatisfactory nature of existing theories of memory and the relationship of body and mind. With this most people agree. He then states that mind is an aura which can be seen and photographed. He quotes unconfirmed experiments in which the phantoms of grasshoppers were photographed at the moment of the insects' death. Also he is satisfied that a separate existence of mind is proved by the observations that a medium showed differences in haemoglobin and biochemical reactions when "herself" and when controlled by different "spirits," though, if the observations were confirmed, it is possible that emotional states may alter autonomic reactions. He goes further and states that the human body loses 2 to 2½ oz. at the moment of death, and that this is the weight of the soul.

Having established the independent existence of the soul, Mr. Duffy accepts much of the modern observations of electroencephalography and maintains that the human brain is used by the mind as a very delicate receiver and transmitter of high-frequency waves. He says, "My hypothesis is that every psychic activity, whether cognitive or conative, results in a discharge in the brain of electrical impulses, the frequency of which is constant for that particular activity; and that these impulses are the determining factors both in the integration of the motor nervous system and in the physiological processes of memory. This electrical receiver receives, records, and reproduces sensory impressions, and the mind can also initiate vibratory responses." Further than this the author accepts as scientifically proved the reality of telepathy, and explains its uncertainty by supposing that only a few people are capable of sufficiently sensitive and accurate tuning to receive thought transference. Memory is then a reproduction of these electrical recordings; dreams are similarly explained, but the reproduction is faulty and incoordinated and complicated by the reproduction of telepathic communications. Hallucinations are reproductions from a brain injured by physical and chemical (but apparently not emotional) agencies.

If the reader is convinced by the author's reasoning he will probably consider that he has presented a coherent argument explaining memory, but all will not be so convinced.

### PRACTICAL THERAPEUTICS

*Methods of Treatment, with chapters on special subjects by various authors* By Logan Clendinning, M.D., and Edward H. Hashinger, M.D. Eighth edition. (Pp. 1,033; illustrated. 50s) London: Henry Kimpton.

This book, first published in 1924, has now reached its eighth edition. The authors are professors of medicine in the University of Kansas. The first part consists of chapters on drugs, anaesthetics, serums and vaccines, extracts of the ductless glands, dietetics, physical therapy, and radiotherapy. The second part deals with the treatment of special diseases. An impression is obtained in different parts of the book that there has been no complete revision since the original edition, so that in many places the book is out of date. In the chapter on extracts of the ductless glands there is no mention, for example, of stilboestrol or of methyl testosterone. A very incomplete account is given of desoxycorticosterone acetate. Thiouracil is not referred to. Myasthenia gravis is dismissed in eleven lines, and is explained as being a disease due to excessive action of choline esterase. Carbinoylcholine is not mentioned. Thus the book has not a very modern point of view. Moreover, it exercises caution in criticism, where sometimes unhesitating condemnation seems required. Thus a regular American pick-me-up is bromo-seltzer, which contains acetanilide. The authors point out that long-continued use of coal tar products, especially this substance, leads to the formation of methaemoglobin and sulphhaemoglobin, but they say nothing of the danger of agranulocytosis, cases of which have now been described after the use not only of amidopyrine but also of phenacetin.

There is a useful chapter on physiotherapy, which though short gives details of the method of applying cold baths and wet packs. It is stated that the wet pack is a valuable remedy for insomnia among other conditions, and certainly it is probable that physical methods of treatment should be given wider trial in this common complaint, which is often so difficult to treat.

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## MARRIAGE AND BIRTH CONTROL

*Modern Marriage and Birth Control* By Edward F. Griffith M.R.C.S. L.R.C.P. (Pp. 26, 6d.) London: Victor Gollancz, 1944.

Dr Edward Griffith has made a name for himself as a teacher on the ideals of human marriage, preparation for it, and contraception in it. *Modern Marriage and Birth Control* was first published in 1935 and has been reprinted thirteen times since then. Now he has rewritten much of it added a very useful chapter on the causes and possible treatment of sterility and brought the section on contraceptives up to date in view of accumulated experience. References to other literature, both scientific and social are given, there is an index, some plates, and a list of clinics where advice can be obtained. Much of the information would not be new to a doctor, but the manner of conveying it might prove very helpful. Clergymen, social workers, magistrates, school teachers, and others who need accurate information for themselves would find in this book all the facts they require.

The close connexion between man's spirit and the high creative possibilities of sex is constantly before the author's eyes. His style is simple, factual, and direct intended for the general reader and intelligible to anyone serious enough to tackle so much material. The description of the initial approach to intercourse and the art of love making is well done. Dr Griffith holds strongly that if study in this matter precedes practice much disappointment and even disaster would be avoided.

Whichever two writers would agree about every word or every emphasis in such a book, in which didactic statement is suitable it can be said that there is moderation and accuracy throughout. If the format is not very attractive, owing to wartime restrictions, the size is comfortable and the price low. Dr Griffith can be congratulated on his work.

## Notes on Books

*The Training of the Nursery Nurse*, an interim report of the National Council for Maternity and Child Welfare, is published by the National Society of Children's Nurseries, 117, Piccadilly, W1. This pamphlet reports the findings of a committee. Recruitment, type of candidate, conditions of service, and particulars of training are duly considered. The final diploma gained by examination is intended to qualify the candidate for the post of staff nurse in a children's nursery or as a children's nurse in private households. The majority report of the committee recommends that the course, which is to train the girl in the care of healthy children from infancy up to school years, should be extended over two years. A minority report states that in a properly constituted nursery training college the course could be adequately covered in one year. Possibly this difference of opinion is more apparent than real, and if more specially qualified teaching staff were employed in the ordinary nurseries, the proposed course might be shortened without detriment. This question of staff should receive consideration when wartime exigencies render it possible. These girls have the charge of children during the most important and formative years of life, and it is important to try to maintain in post war years the general standard of personnel and training of the present nursery training colleges. The training of a nursery nurse which is here contemplated for girls from 16 to 18 years of age is a useful and pleasant occupation for any girl besides being a valuable preliminary to a nursing career.

In the autumn of 1943 the British Medical Students' Association whose office is at B.M.A. House, Tavistock Square, W.C.1, organized a series of lectures on war surgery. It has now been possible to publish these in pamphlet form. The lecturers were Sir James Walton (recent advances in the treatment of war wounds), Prof. J. Trueta (biological treatment of war wounds and fractures), Mr. A. Tudor Edwards (early treatment of wounds and injuries to the chest), Major Gen. C. Max Page (surgery in the field), Mr. A. H. McIndoe (injuries of the face), Sir E. Rock Carling (burns), Surgeon Rear Adm. G. Gordon Taylor (surgery and Russia), and Col. Elliott C. Cutler (American views). This publication (price 2s. 6d.) may be had from the secretary of the B.M.S.A., or from Messrs H. K. Lewis and Co., 136 Gower Street, W.C.1.

'Dr JOHN DREW' is apparently a pseudonym for a medical man who is obviously familiar with his subject. He has written for the general public to give it information about human biology, sex, and venereal diseases which are closely associated with sex (*Human Reproduction and Venereal Disease* (Faber and Faber, 3s. 6d.)). The average man or woman is extraordinarily ignorant about these

matters, much of the V.D. now so prevalent is contracted through ignorance, instruction in sex matters and the dangers of V.D. is all too rarely given to children and young adults. This little book, therefore, should help to lift the veil, and it can be recommended to all laymen because education is the keystone of any antivenereal campaign.

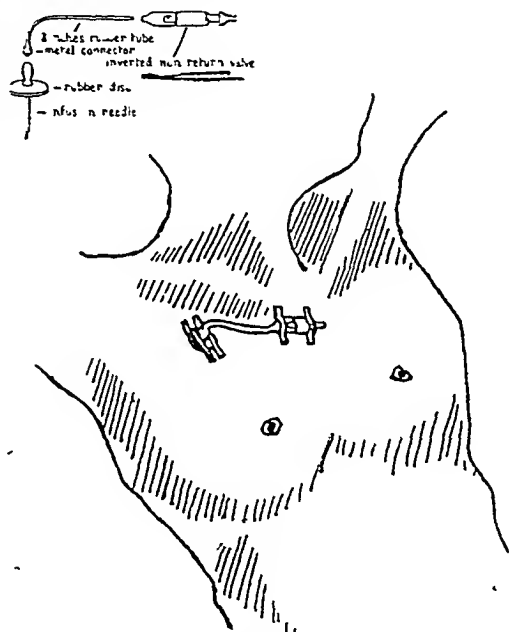
## Preparations and Appliances

### SIMPLE DEVICE FOR CONTROL OF TENSION PNEUMOTHORAX

Major H. FULD, M.D., M.R.C.P., R.A.M.C., writes

Tension pneumothorax (valvular) is rarely seen in civilian practice, but is a frequent complication among chest injuries in battle casualties. The customary method of dealing with this emergency is by needling, a long rubber tube being attached to the needle. The end of the tube is placed under water. This is somewhat complicated, requires frequent supervision, and is unsuitable for use in forward areas and during transport of the patient. To overcome these drawbacks the following device has been designed and has proved itself simple, efficient, and safe.

A transfusion needle from the Army set is passed through the centre of a rubber disk as supplied in the screw cap of a glucose saline bottle. The needle is inserted into the second



intercostal space. Local anaesthesia is unnecessary because the extreme distress and anxiety in patients suffering from tension pneumothorax make them oblivious to the slight discomfort caused by the insertion of the needle. The needle is firmly secured by strapping adhesive plaster across the disk. A rubber tube 8 in. long is attached to the needle by a metal connexion piece. A non return valve (air inlet valve) from the transfusion set is inserted and attached to the rubber tubing. This non-return valve allows air to be blown out of the pleural cavity but none to be sucked in. The valve is stuck to the skin over the sternum. Eight inches of tubing allows the valve to lie flat. It is an advantage to leave half an inch of tubing on the distal side of the inverted valve as it permits attachment to the pump of Potain's aspirator if rapid removal of air is required. Penicillin can be injected into the pleural cavity after detaching the rubber tube with the metal connexion from the needle.

This device can be put in almost immediate use wherever there is an Army transfusion set. It is simple enough for use in the regimental aid post, during transport of the patient in an ambulance, and for further treatment in C.C.S.s and general hospitals.

## BRITISH MEDICAL JOURNAL

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SATURDAY OCTOBER 14 1944

## INHERITANCE AND TUBERCULOSIS

Stocks<sup>1</sup> has recently remarked: "There is a modern tendency to ignore the existing statistical evidence about heredity, derived from the incidence of conjugal and familial tuberculosis, studies of twins, and laboratory work on animals. For this attitude there is no justification, but further statistical research is needed to elucidate the importance of inherent resistance in primary and secondary infection." It is, of course, true that deductions from human observations must be drawn with great care. Unless researches are particularly well designed, an element of doubt may reasonably remain as to whether the inter-family resemblances observed are to be ascribed to the inheritance of a similar genetic constitution or to such factors as the increased chances of infection among close relatives. There has appeared, very opportunely, a paper by Kallmann and Reisner<sup>2</sup> on a twin and family study of tuberculosis which can be described without hesitation as the most skilful and unequivocal piece of research yet undertaken on human twins. The care taken in the planning and execution of this study leaves nothing to be desired from the point of view of human genetics, of the medical aspects of tuberculosis, or of statistical treatment.

The first, and perhaps the most important, requirement is a good sample. This was secured through the co-operation of the tuberculosis hospitals and clinics of the State and City of New York, which notified over a period of nearly five years the cases of pulmonary tuberculosis coming under their care when the patient was one of a pair of twins. Investigation of the patients themselves—the index-cases—and of their relatives was detailed and thorough. (The individual who brings the family into the investigation is described as the "index-case.") The investigators finally had for analysis 308 twin pairs, including 334 index-cases (for some pairs were ascertained through both members), with manifest reinfection (adult) type pulmonary tuberculosis. In addition, there was investigated an unselected sample of relatives comprising 930 full brothers and sisters, 74 half-sibs, 688 parents, and 226 marriage partners. It is an indication of the efficiency of the sampling that the proportion of identical to fraternal pairs, 78 to 230, is almost exactly the same as the known proportion in the population generally. A satisfactory technique was used for adjusting for differences in age, sex, and colour, so that comparable proportions and rates were obtained for the various groups to be contrasted. The average age of the twin pairs at the time of investigation was 31 years, and where they were discordant—i.e., where the co-twin was free from pulmonary tuberculosis

—they had been discordant for an average period of 6 years. The adjusted morbidity rates (essentially the chance of developing manifest pulmonary tuberculosis by the age of 29) are as follows: For the general population of the State and City of New York the rate is 1.4%; for the husbands and wives of the index-cases, 7.1; for their half-sibs, 11.9; for their parents, 16.9; for their full-sibs, 25.5; for their fraternal co-twins, 25.6; for their identical co-twins, no less than 87.3. The husband-wife figure is interesting and doubtless reflects a considerable incidence of direct infection. It is pointed out, however, that as Pope, Pearson, and Elderton<sup>3</sup> showed many years ago, there is a selective factor also. The tuberculous tend to marry each other, just as like attracts like in physical and mental things generally. In spite of the intimate contact of husband and wife, however, the rate even for half-sibs is much higher. Altogether, the progression of the figures is just what would be expected on genetic grounds.

Identical twins have an identical genetic constitution, for they were once a single individual; fraternal twins are no more alike genetically than brothers and sisters born at different times. It is true that identical twins tend to share a more similar environment than do fraternal (especially psychologically), but in the same way fraternal twins have a more similar environment than ordinary brothers and sisters. Yet in this collection fraternal co-twins are not affected more often than the other sibs of index-cases. This makes it very unlikely that the even more similar environment of identical twins could account for more than an insignificant part of the great difference in morbidity rates which is therefore to be ascribed to heredity. In any event, a difference so great that identical co-twins are three and a half times more likely to be affected than fraternal co-twins could not conceivably be explained in such a way. The general conclusion is reinforced by much else, including an analysis of the histories of exposure to infection, the evidence in regard to which is somewhat too intricate to be summarized here.

When index-cases and their co-twins were classified not merely according to whether they were affected or not, but in addition according to differences in the extent and course of the disease, a far more striking contrast emerges. Instead of the identical co-twins being three and a half times more like their index-cases than are the fraternal co-twins, the concordance is now no less than sixteen times as great. Thus, while genetic influences are clearly potent in determining whether or not manifest tuberculosis is contracted, they are much more potent in determining the resistance of the individual to the established disease. It is a remarkable illustration of this finding that the chances of death from pulmonary tuberculosis of a person with the disease who has a healthy identical twin are practically nil. At this point the evidence is closely linked with that provided by the work of Lurie on rabbits.<sup>4</sup> In his experiments the infection rate was high (60 to 80%), and much the same in all strains. In resistance to the established disease, however, there were big inherited differences between resistant, intermediate, and susceptible strains. Lurie, who took

<sup>1</sup> *Practitioner*, 1944, 153, 1.<sup>2</sup> *Amer. Rev. Tuberc.*, 1943, 47, 549.<sup>3</sup> *Drapers' Company Research Memoirs*, No. 111, London, 1908.<sup>4</sup> Noticed in this *Journal*, 1943, 1, 196.

part in the discussion following Kallmann and-Reisner's paper, stated that in new experiments with greatly reduced intensity of exposure the results closely paralleled the human findings. Certain rabbits of high genetic resistance acquired an infection which healed completely, while others of low genetic resistance, similarly exposed to the same low intensity of contagion, developed fatal tuberculosis.

The discussion on Kallmann and Reisner's paper was opened by Barbara Burks, whose early death has unfortunately robbed human biology of one of its finest and most critical minds. Her opening words were: "This is a historic occasion." There could be no greater tribute; if the evidence satisfied her there will be few indeed who could detect a flaw in it. Previous work has been suggestive, and more than suggestive, but now no reasonable doubt can remain that human pulmonary tuberculosis is a disease influenced to a notable extent by inborn, inherited constitution—influenced, moreover, to a greater degree in regard to its behaviour when once contracted than in regard to whether it is contracted at all. But there is nothing in all this to discourage those who are combating it by devising improved preventive, diagnostic, and therapeutic measures. The exact reverse should be the case. To quote once again from Barbara Burks:

"This does not discount the environmental factors which an organization like this one [the American National Tuberculosis Association] emphasizes. It doesn't discount cod-liver oil or tomato juice, or fresh air, or any of the other environmental factors which have undoubtedly been greatly responsible for reducing the tuberculosis death rate. . . . It means, if it is not possible to segregate a tuberculosis case in a hospital or sanatorium, it is at least advisable not to have the nearest relatives of the patient take care of him. . . . It means that it is better to have a tuberculosis case taken care of by husband or wife than by parent, child, brother, or sister. . . . Prophylaxis should begin in regions where there is a history of heavy infection. . . . Nurses who undertake tuberculous nursing should be selected, if possible, as being free from tuberculosis histories in their families. . . . If . . . vitamins and other reinforcing elements of the diet . . . are limited . . . they should be routed first to the families who need them most."

A clear appreciation of the role of genetic constitution in pulmonary tuberculosis and all that this implies should fortify all the diverse lines of attack designed to control and prevent one of the most important of human diseases.

### NEW JOURNALS AND OLD

In spite of—or in some cases because of—the war, new medical journals come and old ones go, the first being a more difficult procedure than the second, if only because no new periodical may be launched without permission from the Government. Publishers of medical journals have had their fair share of difficulties, quite apart from the long-drawn-out rearguard action they have had to fight with the Paper Controller. The printing industry suffered severely at the hands of the enemy in the air raids of four years ago, and there has of course been a steady drafting of their skilled operatives into war work; and the flow of Government publications—many of them designed, so the cynic might suspect, to keep employed the numerous scribes housed in the Ministry of Information—has tended

to crowd out less ephemeral work. So anyone starting a new periodical in wartime has to take his courage in both hands.

At the beginning of 1944 the first issue of the *British Journal of Industrial Medicine* was brought out by the B.M.A., and in the short space of less than a year it has, under the editorship of Dr. Donald Hunter, established a reputation for excellence and high scientific standing that may be the envy of older journals.

The beginning of the year, too, saw the appearance of the *Proceedings of the Nutrition Society*, under the general editorship of Dr. S. K. Kon. The Nutrition Society, founded during the war, has gone from strength to strength, and its successive meetings have attracted a growing number of those interested in this all-important subject. The Nutrition Society has an English group and a Scottish group, and so we find in the official organ of the Society a division of the proceedings into two parts, with separate editors for the English group and the Scottish group. The *Proceedings* is published "in order to record the papers and discussions of the scientific meetings of the Society . . . to place these before as large a public as present circumstances will permit." The first volume shows that the Editor has surmounted his many difficulties with skill. In a volume aiming at a wider public than members of the Society it cannot have been easy to know how much of a discussion should be included after the opening papers. The layout and choice of headings, too, becomes rather complicated in a volume of this sort, especially when there are two groups of the Society, necessitating such a heading as, "Fourth Scientific Meeting—Second Scottish Meeting." It might have been simpler to put as a footnote to the article the kind of meeting it was, whether English or Scottish, and details of the place and date of meeting. The typographical purist might object to mixing a sans-serif with a serif type, but the former certainly brings out the names of the readers of papers and participants in discussion—this type being used nowhere else. The remarkable success of the Nutrition Society, and the interest displayed in the accounts of its work published in the medical and scientific press, suggest that something more ambitious than a *Proceedings* should be published, that, in fact, there is plenty of room for a *British Journal of Nutrition*—a journal that might well grow out of the *Proceedings* under the same distinguished auspices. The beginning of this year also saw the appearance of a new American journal—*Journal of Neurosurgery*—a witness to the growing activity of a highly specialized branch of surgery. On this side of the Atlantic the sign of the surgical times was shown in the changing of the title of the *Journal of Neurology and Psychiatry* to include in it the word *Neurosurgery*. We note with much sympathy and interest what will presumably be an ephemeral publication under the title of *Polish Science and Learning*, this being described as a series of booklets edited by the Association of Polish University Professors and Lecturers in Great Britain, under the honorary editorship of Prof. A. V. Hill, Sir W. D. Ross, and Sir E. J. Russell. No. 4, issued in March this year, was devoted to medicine, and opened with an account by Prof. A. Jurasz (Dean of the Polish Faculty of Medicine in Edinburgh) of the Polish Medical School and the Paderewski

Hospital in Edinburgh. Among the departures from the scene of medical journalism is the *British Journal of Children's Diseases*, which now ceases to be published separately and is to be incorporated in the *Archives of Disease in Childhood*.

This month for the first time the British Medical Association publishes the *Annals of the Rheumatic Diseases*, the lineal descendant of the Annual Report first published ten years ago by the British Committee on Chronic Rheumatic Disease appointed by the Royal College of Physicians and edited by Dr. C. W. Buckley. Four annual numbers of this report were issued, and in 1938 the work of the committee and the publication of its reports was transferred to the Scientific Advisory Committee of the Empire Rheumatism Council. For these past ten years Dr. Buckley has maintained the high editorial standard which has made the journal widely appreciated. He now leads the Editorial Committee jointly appointed by the B.M.A. and the Empire Rheumatism Council. As Lord Horder points out in a foreword to the current volume: "Rheumatism, because of its wide prevalence, and its resulting pain and disablement, is perhaps the most serious enemy of social well-being." He observes that the facilities for treating rheumatism have been grossly inadequate in the past, and are so indeed at the present, when "treatment appropriate to their needs is available to only about 10% of rheumatic sufferers." Lord Horder considers that if the Ministry of Health is to see that appropriate treatment is provided there will in the first place be "a great additional demand on the medical profession and its auxiliaries." When treatment is freely available on a nation-wide scale, facilities should also be provided for intensive clinical research, the recording of which in the *Annals of the Rheumatic Diseases* will, we may hope, bring essential knowledge before the medical public in this and other countries.

### "DISSIDENT DOCTORS"

Silence is often the most effective answer to a vociferous and misguided minority," writes Gordon Malet in the *Spectator*. Gordon Malet's name does not appear in the *Medical Register*, but one presumes this is a pen-name for a medical man who has his own reasons for hiding his identity. The article from which the quotation comes is headed "Dissident Doctors," and is an effective attack on the Medical Policy Association. Previous articles by Gordon Malet in the same paper suggest that he, too, is among a group of "dissident doctors" and also belongs to a vociferous minority. He may belong to that small minority of doctors who find themselves within the fold of the Socialist Medical Association, who have become vociferous through undeniably skilful use of a propaganda machine driven by men no doubt ardent and sincere in the beliefs they hold. Equally sincere is the belief of a large number of doctors that the introduction of doctrinaire politics into medicine is doing untold harm to a profession which has never held it to be its duty to act as political proselytizers. One of the drivers of the S.M.A. machine seems to be Dr. Samuel Smith, who practises in the East End of London. A cyclostyled letter with his signature, and addressed to a doctor in another part of London, has come into our hands. Dr. Samuel Smith is apparently

worried about correspondence on the White Paper in the medical and lay press—"and particularly in the *British Medical Journal*. Until recently," he goes on, "there has, however, been very little correspondence of a progressive nature to counterbalance the spate of vicious anti-White Paper statements." Dr. Smith evidently regards himself as being in the van of progress and in a position to offer guidance to colleagues who might like to join with him in becoming progressive. "It is in the hope," he continues modestly, "that you will agree to assist by sending a letter to the Press that I enclose a few notes on last week's report in the *B.M.J.*" (This refers to the *Journal* of Sept. 16.) It should be made quite clear at this point that Dr. Smith's cyclostyled guide to letter-writing was not addressed to the Editor of the *Journal*. The recipient was plainly one of that vociferous minority of doctors belonging to the Socialist Medical Association, and we assume that the other cyclostyled copies go to the rest of the small band of progressive companions. It is more than disquieting to notice that, at a time when the shortage of doctors is acute, a number of them are prepared to spend time, money, and paper in fomenting political activity and indeed in directing it. These medical men, while parading the fact that they are members of the B.M.A., are not content to work within it in a democratic way. In the *Supplement* to the *Journal* of Sept. 16 a letter signed by ten doctors appeared under the heading of "The White Paper and the Good Will of the Profession," and among the signatures is S. Smith. On looking once more at this, we find that the letter was printed and sent to us for publication by Dr. Smith from the same address as his guide to letter-writing.

"You will appreciate," Dr. Smith writes, "these notes can be used to develop arguments, and a number of replies from different people along these lines would have an excellent effect" (our italics)—the effect, no doubt, of making people as progressive as Dr. Smith is himself. The notes he supplies on the back of his cyclostyled document are assembled under the heading, "B.M.A. Council and the White Paper." "Council well advised to give up fighting against National Health Service and concentrate on securing good administrative machinery" is the call to action trumpeted by Dr. Smith in his most progressive mood. He ends his notes with confident assurance and an encouragement to the B.M.A. to be as progressive as himself. "Government intent on bringing in National Health Service, public wants it; full public and professional support for B.M.A. if more public-spirited approach shown." How reminiscent of Mr. Alfred Jingle at his best! Of course the B.M.A. Council is scolded when its views do not coincide with those of Dr. Samuel Smith, and he refers scornfully to "these Fabian tactics," and asserts in a challenging note: "Attitude and tactics of Council have also surely encouraged such people as M.P.A., whose disgustingly unscrupulous methods Council correctly opposed. Progressive people will support Council against attacks of M.P.A., but would do so more readily if Council did not make it so easy for M.P.A." It appears that the B.M.A. Council is remarkably impartial, at least according to the interpretation of Dr. Smith, because it makes it easy for the M.P.A. and at the same time correctly opposes it.

Has it occurred to Dr. Smith and his fellow-propagandists that the formation of such bodies as the M.P.A. may be the inevitable reaction to the existence and activities of the Socialist Medical Association? If one small politically minded group in the medical profession begins to use professional status as an opportunity for spreading political doctrines, then other dissident groups will assuredly spring up and do likewise, to the infinite harm of the

profession whose interests they claim to have at heart. As Gordon Malet says, when a "minority is succeeding in persuading a substantial number of worthy people that there is something in what it says, the time for silence has passed."

### PNEUMONIA: A STATISTICAL APPROACH

Pneumonia is a disease of variable incidence. Twin studies<sup>1</sup> indicate that inherited differences in susceptibility are at best of small account. Hence a favourable opportunity is provided for analysing the part played by occupational differences and other environmental factors in determining the occurrence of an important disease. In an interesting paper W. J. Martin<sup>2</sup> presents a statistical analysis of one of the most remarkable features of the disease—its much higher incidence among males. He shows that this is a fruitful line of approach which leads to important conclusions. The sex ratio of deaths from pneumonia is very different at different ages. Taking female deaths as 100 in each instance, the corresponding male death rates in England and Wales during 1924–38 were as follows: under 1 year, 133, from 1 to 15 years, 114, from 15 to 65 years, 208, over 65 years, 123. It is shown that variations in the sex ratio of deaths during infancy are related to the total incidence of deaths from the disease, when pneumonia is prevalent the excess of boys affected rises. Variations in social conditions and degree of urbanization have little effect on the sex ratio. The discrepancy between the sexes is least in childhood. Such variation as there is is not affected by degree of urbanization. Moreover, the factors making for male excess in infancy and childhood respectively are not the same, for they vary independently. In old age the discrepancy between the sexes has fallen once again, and a study of its variations yields no clear indication of any important association.

The chief interest of this study lies in the period of working life, 15–65 years. In sharp contrast to the periods of life which precede and follow it, more than twice as many men die of pneumonia as do women. The first point examined is the possible influence of social class. Although the total incidence of deaths from pneumonia rises steadily as social class falls, being nearly twice as great in the lowest as compared with the highest, there is little, if any, corresponding effect upon the sex ratio of deaths. The male excess is much the same in all. A likely guess—that variations in the male excess are occupational—is examined by comparing the rates among men in different occupational groups with those among their wives. It is found that in general wives tend to share the high or low rate of their husbands' group. There is, however, an indication of two significant exceptions—in hotel-keepers and furnacemen—where the male rate was high, the rate for the wives not differing from the rate for wives generally. Thus, apart from the indication of special risks associated respectively with high consumption of alcohol and big changes of temperature, it would appear that variations in the male excess are not directly occupational. Causes are to be sought, rather, among the indirect risks associated with the general conditions of life usually characteristic of particular occupations. One factor of evident importance is the degree of urbanization. In rural districts the discrepancy is much less. During 1924–38, in England and Wales, the number of male deaths from pneumonia per 100 female deaths was only 174, compared with 208 for the two countries as a whole.

Like so many fruitful statistical studies, this example points to the beginning and not the end of research. The question why there should be a great excess of male deaths from pneumonia, this being largely confined to the working years, is tentatively answered by the hypothesis of an indirect occupational risk, coupled with the greater prevalence of alcoholism among men (for a small proportion of men carrying a specially heavy risk would influence the sex ratio of deaths considerably). But the most important result of this paper should be the stimulation of further research into the factors which underlie susceptibility and resistance to pneumonia.

### MIDWIVES IN WARTIME

The report on the work of the Central Midwives Board for England and Wales during the year ended March 31, 1944, is a stencilled document mentioning briefly some matters of interest and importance. The Board pays tribute to the magnificent service rendered by midwives to the community. The increasing birth rate and the shortage of staff, both medical and nursing, have pressed heavily upon the maternity service of the country. The shortage of practising midwives, which has caused anxiety for some time, was dealt with as a matter of high priority by the National Advisory Council of the Ministry of Labour and National Service, and the measures taken have led to a slight improvement in the position for the moment. A certain number of midwives not in active employment were encouraged to return to the work, and the Board has co-operated in securing vacancies for refresher courses when required. In Sept., 1943, the Control of Engagement Order was extended to midwives. All newly qualified midwives were required to do a year's midwifery practice after enrolment, and practising midwives had to continue with midwifery work until May 31, 1944. On that day the Roll of Midwives contained the names of 68,859 women, being 1,747 more than at the end of March, 1943, but the total number listed as practising was only 16,071. The examination arrangements again proceeded without interruption, the wartime expedient of holding written tests at the hospitals and oral tests at a large number of centres being adhered to. On March 31, 1944, the number of institutions approved for instructing midwives in the use of recognized apparatus for nitrous oxide and air analgesia was 91. Compilation of a register of midwives qualified to give gas-and-air analgesia continues, and so far some 2,400 midwives are known to hold the qualification. In consequence of a letter from the Medical Officer of Health of the L.C.C. drawing attention to the existence of a widespread custom among midwives of making arbitrary deductions from the birth weight of infants, and of comments from the secretary of the College of Midwives on this matter, the Board issued a statement to all approved training schools for pupil-midwives stressing the importance of strict accuracy in the keeping of records, and drawing particular attention to the need for accuracy in weighing infants. This matter was raised in the correspondence columns of the *British Medical Journal* of June 5, 1943 (p. 706), by Dr Letitia Fairfield.

Prof Charles Bruce Perry will deliver the Bradshaw Lecture before the Royal College of Physicians at London on Thursday, Nov. 9, at 2.30 p.m., at the College, Pall Mall East. Subject: "The Aetiology of Erythema Nodosum."



## THE UNDERGRADUATE PERIOD

ADDRESS BY SIR JOHN FRASER

The address inaugurating the new session at Westminster Hospital Medical School was delivered by Sir John Fraser, Principal and Regius Professor of Edinburgh University. Speaking first of the influence of undergraduate training on personality, he said that in the discussions on the medical curriculum he had noticed very little comment upon the psychological influences of the university upon the undergraduate mind. The practice of medicine was something more than the treatment of disease: it was a great moral enterprise; and called for more than the application of scientific knowledge and technical procedures: it demanded the exercise of that subtle factor, personality.

Personality sprang from two roots—intelligence and the influence of environment. He assumed that all his listeners possessed the first; but there was something more, and unless it was acquired and developed the full measure of future success might be withheld. What was this mysterious ego which one either gained or missed during the years of professional training? It was the moulding and development of personality by the influence of the environment in which the student lived and worked. All medical schools possessed their distinctive environment: the tradition of the hospital and school, the influence and example of teachers, and contact with fellow students. The Westminster traditions were many and colourful; its teachers, past and present, had a high place in the annals of the profession; and the opportunities for student contacts and discussions which sharpened the wit and stimulated the ambition were abundant.

## A Need to Redress the Balance

Sir John Fraser went on to suggest that there was some need for a readjustment of the balance of undergraduate teaching:

"The experience gained in thirty years of teaching has left me with the impression that we are apt to pay undue and growing attention to the presentation of detail and minutiae at the sacrifice of fundamental and general conceptions. . . . Forty-two years ago I began the study of medicine; from that date until now the length of the curriculum has remained unchanged, but when I review the demands which are made upon the undergraduate body and contrast them with those which I encountered, I realize that there is one outstanding dissimilarity between the periods—it is the degree to which detail, often meticulous in amount, is given an increasingly prominent place in the teaching programme."

e suggested that the presentation of the physical and biological sciences—the introduction to medicine—should be concerned with those principles which had a bearing upon the problem of health and disease rather than with detail which had no direct association with medicine, and in the preclinical subjects the detail should be restricted to facts that were related to clinical considerations.

Insistence upon minutiae not only impaired the primary object of undergraduate training, which was to provide the student with a comprehensive and well-balanced knowledge of the problems that were likely to confront him in average general practice, but it also, if pursued to an undue extent, diminished the powers of logical thinking and deductive reasoning, and offered little or no encouragement to the development of imagination. Imagination was the heritage of youth. In childhood it was pleasurably creative; in school days it underwent a temporary eclipse, because it did not flourish in an atmosphere of regimentation and routine; but it should find its "second wind" in the spacious fields of undergraduate occasions, and if at that time its development was smothered it was unlikely to reassert itself in later years.

## Practitioners of To-morrow

In a short while those to whom he spoke would possess the qualifications which permitted them to practise the profession they had elected to follow. From whatever aspect they viewed it, they would find that the practice of medicine would yield them satisfaction.

"To you will be granted the privilege of practising a profession which is scientific in its basis and logical in its applications, which is creative and constructive in its aims, and which has as its ultimate object the provision of that which is surely the most precious of all possessions, mental and physical health."

Finally, Sir John Fraser spoke of the future. When the Government scheme for a National Health Service came into operation, he said, it was certain to offer a considerable enlargement of the field of medical opportunity. A service universal in range and complete in provision would demand a big increase in the present number of doctors. The increase would apply to every section and department of medical activity, though no doubt the expansion would be greater in some branches than in others. But there had never been an unemployment problem in medicine; taken all over, the demand had exceeded the supply, and, if he read the omens aright, future demands would be so many and so heavy that for a time at least they would tax the available resources to the utmost.

It was probable that there would be a sharper distinction between different types of professional work than at present. The specialist category would be more clearly defined, and inclusion in that group would demand the fulfilment of obligations which had not existed hitherto. While experience has shown that the combination of a certain amount of specialism with general practice might be successful and useful to the community, he believed that the arbit of specialism would be so clear-cut and defined that it would be difficult to pursue the "combination" system.

Work under the new scheme was likely to proceed under more favourable conditions than to-day. It would be so arranged and integrated as to ensure to the medical man the gift of leisure. He knew that there was another side of the picture, and that apprehensions had been expressed that there might be some interference with liberty of action, that the sense of security might lessen initiative, and that the exercise of the art of medicine might become increasingly impersonal.

"There may be some justification for these fears; but, after all they may prove to be unfounded, and if experience shows them to be real and prejudicial it will be the business of the individual affected to do what they can to remove them. And I would remind you that developments which postulate advantages to the many are likely to imply some degree of sacrifice by the few."

## MEDICAL DEFENCE UNION

The annual general meeting of the Medical Defence Union was held on September 19 under the presidency of Dr. James Fenton.

In his address from the chair Dr. Fenton announced that 1,861 members had been elected during the year—the highest figure recorded in the history of the Union—and the total membership was now 27,439. He alluded to the termination of the Spackman case, which had been reheard by the General Medical Council in the way in which the legal advisers of the Union had always claimed that it should have been heard—namely, that evidence should be allowed which was not tendered at the Divorce Court. It was satisfactory that in similar cases the Council would have to follow the lines laid down by the House of Lords, necessitating sometimes a more complete hearing before the verdict was given. He went on to state that a certain number of deaths under anaesthesia had given rise to disquiet. The Union had looked into the matter and was satisfied that manufacturing difficulties arising from wartime problems were contributory to mistakes in the identification of gas cylinders. A subcommittee had been appointed to confer with the Society of Anaesthetists, and this joint body had consulted the manufacturers of anaesthetic gases and also the British Standards Institution. A short-term policy to meet the immediate wartime difficulties and a long-term policy to remove all uncertainties and ambiguities in regard to the marking of cylinders had been elaborated, and it was hoped that the result would be to prevent the occurrence of such accidents.

The President mentioned that an authoritative document had been prepared and was available for any practitioner who wanted advice on being approached by a patient on the subject of artificial insemination. Counsel's opinion had also been elicited on the question of the reporting by practitioners of deaths to coroners. He went on to refer to the grave concern felt in certain quarters concerning the quality and standard of the medical certificates issued by some practitioners, and urged members to exercise scrupulous care in this matter; especially should they refuse to be importuned by their patients to issue a certificate when there were no adequate medical grounds for doing so. The Union could not hope, he said, to achieve any success in the defence of a member who had disregarded these basic principles. Finally, he reminded all concerned that even if as a result of legislation a complete or partial State Medical Service came into operation membership of the Union

would be none the less essential to ensure the necessary legal and financial aid which a practitioner sooner or later might require. The State or the local authority did not accept responsibility for the professional mistakes of its medical staff.

The annual report and statement of accounts were adopted. The accounts showed a credit balance of £7,779 on the year. Dr Fenton was re-elected president, Mr E. D. D. Davis treasurer, and Prof. Gilbert Sirachin was added to the vice presidents. The retiring members of Council, Dr Elizabeth Bolton, Dr E. Lewis Lilley, and Dr Henry Robinson, were re-elected.

## THE TUBERCULOSIS SERVICE

The Joint Tuberculosis Council at its meeting in Birmingham on Sept. 16 decided to publish reports on two important subjects.

### Report on Reorganization

The report of the Council's Committee on the Reorganization of the Tuberculosis Service proceeds, from a survey of the progress made in the 32 years which have elapsed since the publication of the Astor report, to a definition of principles for the continued development of the fight against the disease. The experimental stage, says the report, is past. The principles of 1912 are still of basic importance, but extension of them is needed in several directions.

The individual patient must not be considered as separate from his family when the question of treatment arises: the family is the unit for treatment, whatever the manifestation of the disease, whatever the prognosis, whatever the probable future working capacity of the patient. Small authorities, the report states, should combine to form joint tuberculosis boards, and the smallest authority should not deal with a population aggregating less than 250,000. Some arrangements should be made to remove the need for interpreting fresh advances in medicine to 183 separate local authorities before improvements in the service can be brought into general effect. Better central supervision of local tuberculosis services and national minimum standards are needed. Housing authorities should be obliged to provide suitable living accommodation for families which include tuberculous persons. The necessity for full co-ordination of tuberculosis services with other public health units and the unwisdom of allowing tuberculosis clinicians to work in "isolation" are stressed.

Other sections of the report deal with the equipment of dispensaries and the importance of associating these with hospital out-patient departments. It is suggested that "boundary barriers" should not be allowed to obstruct the use of dispensaries by patients living near them. Special sessions for children are advocated. The tuberculosis officer should be provided with hospital beds for the observation of cases, and these beds should be under his own care. Waiting lists must be abolished, not merely for the cases of pulmonary tuberculosis but for all varieties of the disease.

Medical education in tuberculosis (undergraduate and post-graduate) is discussed, and the lack of official encouragement for research and statistical study criticized. It is pointed out that tuberculosis nursing is still not recognized as a specialized branch of the nursing profession. Revised qualifications for tuberculosis officers are proposed, and these include, for the junior entrant, certificates of having held residential posts in general hospitals (with, if possible, experience in children's wards) and a certificate of training in social medicine as part of a reformed DPH. The tuberculosis officer must stand in professional relationship to the general practitioner as an expert and specialist in chest diseases of all kinds, must devote the whole of his time to tuberculosis and other lung diseases, and must not be asked to combine other public health appointments with his tuberculosis work. Salaries must be such as to attract highly qualified men and to compare favourably with the salaries of administrative medical officers. The tuberculosis service must be brought more into the current of general medicine than hitherto.

The report suggests that two forms of notification be employed instead of the present single form. "Notification" would be reserved for infectious or progressive types of tuberculosis, and a new procedure of "intimation," or provisional notification, would be introduced for cases of infection in which the activity of the lesion was in doubt. Transfer from the "intimation" category to the "notification" category would be at the discretion of the tuberculosis officer. "Intimation" should also apply in cases of pharyngeal conjunctivitis and erythema nodosum.

It is strongly emphasized that no tuberculosis scheme is complete without a comprehensive scheme of after-care, rehabilitation, and resettlement.

### Wartime Diet for the Tuberculous

The report of the Council's Committee on Nutrition deals with the subject of wartime diet. It sets out to assess whether the diet available to tuberculous persons during the present war is sufficient (a) to help the infected person to avoid developing active disease, (b) to treat the active case during stay in an institution, and (c) to

aid the discharged patient to avoid relapse after leaving the institution.

In investigations such as these, questions of calories and vitamins obviously exist side by side with questions of finance. It is calculated that from rationed and "points" foods about 1,000 calories a day can be obtained, and that the additional 1,600 calories necessary to keep above the "danger line" can be obtained from unrationed foods such as offal, fish, sausages, potatoes, bread, flour, fruit, and vegetables. The wartime diet of rationed foods supplemented by unrationed foods provides, according to the report, the requisite vitamin intake. But 8s 6d or 9s a week must be spent to provide these calories and vitamins, whereas the maintenance allowances for the dependent children of a tuberculous person, permitted by Ministry of Health Memorandum 266/T, range from 5s to 8s a week, according to age. Moreover, although the J.T.C. considers 8s 6d a week per person the minimum sum to be spent on food alone to help infected persons to escape active disease, it observes that this does not necessarily mean that the patient is receiving food in satisfactory quantity.

With regard to institution diets in wartime, the J.T.C. quotes approvingly from the recent report of the King Edward's Hospital Fund on hospital diets, and adds some riders about "priority" milk, the addition of vitamin C to tuberculosis diets, and the preparation and presentation of institution meals. On the question of diet for the discharged patient, it points out that, with the "priority" allowance of 2 pints of milk a day, the patient has exactly the same amount of food available to him as he had in the sanatorium, and, in addition, he can obtain meals in canteens and restaurants. As he will often be doing more work "outside" than he did in the sanatorium, he probably needs these extra meals to combat any tendency to relapse. With regard to children, the report says that for those under 5 years old the optimum daily quantity of milk is 1 pint, and for those between 5 and 12 years the optimum daily quantity is  $1\frac{1}{2}$  to  $1\frac{3}{4}$  pints, therefore, instead of 2 pints daily, tuberculous children should be allowed 1 pint and extra butter, cheese, or eggs.

The report on wartime diet concludes with a strong plea for more general and more efficient pasteurization of milk, and urges the Government to facilitate the manufacture of pasteurizing plant, to pool pasteurization facilities in areas where this is practicable and desirable, and to inform the public officially that when pasteurized milk is not available boiling is the only satisfactory alternative.

Copies of both reports may be obtained on application to Dr Norman England, Hon. Secretary, Joint Tuberculosis Council, 1 Becket Street, Oxford.

## Nova et Vetera

### BOLOGNA AND THE BEGINNINGS OF ANATOMY

Of the ancient Italian medical schools the most interesting are those at Salerno, at Bologna, and at Padua. After the landing at Salerno we published some notes on the history of its school (*Journal* Sept. 25, 1943, p. 402). Now that our armies are closing in on Bologna, we direct attention to certain important incidents in the history of its venerable university. We hope that circumstances will soon call for a similar note on Padua.

Bologna is an important railway junction and manufacturing centre, with a peacetime population of about 200,000. It also contains many highly interesting antiquities, notably its famous towers and its unique collection of Etruscan remains. In ancient times it was an Etruscan stronghold and sided with Hannibal in the Punic War. In 189 B.C. it became a Roman colony. Legend tells that the university was established by Theodosius the Great in A.D. 425, and certainly it was a renowned law school very early in the Middle Ages. Other departments accumulated around that of law, and it thus became the first institution in Europe to which the term "university" can rightly be applied. An organized medical school can be traced back as far as 1156.

At first the teaching of medicine at Bologna, as elsewhere, consisted entirely in readings and commentaries of Latin translations of Arabic, Greek, and Hebrew works. The Medical Faculty was so dependent on the jurists that until 1306 it was not permitted to elect its own head. This is of importance in view of the manner in which dissection of the human body began at Bologna.

### An Early Post-mortem Report

Post-mortem examination is heard of earlier than dissection. It is quite natural that we should have early news of this process at the greatest of law schools, but the very first frank

account of a necropsy comes to us from Cremona, some 150 miles to the west. The Franciscan Salimbene of Parma, in his chronicle of 1288, tells that, during a pestilence two years before, a physician of Cremona opened a corpse to see if he could find the cause of death. The first formal account of post-mortem examination does, however, come from Bologna. In February, 1302, a certain Azzolino died there under suspicious circumstances. Poison was suspected; a judicial inquiry was held, and a post-mortem actually ordered by the court. It was conducted by two physicians and three surgeons, with Bartolomeo da Varignana at their head. Their report exists, and terminates with the formal statement, "We have assured ourselves of the condition by the evidence of our senses and by the anatomization of the parts." There is no remark that the proceeding was unusual. Bartolomeo was professor of medicine at Bologna, an office in which he was succeeded by his son and two of his grandsons.

A fellow student of Bartolomeo at Bologna was the Norman, Henri de Mondeville. About 1300 he settled at the famous and ancient medical school of Montpellier. There, some years later, he wrote a book on surgery, which was decorated with figures displaying dissections. These, unfortunately, have disappeared, but some small and inferior copies of them have survived, so that we know their general character.

### Taddeo and his School

Now, towards the end of the fourteenth century the medical faculty at Bologna included among its members a most remarkable man, Taddeo Alderotti (1223-1303). Under the cloak of extreme scholastic conservatism he succeeded in introducing many changes in the intellectual climate of the University. He understood well the importance of access to Greek sources, and encouraged the preparation of good Latin versions. He himself translated an Aristotelian treatise into Italian and impressed Dante with his powers and knowledge. He stamped his personality on the whole development of medicine at his university. He is bound up with the beginning of dissection in a peculiar way. Not only are many hints of post-mortem examinations scattered through his *Consilia* but all the first generation of writers who discuss dissection—Bartolomeo da Varignana (died 1318), Henri de Mondeville (died 1320), and Mondino de Luzzi (died 1326)—were his pupils. The evidence is that the process was initiated by Taddeo himself. As the revival of medicine in North Italy is investigated the lines seem always to converge on him.

He most famous of the pupils of Taddeo is Mondino. He was born near Bologna, graduated in medicine there, and joined the teaching staff soon after Taddeo's death. He is the first known to have dissected the human body systematically in public, and his book on anatomy is the first based on direct knowledge of human dissection. He thus introduced practical anatomy as an academic subject. His *Anathomia*, written in 1316, rapidly became a standard work. It retained its position for nearly three centuries. It was the most widely read text when Vesalius began to teach at Padua towards the middle of the sixteenth century, and was still studied when Harvey was a student there at the end of that century. Anatomy had by then passed from Bologna to Padua, but Bologna was its cradle and Taddeo and Mondino were its two godparents.

### BEQUEST TO AN APOTHECARY'S WIDOW IN THE FOURTEENTH CENTURY

The will of John Foot (alias Maryns), apothecary, was proved in the Hustings' Court, London, in 1384-5. It had been signed in 1381. At such an early date it is unusual to find so long a period of time as three years intervening between the signing and probate of a will. He willed his body to be buried in the "Pardounchirchawe," and among other bequests left to Cristine atte Bowe, widow of Thomas atte Bowe, citizen and apothecary of London, a "calyxcoope" standing upon lions silver-gilt with silver covercle and 100 shillings. When the widow died at the end of March, 1403, her will was proved both in the Hustings' Court and in the Commissary Court of London. Her son, John, inherited "my silver cup standing upon lions gilt, with cover." This lady also desired to be buried in the Pardounchirchawe, which was situated on the north side of the cathedral. It is not often that one can trace a piece of plate through two wills at so early a date as this.

## Correspondence

### Rate of Artificial Respiration

SIR.—The article by Dr. P. R. Tingley (*Journal*, Sept. 16 p. 366) calls for prompt criticism.

Quite logically he recommends (from his breath-holding experiments) that the rate of artificial respiration should be as fast as possible consistent with efficiency—i.e., Schäfer's method 30 to 60 times a minute, Silvester's up to 45, and my rocking method at double the usual rate or faster. He also "states confidently that an increased rate can do no harm in any case, and must in many cases do much good." This sentence alone shows that he is unaware of the dangers of acapnia, and is therefore hardly qualified to revolutionize resuscitation.

His arguments are the more dangerous because they are plausible (especially when cyanosis is present). Indeed, they are unanswerable if one falls into the old error of assuming that the state of a drowned person and his needs are similar to those of a conscious subject. They are quite different. Thus, in the normal subjects of Dr. Tingley's breath-holding experiments combustion (turning  $O_2$  into  $CO_2$ ) is active—especially in the muscles resisting respiration—and  $CO_2$  is accumulating in the blood until it stimulates the respiratory centre beyond resistance by the will. Respiration has then to be violent to make up for arrears. But in the cold and toneless drowned combustion is in abeyance, the consumption of  $O_2$  is minimal, and very little  $CO_2$  is being formed. Hence, when cyanosis and errors of  $CO_2$  and  $O_2$  have been adjusted by the first few minutes of artificial respiration, overventilation may then easily wash out too much  $CO_2$  and produce a deficiency of it in the blood (acapnia).

Very briefly, the dangers of acapnia are: (1) The respiratory centre is deprived of its normal stimulus ( $CO_2$ ); this causes apnoea, which may be fatal to the centre if prolonged. (2) Lack of  $CO_2$  makes oxyhaemoglobin reluctant to part with its oxygen to the tissues. (3) The capillaries of the brain (and intestine) have been shown to constrict. (4) Acapnia causes atonia in the muscles, so that the unsupported veins dilate and the left heart is unfilled. Atonia of the diaphragm allows the lungs to collapse.

So acapnia has very ugly possibilities, though perhaps we are apt to magnify them. In fact, Prof. R. R. Macintosh of Oxford kindly wrote me (Dec., 1943) that in some operations apnoea is maintained by hyperpnoea for 20 or 30 minutes without apparent injury from acapnia. Recovery occurs without using  $CO_2$  (avoided as being toxic to nerve cells in *extremis*).

Different rates of artificial respiration by rocking have already been investigated by Eve and Killick (*Lancet*, Sept. 30, 1933), who found that the adequate ventilation of 6 litres was produced in a minute by 10 double rocks through a total angle of 100 degrees without reducing the  $CO_2$  in the expired air below normal. Increasing the rate up to 20-22 per minute increased the ventilation but reduced the  $CO_2$  too much. As to the important aid given to the circulation by the rocking method (presumably by the weight of long columns of blood acting alternately in arteries and veins, reflux being prevented by valves), it is evident that in rapid rocking this hydrostatic effect would not have time to act. Prof. Hemingway advises 4 seconds head-down and 3 seconds feet-down for the circulation.

A year ago the Home Security Department of the Australian Government cabled me that their medical advisers considered 12 rocks a minute excessive and likely to cause hyperventilation: they suggested half this rate, or 12 rocks dropping to 6 after the first 5 minutes. I replied with the above evidence, but obviously these experts feared acapnia. For all these reasons I trust that the present recommended rate of 9 double rocks per minute through 90 degrees will not be exceeded. It would be a serious step to increase the standard rate (12 per minute) of Schäfer's and Silvester's methods. Possibly an expert in acapnia might like to do so in the early stage of cyanosis, but the first-aiders must be given a definite rule.—I am, etc.,

HULL

FRANK C. EVE.

### Intravenous Anaesthesia

Str.—In recent years several devices for the administration of continuous or intermittent pentothal have been produced. The latest are those described by Major W. W. Mafflow (Sept. 30, p. 432) and Major Wallace M. Dennison (Sept. 30, p. 437). All such devices suffer from the disadvantage that they require cumbersome apparatus. The following method, for which no originality is claimed, is just as effective, more controllable, and involves a minimum of equipment—a 20-cm. eccentric nozzle syringe, needle, sand-bag, tourniquet, Spencer-Wells forceps, and arm-board or anaesthetic trolley. Pentothal in 5% solution is used throughout. The average patient is induced with 0.5 g., transferred to the operating table, and put on nitrous-oxide-oxygen. An arm-board is placed in position, or the arm stretched out over a trolley, a small sand-bag being used as support. A tourniquet is applied, and a needle, with the 20-cm. syringe attached, is inserted into the vein. The tourniquet is loosened and is used, secured by Spencer-Wells forceps, for keeping the syringe in position on the arm. Injection is made as required. Clotting will not occur if a sufficiently coarse needle (size 12 or larger) is used, and if minimal amounts of solution are injected every few minutes.

All operations for which pentothal is a suitable anaesthetic agent can be performed with this technique. An arm-board is preferable to the trolley for supporting the arm, as then the table can be moved either bodily or into a Trendelenburg tilt with no risk of displacing the syringe. In those cases in which the patient is already on a saline drip the pentothal may be introduced directly through the rubber tubing after this has been pinched up distal to the needle puncture. I have found this method simple and satisfactory.—I am, etc.,

London, N.W.3.

HELEN BOWER ALCOCK.

### Apparatus for Fractured Femur

STR.—In the third edition of his *Fractures and Joint Injuries*<sup>1</sup> Mr. Watson-Jones goes to some pains to discuss and to condemn the method of treating fractures of the shaft of the femur by the Hamilton Russell traction apparatus. As the great weight of Mr. Watson-Jones's authority may lead to the disuse of this excellent apparatus I would like to say something in its defence. In the first place, this apparatus is easily the most comfortable of all that can be used for fractures of the femur. In the second, it is very easy to put on and requires no special piece of apparatus that cannot quickly be obtained. The Thomas-splint method, by way of contrast, requires a Thomas splint that fits the patient well. This is a matter of small moment in a big city hospital, but it is of some importance to a practitioner in a remote area who is unlikely to have more than one Thomas splint in stock. In the third place, if the surgeon uses the apparatus correctly he can expect to get a result either where there is no shortening at all or where there is not more than half an inch of shortening. This apparatus has been in routine use in this hospital since 1926. There are a number of patients in the neighbourhood who have one femur half an inch shorter than the other. If they have any disability they certainly don't complain of it.

If the method is to be used properly, however, there are certain points that should be noted. It is impossible to put the splint up properly without first studying thoroughly Hamilton Russell's own description.<sup>2</sup> If this is not done it is almost certain that the apparatus will be so put up that the necessary forces are pulling in wrong directions. The diagram shown by Mr. Watson-Jones is correct. In putting up the apparatus there is one very important point—and that is that extension should be applied to both legs. This was first done, so far as is known, in this hospital in 1926. When Mr. Hamilton Russell saw this method in action during a postgraduate tour late in 1926 he expressed his strong approval of it, and until his death both used and advocated the two-leg method. The advantage thus gained is that it obviates trouble arising from the pulling down of the pelvis on one side. Although easily put up, the apparatus is certainly not self-regulating, and requires constant attention. This is to be regarded as a virtue and not a fault. The three main difficulties are: (1) a tendency to eversion—this can be overcome by making the sling under the knee pull from the outer side; (2) the tendency of the patient to slip down in the bed and thus to alter the parallelogram of forces—this is helped by taking away the patient's pillow or by gaining his co-operation; (3) the tendency of the fragments to sag backwards at the site of

fracture. Mr. Russell used to place under the site of fracture a small pillow, which had to be constantly adjusted. Possibly a better method is to make a plaster gutter for the back of the thigh and to put the pillow under this. If the surgeon is prepared to give the attention that is required he can be quite certain of getting a good result.

A description of its practical application should not conclude a discussion on the Hamilton Russell extension apparatus. It is usually forgotten that the apparatus represents the practical application of a great principle. This principle has to do with the action of muscles on bone fragments. For generations it has been taught that, if a fracture separates one muscle group from another, the whole limb must be postured so that the distal fragment corresponds to the position into which the proximal fragment has been drawn by unbalanced muscle action. Hamilton Russell taught the exact opposite. He taught that if the fractured limb were placed in a position of physiological rest the unbalanced muscle action would soon cease to have effect, and that all muscles would do their best to return to their ordinary position. In two articles<sup>3,4</sup> I critically examined his contention in the light of acknowledged physiological research. On re-reading these articles I see that I have since learned a good deal about fractures, particularly in regard to the time necessary for union. With regard to the action of muscles on fragments, however, every year of experience confirms me in the belief that Mr. Hamilton Russell enunciated a master principle when he wrote the following words: "Muscles are the creatures of habit and the slaves of custom. In a broken limb every muscle and muscle fibre will co-operate in the endeavour to preserve the position to which it has been habituated, and the last thing a muscle will do will be to abuse its liberty by displacing a fragment into an unnatural and unaccustomed position."<sup>5</sup>

There is one thing more that can be said about Hamilton Russell's contribution to the study of fractures, and that is that he was one of the first to insist on active as opposed to passive movement.

May I, in conclusion, pay a tribute to Mr. Watson-Jones's great work on fractures, which in this, as in many other hospitals, is the bible of the fracture room.—I am, etc.,

General Hospital, Launceston, Tasmania.

C. CRAIG.  
Surgeon-superintendent.

## REFERENCES

<sup>1</sup> 3rd edition, 1943, p. 681.

<sup>2</sup> *Papers and Addresses in Surgery*, 1923, p. 272.  
p. 808.

p. 803.  
1923, p. 282.

## Episiotomy

SIR,—My conclusions on episiotomy (Aug. 26, p. 291) having been objected to by Drs. O'Meara (Sept. 9, p. 353) and Banks (Sept. 16, p. 385), I to-day tried the latter's tip of fully extending the primipara's legs at the hips when the head was stretching the perineum ("Trousers don't tear when you are standing, but when you are bending down"). The result was a perineal tear to within 1/2 inch of the anus, and I wished I had done an episiotomy.

Regarding my remark that I frequently give pitocin in uterine inertia when the head is well down and the os fully dilated, Dr. O'Meara says, "I don't like it, won't do it, and won't allow it to be done, even in hospital." This peremptory interdiction would carry more weight if he gave some reason for it. He has had great experience of midwifery, and arguments against the practice would be of great interest to people like myself who have consistently given pitocin before the birth of the child for many years with nothing but beneficial results. As it is, his mere negation cuts no ice whatever. Dr. O'Meara disbelieves my contention that the injection of ergometrine has banished the boggy of post-partum haemorrhage. Possibly his experience of this procedure is not so bappy as mine. If so, he does not say so, nor does he adduce any instances of failure. These again would be interesting and instructive. I only give my own experience of ergometrine, not anything I have read or heard, and still retain vivid recollections of occasional awful moments, in pre-ergometrine days, of intimidating torrents of blood, frantic bimaual grabbings of uteri, and intra-uterine douches of water at 118° F. I still carry my intra-uterine douche, but only as a talisman. Dr. O'Meara "strongly disagrees with the practice of giving ergometrine before the placenta is expelled." So do I; *as a practice*. Why? Because years ago, in ignorance or without thinking, when ergometrine was first put on the market, I thus gave it oo ooe occasion, with the result that the uterus snapped down oo the placenta like a vice and it took a large part of the staff of a gynaecological

ward in hospital two days to get it out. But circumstances alter cases, and a few weeks ago, after chloroform delivery and before expulsion of the placenta, I had a powerful hunch that I was going to get a bad p.p.h., and knowing that ergometrine injected intramuscularly takes 4 minutes to act, I risked it just before squeezing out the placenta. My hunch proved correct, as even then the patient lost a little more blood than normal, and I agreed with the nurse when she said, "We should have had some trouble with her if you had not given that."—I am, etc.,

Stowmarket, Suffolk.

H. S. GASKELL.

### Nystagmus in Anxiety States

SIR,—It is not generally realized that lateral nystagmus may be a prominent feature in some of the patients who suffer from acute anxiety states. Nearly 17% of a group of patients who broke down under the stress of intense enemy action developed varying degrees of nystagmus, which, in the majority, disappeared quickly under rest and sedation. In a few patients, however, it persisted for several weeks. Nystagmus in these patients appears to be part of a process of temporary disintegration, similar to that responsible for producing generalized tremor of the limbs or stutter or temporary loss of bladder control. This is worth emphasizing in order to avoid prolonged investigation and unnecessary hospitalization of these patients.—I am, etc.,

London, N.W.7.

M. N. PAI.

### Débridement

SIR,—With reference to the letter on débridement (Sept. 16, p. 387), may I add a brief note.

The word was frequently used (and not infrequently misused) in the earlier years of the present war. In a review by Mr. (now, I believe, Major-Gen.) W. H. Ogilvie of "War Primer" in the *Bulletin of War Medicine* (1941, 1, 138), dealing largely with gas gangrene, he states: "... débridement, a term used to describe the excision of the whole wound track and of damaged or devitalized structures around it, the removal of blood clot, dirt, and foreign material, and the complete arrest of haemorrhage."

Also, in an earlier issue of the same *Bulletin* (1941, 1, 3), Mr. Reginald Payne, reviewing an article by Hoche in *Med. Klin.*, speaks of "surgical revision" of wounds, and adds the following note: "The term 'surgical revision' is one which has recently been introduced and includes the following:

(1) examination of a serious wound under anaesthesia; (2) determination of its extent; (3) removal of dead tissue and foreign bodies; (4) arrest of haemorrhage; (5) provision of drainage, if required. It will be seen that 'revision' includes considerably more than the French term 'débridement.'—I am, etc.,

Brintree, Essex.

H. HAROLD SCOTT.

### Prevention of Industrial Dermatitis

SIR,—I am grateful to Dr. Mummery for his further letter (Sept. 16, p. 387). If he publishes figures he takes the risk of having them read and having the reader draw his own conclusions. My quotation of 203 cases in 3,850 workers is still the total in Dr. Mummery's cases.

The fact that Dr. Mummery failed to protect his workers against paraffin and oil with barrier creams is suggestive that he did not use the correct protection. There is no one satisfactory barrier cream. Specific hazards must be protected by specific barriers.

I have recently investigated the risk of dermatitis in the photographic industry, and I learn that the common solutions in which photographers put their hands vary from pH 4.2 to pH 11, and it is the habit of these workers to put their hands into one solution and then another many times in the course of their work, and it is impossible to wash except at the end of a batch of printing and developing. It requires no imagination to see that far more than cleansing is necessary here. As a sufferer myself from sensitization and dermatitis due to so-called metal poisoning I have found that I now can touch my hobby without risk if the correct barrier cream is used.

In Dr. Mummery's own field it is evident that the workers in America take far more recognition of the sensitizing dermatoses. Fletcher Hall,<sup>1</sup> in a recent article of great importance to this industry, stated that oil folliculitis and chloracne were the only industrial dermatoses of major importance to the aircraft industry on which adequate studies have been published, and reference is made in the article to Schwartz and Russell, "Skin Hazards in Airplane Manufacture." He found after an investigation of 580 cases of dermatitis (210 re-industrial) in 65,000 employees in an aircraft company that sensitivity is a major factor. Schwartz<sup>2</sup> in the same issue of the *Journal of the American Medical Association* dealt with dermatitis from explosives, and makes the alarming statement that 30% of tetryl workers had dermatitis in the first 33 months. He recommends a protective. Peck, in the same issue, "Dermatitis from Cutting Oils, Solvents, etc.," states: "... exposed parts such as the face should be covered with protective ointments of the invisible glove type reinforced with inert powders." He also advocates adequate washing facilities and the use of the aliphatic alcohol sulphates or alkylated argylsulphonate, which removed dirt more easily than soap. Schwartz, the eminent American industrial dermatologist, in the article previously quoted,<sup>2</sup> goes through the whole of airplane manufacture—anodizing, degreasing, dope, hydrofluoric acid, machine shop, paint, plaster, welding, zinc chromate, etc.—and in his summary, which was the result of an inspection of aircraft factories employing over 100,000 men, he came to the following conclusions: "Preventive measure consisting of wearing of impervious clothing, the use of protective ointments, and the use of non-irritating skin cleaners in addition to proper general and local ventilation, etc."

My own experience is such that I am not satisfied with any one method of protection, and as this is in line with the recommendation of Dr. Schwartz I shall continue to recommend protection in every possible way.—I am, etc.,

London, N.

L. B. BOURNE,  
Medical Officer, A. C. Cossor, Ltd

### REFERENCES

- <sup>1</sup> *J. Amer. med. Ass.*, 1944, 125, No. 3, 179.
- <sup>2</sup> *Publ. Hlth. Rep. Wash.*, 1941, 56, 1581.
- <sup>3</sup> *J. Amer. med. Ass.*, 1944, 125, No. 3, 186.
- <sup>4</sup> *Ibid.*, p. 190.

### Infantile Gastro-enteritis

SIR,—In your leading article (Sept. 30) you say Drs. Alexander and Eiser "stress the aetiological role of parenteral, particularly upper respiratory, infection in gastro-enteritis." At a post-mortem on a three-months-old child whose death was due to gastro-enteritis I found a spheno-ethmoiditis with yellow pus (illustrated at p. 5, *Sinusitis and Mental Disorder*, 1938), the whole gastro-intestinal tract appearing almost normal, thus confirming the association and suggesting an aetiological relationship of the conditions.—I am, etc.,

Birmingham.

F. A. PICKWORTH.

### Artificial Insemination

SIR,—May I ask that the *Journal* will use its influence to obtain for the rank and file of the medical profession an authoritative pronouncement regarding the ethics of artificial insemination.

A patient of mine, while attending a birth control clinic, was recently asked if her husband would be willing to act as a donor for an artificial insemination panel. The lady was shocked and asked my advice about the whole question, being quite bewildered that such a request could be made to her on such an occasion. The question is one in which the public confidence in the medical profession is likely to be involved. If, without the knowledge of her husband, and without legal formalities of any description, a woman visiting a doctor's consulting-room can ethically be inseminated with the genes of an unknown male parent, the confidence of the general public in the profession may be impaired.

The Church, having for years condemned lust without procreation, may find difficulty in pronouncing upon the question of procreation without lust. The medical profession undoubtedly must take a leading part in guiding the general public on this



most difficult subject. Could we not have a considered pronouncement from a high authority on medical ethics, such as the General Medical Council, to guide the members of our profession, whose privilege it will be to educate the public in his most difficult problem of human relations? Should we all in this respect we may find that the present veterinary approach to this problem may persist and discredit our humanitarian traditions—I am, etc.,

Barnstable

RICHARD HARPER

### Bequests to Anatomy Schools

SIR—There appeared in the *Daily Telegraph* of May 9 this year a short appeal from Dr Neville Goodman, H.M. Inspector of Anatomy, to the medical profession to give a lead to the public by bequeathing their remains to the schools of anatomy. There must be many like myself who are willing and prepared to do this, all the more so when it is realized what is happening to so many young bodies on the various fronts.

I suggest that arrangements could be made to form an association affiliated to the Cremation Society (of which I am a member). The society could estimate the cost of collecting from the medical schools the remains allocated to any particular individual. These could then be cremated and the ashes disposed of according to the wishes of the deceased or nearest relative, the charge for doing this to be taken from the entrance fee to such an association—I am, etc.,

"DELTA"

### Service Medicine

SIR—There seems to me to be some confusion of thought on this subject. There is a considerable difference between "Services 'medicine'" and 'medical services'."

When a doctor is commissioned as a regular medical officer he is assumed—for the moment—to know all about medicine, surgery, and midwifery by virtue of his registrable qualification, so his training in administration begins. He has to learn that for every clinical act there is a corresponding administrative act, even though it only be filling in the "Disposal" column and signing a sick report. In addition to this he has to render certain necessary returns, some daily, some weekly, others monthly, quarterly, or even perhaps half-yearly. To omit rendering these to the proper authority is to delay the rendering of returns on the part of those whose duty it is to consolidate the returns received from lower formations. Moreover, by his signature of these returns the medical officer accepts responsibility for their accuracy. Delay and inaccuracy are two of the unpardonable sins.

He has to learn the system of store accounting, including the preparation and forwarding of indent and receipts for medical stores. When they arrive he as a medical officer, must "take them on charge" in his medical store account, which keeps a record of all receipts and expenditure. He must report deficiencies and breakages on the appropriate form and attribute blame to individuals responsible. He must keep a record of the patients he sees, with his provisional diagnosis of each, and state the disposal of the cases.

As he becomes more senior in rank he learns about the procedure with regard to medical boards, invaliding, etc., as well as the method of dealing with claims for payment from civil practitioners for attendance on Service personnel, and many other administrative details too numerous to mention here. At the same time he does actual medical work in dealing with the sick. Some he treats, others he may refer for treatment to hospitals or specialists. Then he has to act as the medical adviser to his commanding officer, and as such is responsible for camp or other sanitation and keeping a sanitary diary, as well as making application for urgent repairs to anything needing such which may come to his notice, whether they be blocked drains, leaky taps, or broken windows. But these are mostly items of administration.

In time of war the great reserve of all the medical services is the civil medical profession. The regular officer will probably be promoted to acting rank one or two or more steps higher, and, unless he be a surgical, medical, or other specialist, he will find himself in a more senior administrative post, because he has been properly trained in medical administration.

The called up civilian is more likely to be engaged in clinical work of some kind, and only such administrative activities as the nature of his employment demands—e.g., recording the patients seen and their treatment or disposal.

So far as Service medicine is concerned, it may be like general practice on a small scale (including families), or it may be actual hospital practice if he be in a military hospital, and it is his duty to maintain the high level of efficiency which is in peacetime the rule in all Service hospitals. He has to realize—getting down to 'brass tacks'—that he is employed by the State as a 'money saver,' in that he should aim so far as possible to prevent sickness and other casualties partly by advising his commanding officer, or, when these occur, that invalids must be restored to the active list with the loss of as few man hours as possible. To do this he must be an efficient doctor—whether as physician or surgeon. The principles of surgery and medicine in the Services do not differ one whit from those in civil life—which is to say that 'Service medicine' in its principles and practice does not differ from "civil medicine." I will go further, and say that in peacetime there are opportunities for doing good work in Service hospitals such as will probably not be found outside teaching hospitals. Grumbling about "Service medicine" by temporary officers serving in wartime has not been unknown in previous wars. Everything depends on the man himself, and the first thing he should learn is not to confuse Medicine with Administration—I am, etc.,

"UNCLE HARRY"

SIR—Whatever mistakes the Government may commit in the years of transition from war to peace, it is not likely to repeat the disastrous blunder of 1919, when our defences were so recklessly shorn away. Compulsory training in the Navy, Army, or Air Force has, in fact, already been announced for all boys and youths after the war, so that Service medicine will for many years cover a wider field than it did in the 1920s and 1930s. Directly or indirectly, whether we realize it or not, all of us are vitally concerned in the impending reform of Service medicine, whose existing faults I emphasize with constructive, not recriminatory, intent.

The hospital secretary and his lay staff hold an honoured position in the world of civilian medicine, and the appointment of medical men as hospital secretaries would mean a waste of medical training—to say nothing of the objection that medical men would fill such posts less efficiently than their present occupants. Yet the Services persist in using qualified medical men to do work requiring less knowledge of medicine than is possessed by the average hospital secretary, and such people must, according to Major C. H. Pauli (Sept. 23, p. 417), 'be given sufficient rank in order that medical policy may be fully stressed and enforced.' That is pure bunkum. If Major Pauli were ill with pneumonia he would doubtless desire treatment from the supposedly best doctor available, irrespective of rank. Similarly, a layman of any intelligence hearing an opinion with regard to medical policy would be impressed rather by the sponsor's professional status than by his gold oak leaves or coloured tabs.

Major Pauli's faith in the gods of administration is touching. He coolly ascribes to medical administrators the success of the Army transfusion arrangements. So far as medical men are concerned surely the chief credit belongs to (a) those pathologists who established blood transfusion depots under the auspices of the Medical Research Council before the war (see Sir E. Mellanby's paper on 'Medical Research in War-time,' *Journal*, 1943, 2, 351), and (b) the clinicians who decided which cases were in need of transfusion and those who performed it with the requisite dexterity. Questions of transport and distribution are admittedly vital, but their detailed solution is within the capacity of laymen so long as doctors give the necessary general guidance. Furthermore, Major Pauli is pleased to taunt me with ignorance of administration. As well might he reproach me for knowing little or instrument-making, radiological processes, hospital finance, central heating equipment, massage, and a host of other important matters in which the whole-time clinician necessarily relies upon expert auxiliaries.

Several correspondents have sought to bolster up Service medicine by reason of the skilled diagnosis and successful treat-



ment from which they have themselves benefited in the Forces. I submit, Sir, that such instances of professional skill do not constitute a valid argument in favour of Service medicine *as such*. Of course no one will deny that the Services now contain a large proportion of the finest clinicians and pathologists in the Empire. Many of your readers must have shared my delight in the tale of the Eighth Army mobile field surgical teams as vividly told by Brig. C. Donald (*Journal*, 1944, 1, 709, 743). Nor will the most irreconcilable opponent of Service medicine *as such* seek to minimize the triumphs of Service plastic and orthopaedic surgery, and the less spectacular but equally valuable work of the general practitioner, medical officer to a unit, or M.O. in charge of a hospital medical division. Nevertheless we must remember, in apportioning the praise, that the clinical achievements of Service medicine in this war are founded mainly on pre-war training and experience *outside* the Services, and that many clinicians are handicapped by subordination to a professionally insignificant minority of high-ranking regular maladministrators who have forgotten when they last handled a patient.

Until the war stops we temporary serving officers will help to work this defective machine; but, in the interests of truth, efficiency, and the welfare of our patients we shall protest against the continuance of present abuses in time of peace. Although we are now condemned to silence or anonymity we shall not always remain under the censorship of "brass hats." Much will be said later.—I am, etc.,

"TEMPORARY SERVING OFFICER."

### The Young Married Doctor

SIR,—With regard to recent correspondence on medical education, both pre- and post-graduate, I think there is one point which is often overlooked: that is, the influence of marriage upon a newly qualified doctor's choice of career.

After a very long undergraduate course the young doctor, apart from financial considerations, which are often weighty in view of current residency salaries, has a choice to make. If he wishes to specialize he must deliberate the old truism about marital refrigeration. In other words, he is asked to spend another lengthy period wholly unnaturally to attain that goal. As we as a class show no variation from the general public biologically, an initial loss of recruits occurs shortly after qualification. How many know only too well the fatal effect of an honest answer to the question, "Married or single?" upon an application for a hospital post. I have personally found this to be true, even in these days of shortage and being rejected for the R.A.M.C.

Could not, therefore, this simple reform be considered amid all the welter of projected contemporary schemes—namely, more provision for married men in senior hospital resident posts after twelve or eighteen months' postgraduate experience? It is not asking for a great deal when balanced with what sacrifice has already been made in comparison with most professions. It seems to me that unless this is done an even greater loss will occur after the war. Can anybody reasonably expect a Service M.O. (many of whom are married) away from his family for perhaps years to be willing to continue even part-time separation for a number of years after the conclusion of hostilities? If this be true of wartime, how many in peacetime sacrifice keenness for domesticity when both can be combined without loss of efficiency.—I am, etc.,

"Y.M.D."

### A Bouquet

SIR,—May I be permitted to express my admiration for, and thanks to, the Editor and staff for the magnificent way in which the high standard of the *Journal* has been maintained throughout the past five years of war?—I am, etc.,

London, S.W.5

R. E. PALMER FIELD.

\* \* We thank Dr. Palmer Field and the many correspondents who have written to the same effect in private letters.—Ed., B.M.J.

D. Polowe (*J. Amer. med. Ass.*, 1944, 124, 771) records a case of splenectomy in the eighth month of pregnancy complicated by thrombocytopenic purpura haemorrhagica in a 2-para aged 29. A large splenoma was found. The patient was delivered of a normal infant about two weeks before the estimated term.

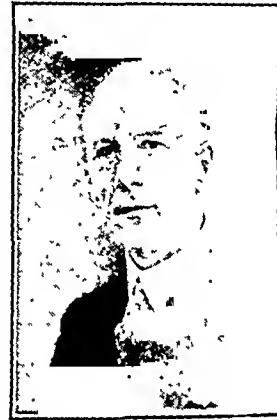
## Obituary

SIR JOHN LEDINGHAM, C.M.G., F.R.S.,  
LL.D., D.Sc., M.B., F.R.C.P.

With the death of Sir John Ledingham on October 4 pathology and bacteriology lose a most distinguished figure, whose whole life was devoted to the prosecution of research and the encouragement of fellow workers. He served the Lister Institute of Preventive Medicine for 38 years in all, becoming Director in January, 1931, after a long period as head of the department of bacteriology, serology, and experimental pathology.

John Charles Grant Ledingham was born at Boyndie, Banffshire, in 1875, son of the Rev. James Ledingham, minister of the parish, and from the local public school went to Banff Academy and thence to the University of Aberdeen, where he graduated M.A. in 1895, with first-class honours in mathematics and physics, and won the Simpson and Arnott Prizes. His career in the Faculty of Medicine was no less brilliant; after winning two gold medals he took the B.Sc. degree (with distinction) in 1900 and the M.B. (with honours) in 1902, and then held the Anderson scholarship. Post-graduate study at Leipzig University and at the London Hospital led to his appointment to the staff of the Lister Institute in 1905, and after a few months in the serum department at Elstree he was transferred to the main Institute on Chelsea Embankment as assistant bacteriologist; he became chief bacteriologist in 1908 and succeeded Sir Charles Martin as Director from 1931 to 1943. In 1920 the University of London granted him the title of Professor of Bacteriology, and as head of the bacteriological department of the Lister Institute he helped in every way the investigations of members of his own staff and of all research scholars or voluntary workers, native or foreign, attached to the department, including graduates conducting research with a view to the higher scientific degrees of the university. During his tenure of one of the most responsible posts in preventive medicine he proved himself a capable administrator, while inspiring those who worked under him and pursuing his own experimental studies on viruses and virus diseases and a wide range of other subjects. The establishment of the National Collection of Type Cultures was one of the many projects that gained his warm support.

The Governing Body of the Lister Institute took pride in the outstanding contributions to scientific knowledge for which Ledingham had been responsible through his own researches and through the many investigations carried out under his friendly guidance and stimulus by members of the staff and others enjoying its scientific hospitality. His wide knowledge, sound judgment, and personal distinction as an investigator in the fields of pathology, bacteriology, and immunity enabled him to render to the Government and the nation services of great importance, which were recognized by the public honours he received, including the C.M.G. in 1918 for his work in the last war, election as F.R.S. in 1921, his knighthood in 1937, the honorary LL.D. of his own university (Aberdeen), the Sc.D. of Dublin and D.Sc. of Leeds, and the title of Professor Emeritus of Bacteriology conferred on him this year by London University. He was a member of many expert scientific committees and chairman of the Tropical Disease Committees of the Medical Research Council and the Royal Society. He presided over the second International Congress for Microbiology held in London in 1936, and was honorary president of the third Congress held in New York in 1939. Some thirty papers were published under his name or in collaboration with



[Lafayette, Ltd.]

others during the period 1920-43, and a book written jointly with his colleague Sir Joseph Arkwright, *Carrier Problem in Infectious Diseases* came out in 1912. He delivered the Jarvis Lectures on 'Some Problems of Natural Immunity' in London in 1924, and ten years later the Hefter Lectures in Baltimore, describing his studies on viruses up to that time in the work that led to the publication in 1933 by the M.R.C. of the *Transactions on Diphtheria* and the publication in 1930-1 of the encyclopedic *System of Bacteriology* in nine volumes. Prof. Ledingham took a full share as contributor and associate editor.

He was elected a Fellow of the Royal College of Physicians of London under the special by-law, had been examiner for the College, and also served as a member of its Council. During the last war he held the rank of lieutenant colonel, R.A.M.C., took charge of the bacteriological department of the King George Hospital for a year, was a member of the Medical Advisory Committee in the Mediterranean and became consulting bacteriologist to the Forces in Mesopotamia. In the British Medical Association, which he joined 40 years ago, he was secretary to the Section of Bacteriology at the Annual Meeting of 1910, vice president of the Section of Pathology and Bacteriology in 1912 and again in 1914, and presided over that Section in 1925.

#### ALFRED C. COLES, M.D., F.R.S.E.D.

Dr. Alfred Charles Coles died on Sept. 26 at his home in Bournemouth, aged 78. He was a very expert medical microscopist and made this his hobby after retiring from active work. He had studied medicine in Edinburgh, graduating M.B. Ch.B. in 1889, B.Sc. in 1890, M.D. in 1893, and D.Sc. in Public Health in 1903; he took the M.R.C.P. Lond. in 1907. Before settling in practice as a physician Dr. Coles had been house-surgeon for a year at the East Suffolk and Ipswich Hospital, and for three years at the County Hospital, York, later serving as R.M.O. at Queen Charlotte's Hospital. He was elected physician to the Royal National Sanatorium in 1914 and to the Royal Victoria Hospital, Bournemouth in 1919, having served during the last war as medical officer in charge of the bacteriological laboratory of the Military Hospital at Mont Dore. He joined the B.M.A. in 1891, and had been president of the Bournemouth Medical Society. He wrote three books: *Clinical Diagnostic Bacteriology* (1904), *The Blood: How to Examine and Diagnose its Diseases* (1905), which went into a third edition, and *Critical Microscopy* (1921). His last published writing appeared in these columns on Oct. 11, 1941, under the title 'The Size and Visibility of the Filterable or Virus Bodies'.

Dr. MERVYN H. GORDON, F.R.S., writes

Coles was a master of the microscope, the range of which he showed to be far higher than others realize. He concentrated on diseases of unknown aetiology, and succeeded in finding in many of them bodies that may or may not prove ultimately of causal significance. He acquired a superb technique, and when in Hodgkin's disease, after other agents had been excluded, elementary bodies were found, Coles, at first sceptical, was not satisfied merely with confirming it. He sent me wonderful photographs of these bodies—stained and unstained—side by side with similar virus bodies, the established organism of vaccination. A great investigator.

The following well-known medical men have died abroad: Dr. YANDELL HENDERSON, eminent professor of physiology, Yale University, aged 70; Dr. CHARLES HENRY MAY, a prominent ophthalmologist whose *Manual of Diseases of the Eye* went through 18 editions, aged 83; Dr. WARREN TAYLOR VAUGHAN, editor of the *Journal of Laboratory and Clinical Medicine* and an authority on allergy, aged 51; Dr. JOSE GUTIERREZ, extraordinary professor of radiology and physiotherapy at Buenos Aires, Dr. CARL KOLLER, an eminent ophthalmologist of New York, formerly of Vienna, celebrated for his work on cocaine as a local anaesthetic, aged 86; Dr. CHARLES WULFS BURY, eminent professor of mental disease at the University of Pennsylvania department of medicine, aged 82; Prof. PIERRE NOBÉCOURT, the eminent Paris paediatrician, aged 72; Dr. ARTHUR MONCORVO FILHO, a pioneer in paediatrics and infant hygiene in Brazil, aged 73; and Dr. FRANZ CHOVIŠTEK, jun., formerly professor of internal medicine and director of the Third University Clinic in Vienna, aged 79.

#### LEWIS SMITH, M.D., F.R.C.P.

Consulting Physician to the London Hospital

Dr. Lewis Albert Smith, who died in retirement on Sept. 17 at Cricketham aged 75, served the London Hospital as assistant physician and physician from 1902 to 1927, when he was elected to the consulting staff.

He was born at Chelmsford on May 8, 1869, third son of Joseph Alfred Smith of that town, and entering the London Hospital Medical College in 1889 won the Letheby scholarship in chemistry and graduated M.B. Lond., with honours in

forensic medicine and obstetric medicine after qualifying in 1895. He took the M.R.C.P. in 1901, and in the following year qualified for the gold medal at the M.D. examination. His teaching career at the London Hospital began as medical tutor, and before he was appointed to the visiting staff there he had been physician to the Eastern Dispensary in Whitechapel and to the Poplar Hospital. He was elected F.R.C.P. in 1910, and represented the College as examiner



in medicine on the Conjoint Board in 1923-6. Recognized by his house physicians and clerks as a sound teacher of clinical medicine, Lewis Smith built up a large consulting practice. He inspired warm feelings in his juniors, and had the gift of keeping up old friendships. He contributed articles to Allchin's *System of Medicine* and to Hutchison's *Index of Treatment* and was the author of a little waistcoat pocket book, *'Golden Rules of Medical Practice'*, which epitomized common sense and knowledge of human nature in the form of dry aphorisms. Lewis Smith abstained from public occasions and medical politics; he joined the B.M.A. in 1906, but after acting as secretary of the Section of Medicine at the Annual Meeting of 1909 he took no further part in its business.

Sir FREDERICK MENZIES writes

The news of the death of Dr. Lewis Smith, or "L.A.," as he was affectionately called by many of his friends, will have been received with deep regret by a large circle of his old colleagues, students, and friends, particularly of the London Hospital. For the last four years he had been living in peaceful retirement at Cricketham, North Wales, and although it had become necessary for him to live a semi-invalid life for the greater part of this period, he always continued to take a remarkably keen interest in all the developments of war-time, at home and abroad. In addition, he kept closely in touch with a large number of his old friends in all parts of the world by means of an extensive correspondence, and by the periodical issue of brief brochures, in the course of which he related various interesting experiences of his favourite pastime of fishing. Despite his severe physical disabilities, which made movement very difficult for him in recent years, he was marvellously cheerful, alert-minded, and loved a good long talk about all kind of problems—medical, political, economic, literary, etc. He possessed a powerful personality and expressed himself clearly, concisely, and strongly upon any subject in which he was interested, so that there was never any doubt about his views. Nevertheless, he did not arrive at his opinions without considerable and careful thought, and there was never a more warm-hearted, generous friend than "L.A." and not only to his friend but to many lame dogs whom he helped over a difficult stile. The sudden and unexpected death of his brother-in-law, Sir Hugh Rigg, with whom he had been very closely associated all through professional life and to whom he was extremely devoted, came as a terrible shock and deep sorrow to "L.A." and was greatly accentuated by the almost simultaneous deaths of two other very close friends—Hurry Fenwick and Wilfred Hadley. I cannot go on without paying humble tribute also to the devotion and love bestowed upon him ceaselessly by his wife. It was my privilege to be with them on the day, quite recently, when they celebrated their fortieth anniversary of their wedding day and to witness the happiness when congratulatory telegrams and letters poured in from relatives and friends at home and abroad. Like many of my friends I shall sadly miss "L.A."—with whom I have happy hours.

The death took place at his residence in Sunderland on Sept. 1 of Dr. RICHARD HENRY DIX, aged 68, after a long illness. He was born in Sunderland and studied medicine at Durham and Dublin Universities. He graduated M.B., B.S. Durham with honours in 1900 and took the M.D. in 1902. In 1914 he obtained the M.R.C.S.Eng. and L.R.C.P.Lond. diplomas. After holding appointments as assistant demonstrator of pathology, anatomy, and physiology at Durham University he settled in Sunderland, where in an extensive private practice his patients were fortunate in having the benefit of his unusual skill and clinical judgment. His reputation as a family doctor in the best tradition was well recognized among his colleagues. In his early days Dr. Dix was somewhat of a local pioneer in radiology, which he carried out with apparatus installed in his surgery. His enthusiastic work in connexion with local medical organizations was well known, but by many of the public he will be gratefully remembered as honorary surgeon to the Sunderland Children's Hospital. It was there that for many years he gave much of his time and interest to work to which he was particularly devoted. Until the time of his illness he had been hon. secretary of the Sunderland Medical War Committee.

A veteran member of the B.M.A.—Dr. JOHN HUTTON BALFOUR—who joined it in 1887, died at Gullane on Sept. 15, aged 84. He graduated M.B., C.M.Ed. in 1881, and after serving as resident surgeon at the Royal Infirmary, Edinburgh, practised for more than 57 years in the Portobello and Niddrie districts. At the close of 1931 he received a presentation at a public meeting at Newcraighall, Midlothian, when the chairman said that Dr. Balfour had succeeded his father and brother, so that his family had then practised medicine in the neighbourhood for 78 years. Before the introduction of the National Health Insurance scheme "Dr. John," as he was widely and affectionately known, was, in addition to his ordinary work, medical officer to a number of collieries. He retired from practice seven years ago. He had taken a large part in the social and athletic life of the district and was himself a keen rugby football player and golfer in his younger days, and greatly interested in rowing and bowling. He was proud of having brought into the world almost 6,000 babies, and in doing this had lost only six mothers, one of them a woman at the point of death whom he was called in to on passing the house.

Dr. HENRY ALFRED LEEBODY, who died on Sept. 19, was the second son of Prof. Leebody of MacGee College, Londonderry, and, through his mother, was a direct descendant of John Knox. After a B.A. course in Ireland he went on to study medicine in Edinburgh, where he graduated M.B., C.M. in 1895. For a quarter of a century he was in general practice in the village of Corstorphine, now a suburb of Edinburgh, and he found an outlet for his inborn love of soldiering in service with the Queen's Edinburgh Rifle Volunteer Brigade, and later, on the formation of the Territorial Army, with the 3rd Lowland Field Ambulance. Shortly after mobilization on the outbreak of war in 1914 he was posted to the Scottish Command as D.A.D.M.S., where he became before the end of the war A.D.M.S., with the substantive rank of colonel. Disappointed in his hopes of further military service by the descent in 1920 of the "Geddes axe," he was fortunate in obtaining congenial work on the tribunals of the Ministry of Pensions until 1927. For the next 10 years he served as ship surgeon with the P. & O. line, which afforded him a welcome opportunity of travel and provided him with leisure to develop his remarkable gifts as an artist both in black-and-white and in colour. Dr. Leebody was a typical Irishman, keenly observant, humorous, kind-hearted, and generous. He was tall and strongly built and apparently incapable of fatigue. Throughout his life he was, to everyone with whom he came in contact, a true guide, philosopher, and friend, and an unfailing source of strength and inspiration. His son, Dr. John Leebody, is the medical superintendent of St. George-in-the-East Hospital, Wapping.

We regret to announce the death in retirement at Redlynch, near Salisbury, of Dr. THOMAS GILLESPIE, late honorary physician to the Southampton Children's Hospital, who represented his Division at the Annual Meeting of the B.M.A. in 1922. He began the study of medicine at Cambridge, taking his B.A. in the Natural Sciences Tripos of 1897, and after qualifying in 1900 became H.P. at Bart's and assistant H.P. at the Metropolitan Hospital. He took his M.A., M.B., B.Ch. degrees at Cambridge in 1901, and served during the last war as temporary captain, R.A.M.C. Dr. Gillespie was a co-founder of the Children's Hospital at Southampton and a member of the Board of Management from 1908 until he retired in 1938: a invalid is now called after him. He was also an original

member of the Itchen, Romsey, and District Local Medical Service—one of the first in this country (1921)—and its chairman for over 20 years. His charm was the most typical feature of an all-round rare personality. A medical colleague writes: So Tom Gillespie has gone, and with him something of sweetness and light has passed forever from the earth. For Tom, as he was universally called, had above everything the great gift of friendship. Few men can have had more friends, and no one was ever less likely to have an enemy. Coming to Southampton some 40 years ago after a noteworthy hospital career, he very quickly gained the affection and trust of his patients and the high regard of his professional colleagues for his skill. His best-known work was probably his connexion with the Children's Hospital, the fortunes of which he helped to guide with great wisdom for many years. For Gillespie was a man of a very matured and sane judgment; every committee of which he was a member—and they were numerous—came to rely more and more on his opinion. Few can have been called on more often by all sorts and conditions of men for advice and help in personal troubles, for he saw life steadily, and he saw it whole. It was a great blow to his professional friends and to his many patients, when an increasing lameness, borne, as would be expected of him, with courage and patience, led to his retirement shortly before the war; but we all hoped he would enjoy many years of happiness, for with his great intelligence and his varied interests, life still held much for him.

## Universities and Colleges

### UNIVERSITY OF LEEDS

The inaugural lecture in the Faculty of Medicine of the University of Leeds will be given by Sir Joseph Barcroft, C.B.E., F.R.S., in the Riley Smith Hall of the University Union at 3 p.m. on Thursday Oct. 26. Subject: Problems in Foetal Life. Members of the medical profession are cordially invited to be present.

## Medical Notes in Parliament

### Hospital Accommodation in London

On Sept. 26 Sir E. GRAHAM-LITTLE asked the Minister of Health whether he was aware that through recent requisitioning of another 50% of beds in the London hospitals, occasioned by the opening of the second front, the admission of civilian patients to the London hospitals had become almost impossible; and whether he would release for civilian use a proportion of the empty beds reserved for military casualties. Mr. WILLINK: As part of the plans for receiving casualties from Western Europe hospitals throughout the country were asked to restrict the admission of civilian patients, the aim being to reduce occupancy on the average to about 50% of the beds. In some hospitals this step was necessary in order to secure more beds for the casualties, and in others, notably in London, to set free staff for the hospitals specially designated to receive the casualties on arrival in this country. At the same time it was made clear that the restrictions were not to be applied to patients in immediate need of treatment in hospital. In view of recent developments of the war situation, my officers are now arranging for the restrictions to be relaxed, bearing in mind the varying needs at each hospital of civilian and Service patients respectively.

### Mass Radiography in Liberated Countries

On Sept. 26 Mr. PARKER asked the Minister of Health whether he would consider supplying a limited number of mass radiography sets, from the stock of apparatus ordered by the Ministry from British manufacturers, to the Allied Governments that they might be able to estimate the extent of the tuberculosis problem in their countries after liberation; whether training would be provided through the Ministry's special training course to such Allied mass radiography teams as required it; and whether the co-operation of British tuberculosis experts would be available to assist and advise the Allied Governments in their antituberculosis work. Mr. WILLINK said that the question of making mass radiography apparatus available to the liberated countries was outside his responsibility, but it was under consideration by UNRRA. In regard to the last two parts of the question he would be glad to render all the assistance in his power.

## Production of Penicillin

In reply on Oct 4 to Col Lyons Sir ANDREW DUNCAN said that seven plants, six of which were pilot plants, were producing penicillin in this country. Nine large-scale plants were expected to come into operation within the next six months. Two of them were about to start production. The Government was in the closest touch with organizations in America and Canada and had the active assistance of one of the American firms in one of the plants it was putting up.

## Local Authority Hospitals

Answering Sir Ernest Graham-Little on Oct 5 Mr. WILLIAMS said that apart from specialized institutions, such as mental hospitals, maternity hospitals, infectious diseases hospitals, and sanatoria, the number of beds contributed by institutions and hospitals under the control of local authorities in England and Wales was 131,440. Of these 73,921 were in 154 general hospitals and 57,519 in 376 institutions for the sick, infirm, and mental cases. About 390 of the hospitals and institutions were administered under the Poor Law.

**D.D.T. against Flies and Lice**—On Sept. 26 Viscount CASTLE-REAGH asked the Minister of Production if, in view of the large increase in the number of flies and other germ-carrying insects and the danger of a corresponding increase in disease, he would make available to the public the disinfectant, dichlorodiphenyl-trichloroethane. Mr. LYTLETON said that the total production of D.D.T. available to the United Nations was at present required for military use, and it was not possible to release any for general civilian use. A small quantity had, however, recently been allocated to the Ministry of Health for use in air raid shelters. Raw materials for effective fly sprays had been available to manufacturers during 1944.

## Notes in Brief

Provision of honours for the chronic sick and the permanently incapacitated is one of the aspects of the National Health Service which are engaging the attention of the Minister of Health.

It is estimated that the balance in the approved societies' current account under the National Health Acts at June 30, 1944, was £13,300,000 and the cost price of investments at that date £104,400,000.

The Government of Nigeria is educating the public in the dangers of fraudulent drugs and considering whether legislation should be introduced controlling advertisements of them.

## EPIDEMIOLOGICAL NOTES

## Discussion of Table

In England and Wales notifications of measles were 354 higher than last week, scarlet fever 105 higher, and diphtheria 25 higher. Notifications of acute pneumonia rose by 144 after being practically constant for seven weeks.

Measles is prevalent in the north. Lancashire reported 191 more cases than last week, and Cheshire 43. Lancashire also had 43 more cases of scarlet fever, and Glamorganshire 27. There were 24 fewer cases of whooping-cough in the whole country, although in Lancashire the total rose by 54.

No new outbreaks of dysentery were reported but there was a rise in incidence in most of the existing outbreaks, the total cases, 365, being 14 higher than last week. The largest returns were Essex 36, Glamorganshire 35, London 34, Surrey 27, Dorsetshire 26, Hertfordshire 26, Sussex 26, Lancashire 24, Kent 17. Only 1 case was reported from the outbreak in Staffordshire and 4 from Derbysire, where 21 and 23 cases respectively were notified last week.

In Scotland notifications of acute primary pneumonia went up by 51, of scarlet fever by 69, of dysentery by 30, and of measles by 28, but there were 31 fewer cases of diphtheria and 27 of whooping-cough. The rise in dysentery was due mainly to increases in the 47 cases notified in Edinburgh and the 55 in Glasgow.

In Eire 117 fewer cases of diarrhoea and enteritis were reported, but the incidence is still high, 68 notifications.

In Northern Ireland the notifications of diphtheria rose by 21, while those from measles and scarlet fever fell by 5 each.

## Week Ending September 30

The notifications of infectious diseases in England and Wales during the week included: scarlet fever 1,828, whooping-cough 982, diphtheria 545, measles 2,015, acute pneumonia 479, cerebrospinal fever 39, dysentery 351, paratyphoid 11, typhoid 11, poliomyelitis 20, polio-encephalitis 2, encephalitis lethargica 2.

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## INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended Sept. 23.

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year, for (a) England and Wales (London included) (b) London (administrative county) (c) Scotland (d) Eire. (e) Northern Ireland.

Figures of Births and Deaths, and of Deaths recorded under each infectious disease, are for (a) The 126 great towns in England and Wales (including London) (b) London (administrative county) (c) The 16 principal towns in Scotland (d) The 13 principal towns in Eire (e) The 10 principal towns in Northern Ireland.

A dash — denotes no cases, a blank space denotes disease not notifiable or no return available.

Disease	1944					1943 (Corresponding Week)				
	(a)	(b)	(c)	(d)	(e)	(a)	(b)	(c)	(d)	(e)
Cerebrospinal fever Deaths	33	6	20	4	1	49	6	10	—	2
Diphtheria Deaths	566	17	152	86	36	757	39	167	103	25
Dysentery Deaths	365	34	134	—	—	270	42	71	1	—
Encephalitis lethargica, acute Deaths	1	—	2	—	—	4	—	—	—	—
Erysipelas Deaths	—	—	37	15	2	—	—	63	6	3
Infective enteritis or diarrhoea under 2 years Deaths	67	3	38	17	5	61	10	16	140	30
Measles* Deaths	1,509	19	156	7	19	466	36	31	9	3
Ophthalmia neonatorum Deaths	74	6	12	—	—	70	2	12	—	—
Paratyphoid fever Deaths	8	—	21	1(B)	—	14	2	1	—	—
Pneumonia, influenza Deaths (from influ- enza)	435	13	14	2	1	356	14	3	1	1
Pneumonia, primary Deaths	10	—	—	—	—	9	1	3	—	—
Polio-encephalitis, acute Deaths	17	219	18	5	8	1	135	11	8	9
Poliomyelitis, acute Deaths	16	1	11	3	—	8	—	—	3	—
Puerperal fever Deaths	1	1	14	—	—	—	15	—	—	—
Puerperal pyrexia Deaths	134	8	9	—	1	149	10	5	1	2
Relapsing fever Deaths	—	—	—	—	—	—	—	—	—	—
Scarlet fever Deaths	1,696	30	322	33	54	2,772	260	337	50	69
Smallpox Deaths	—	—	—	—	—	—	—	—	—	—
Typhoid fever Deaths	12	2	2	16	2	3	—	2	11	3
Typhus fever Deaths	—	—	—	—	—	—	—	—	—	—
Whooping-cough* Deaths	1,059	57	64	25	3	1,480	102	167	49	9
Deaths (0-1 year) Infant mortality rate (per 1,000 live births)	331	33	88	41	18	313	45	55	61	14
Deaths (excluding still births) Annual death rate (per 1,000 persons living)	4,124	506	614	187	123	3,658	534	543	192	99
Live births Annual rate per 1,000 persons living	6,28	414	926	386	281	6,212	709	868	435	269
Stillbirths Rate per 1,000 total births (including stillborn)	191	12	37	—	—	197	23	30	—	—

\* Measles and whooping-cough are not notifiable in Scotland, and the returns are therefore an approximation only.

† Paratyphoid A, B, 1.

‡ Includes primary form for England and Wales, London (administrative county) and Northern Ireland.

§ Includes puerperal fever for England and Wales and Eire.

¶ Owing to evacuation schemes and other movements of population, birth and death rates for Northern Ireland are no longer available.

a dilution of 1:16 of the patient's serum. Agglutination, if present, can be reversed by placing the tubes in a water-bath or incubator at 37° C.

The Paul-Bunnell test is carried out with a suspension (0.5-2%) of sheep R.B.C.'s, the mixture of serum and cells is incubated at 37° C. for 1 to 2 hours, and the results read immediately or after standing at room temperature overnight. (The tubes should not be put in the cold as is sometimes recommended.) The diagnostic titre depends on the particular technique used; it usually lies between 1:50 and 1:100. Thus there is little likelihood of confusion between the two tests, and a significantly positive Paul-Bunnell reaction will not occur with the infections—e.g., virus pneumonia and trypanosomiasis—that give rise to cold agglutinins provided the tests are correctly performed. A false positive Paul-Bunnell reaction may occur in serum sickness, but these agglutinins may be removed by absorption of the serum with an emulsion of guinea-pig kidney.

The rationale of the Paul-Bunnell test was described in the reply printed in the *Journal* of Dec. 11, 1943, p. 771: and cold agglutinins in the *Journal* of April 1, 1944, p. 481.

### Flea Bites

**Q.**—*A woman of clean habits has always been susceptible to insect-bites. With canteen work and more use of public vehicles, life has become a misery. She never comes in without a flea, which never leaves her until it is found and destroyed. Is there any liquid or powder one could spray on the body and clothes which would act as a repellent, or preferably as an insecticide? Why are some people's reactions to a flea bite so violent, sometimes resulting in urticarial spots, while with some people the reaction is hardly noticeable?*

**A.**—Fleas are prevalent in warm weather and seem to have been particularly bad this summer. The foci of infestation are usually in houses where fleas breed in undisturbed corners; it is most unlikely that they would breed in public conveyances if these are reasonably clean. It is, however, quite easy to acquire fleas by close contact with people from infested homes. Unfortunately no repellent can be recommended at present, most of the older remedies being as unpleasant for the human skin or nose as for the flea. It may be found that spraying the socks with strong insecticide will act as a deterrent, for fleas cannot jump upwards more than five or six inches. Unless people are exposed to special risk from fleas by reason of their occupation, an infestation at home should be suspected in case of frequent attacks. In clean homes fleas can usually be traced to pet animals; both the cat and dog fleas are liable to bite man. The sleeping place of any pet as well as its fur should be carefully examined. Some people are known to be much more sensitive to flea bites than others, which is the usual case with reaction to insect bites. It would appear that the irritation is a form of allergy. It is probably for this reason that some people are apparently immune from bites, while others complain that they seem to attract fleas.

## INCOME TAX

### Benefits in Kind

M. S. employs a surgery cleaner whom he supplies with dinners and teas; can he charge the cost of the meals as a professional expense?

\* Certainly. As to the amount to be charged, it is not possible to give advice other than to say that a reasonable estimate of the cost of the food should be the basis of the amount which can be charged.

### Appointments: Schedule D Assessment

"A. B. C." writes: "Since the beginning of the war my earned income has come from appointments only and I have been assessed under Schedule D, just as I was assessed when in general practice." He asks whether he would have been liable for less tax if he had been assessed under Schedule E.

\* It is not possible to give a categorical answer, as the choice of schedule may have worked both ways. On the one hand the rules with regard to expenses (particularly the expense of travelling between residence and the place of work) are rather more rigorous under Schedule E, and "A. B. C." may have benefited from assessment under Schedule D in that respect. On the other hand cancellation of 7/12ths of the tax assessed for 1943-4 applies only to emoluments assessable under Schedule E, and "A. B. C." has lost that advantage. On balance "A. B. C." has probably lost, but as he is presumably not paying tax for 1944-5 under the "pay-as-you-earn" system, there is, so far as he is concerned, no overlapping of tax deductions—which, of course, is the reason for the cancellation. If the loss is material application might be made to the inspector of taxes to treat the assessment as if it had been made (as apparently it should have been made) under Schedule E, or alternatively to discharge that assessment and create another under Schedule E to which cancellation will apply.

## LETTERS, NOTES, ETC.

### Ingrowing Toenail

Wing Cmdr. A. RONALD (Cosford) writes: It surprised me that in the various methods of palliative treatment recommended for ingrowing toenail (Sept. 16, p. 390) the most effective and simplest method—namely, packing under the nail edge with cotton-wool or tinfoil—should be given last of four methods, and the most important point of all omitted—i.e., that the nail must be allowed to grow beyond the end of the toe. Any treatment by a cutting of the nail either in "Vs" or otherwise must result in formation of a chisel edge which on walking produces a fresh ulcer, and it is only by allowing the nail to grow in its normal way beyond the end of the toe that the condition can be really cured. So-called "radical treatment" by amputating half the phalanx from such an important weight-bearing structure as the great toe seems a terrible confession of failure on the part of surgeons as a whole. If packing under the nail edge should fail to cure the condition, which is most unlikely if the packing is persisted with over three or four months, then a very effective and rapid method of dealing with the complaint is removal of the nail and nail-bed followed at once by split skin graft.

Dr. W. F. COOPER (Kingston Hill) writes: You had a note on ingrowing toenails (Sept. 16, p. 390). A very simple method is to file the middle part of the nail almost to the bed instead of cutting a piece out; it can be repeated as often as required, is quite painless, and efficient. Some nails have debris under parts, causing irregular growth; but it is easy to file the nail down, to scrape out the debris and cut off what is necessary, so that the nail grows normally. Nails are best filed when dry and cold, but cut best when wet and as hot as possible (forming the other type of chitin). A bastard-cut file is best for toes, and smooth-cut for fingers.

### "Cracked Fingers"

Col. S. HAUGHTON, I.M.S. (ret.), writes: The following treatment may help the doctor who asks this question (Sept. 9, p. 361). I suffer frequently from "cracked fingers" due mainly to gardening. This treatment has never yet failed to cure this condition with me. (1) With an ordinary nail-file, file away any hard skin. (2) Paint the cracks with friar's balsam. (3) Splint the tip of the finger with elastoplast. If the crack is at the tip of the finger one requires a piece of plaster from palmar to dorsal surface and then a second piece round the finger. If the crack is at the side then a circular piece is sufficient. I reapply after 4 days. My cracks are always healed in 7 to 10 days. It is the splinting by the "elastoplast" with the subsequent rest the finger gets that allows the cracks to heal so quickly. With me this never fails and all pain goes at once.

Lieut.-Col. M. ORR WILSON (Plymouth) writes: Another very good treatment for cracks on the finger-tips which are very painful and difficult to heal is the use of methylated ether to cleanse the skin after the removal of plasters. A finger-stall made of elastoplast soon stops the pain and heals the crack. Ordinary anaesthetic ether does not seem to have the same effect. This note is the result of painful experience and further experiments.

### W.C. Equipment

"M.D." writes: I would suggest that the lack of facilities for washing after defaecating can be overcome by using absorbent cotton, which can be soaked in the water entering the pan. Scrupulous cleanliness is impossible with ordinary toilet paper. I suffered for years from pruritus until I had my appendix removed, and found that the only way to relieve it was by washing after defaecation and applying surgical spirit.

### Cerebrospinal Fever Investigation in Scotland

Dr. J. SMITH, F.R.C.P., Director of the City Hospital Laboratory, Aberdeen, writes to correct an omission in the leading article on treatment of cerebrospinal fever (Oct. 7, p. 475). Aberdeen also participated in the investigation.

### Sensitivity to Sulphonamides

The reader who asked the question under the above heading in the *Journal* of Sept. 16 (p. 390) now writes: In the case which I quoted, where the patient developed irritation of the hands, mouth, and anus on taking sulphathiazole, I tried the effect of giving nicotinic acid with the drug and was completely successful in overcoming the symptoms of irritation. I began with 0.25 g. sulphathiazole and 50 mg. nicotinic acid, and, as no irritation resulted, followed this with a similar dose in two hours, then 0.5 g. plus 50 mg. nicotinic acid in another 4 hours. After that I gave 1 g. sulphathiazole and 100 mg. nicotinic acid three times daily for several days with complete success, there only being very slight and transient irritation of the hands about one hour after each dose.

LONDON SATURDAY OCTOBER 21 1944

## PLASMA VOLUME IN TRAUMATIC SHOCK

BY

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AND

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The estimation of plasma volume in patients with traumatic shock has been beset with difficulties. Most methods have depended upon the estimation of Evans's blue in plasma after the injection of a known quantity of the dye into the blood stream. In fasting subjects quite reliable results can be obtained by direct determination of the dye in plasma, but the turbidity of the plasma of non-fasting subjects, and especially of patients with traumatic shock, renders this method very unreliable. The technique described by Crooke and Morris (1942) has overcome this difficulty, but it has been found that a small amount of haemolysis which cannot always be avoided in shocked patients has led to considerable errors in the estimation. A method of correction for this has now been devised (Morris, 1944), but a further serious cause of error has been traced to the effect of morphine or hyoscine given to patients before the injection of Evans's blue (Bowler, Crooke and Morris 1944). These substances may cause anomalous dye concentration curves, thus making the determination of plasma volume impossible. Normal curves are obtained however when the dye is injected a sufficient time before the morphine or hyoscine to allow it to become uniformly mixed in the circulation. In the light of these observations a number of determinations of plasma volume in shocked patients can now be regarded as valid, although many of the earlier cases have had to be discarded.

The haemoglobin (pyridine-haemochromogen method, Rimington 1942) and haematocrit were measured repeatedly in some of the cases and were found to run parallel. The determination of haemoglobin is more accurate than that of the haematocrit, and the latter has been omitted in more recent cases. Total blood volume cannot therefore be determined, but it gives little more information than plasma volume when the haemoglobin value is also known. Only the values of plasma volume and of haemoglobin will for this reason, be recorded in this paper.

A few typical cases are described briefly. Some of the patients were admitted to the London Hospital, while others were seen in outlying hospitals.

### Clinical Material

**Case 1**—A man aged about 50 was run over by a heavy lorry at 10.30 p.m. He was admitted at 11.10 p.m., conscious but restless, and protesting against interference. His skin was cold, clammy, and cyanosed, and his blood pressure was 98/72 mm Hg. He was found to have a badly crushed pelvis. The gluteal muscles were partly torn off and the left testicle was hanging out of the torn scrotum. The extent of internal injuries could not be ascertained, but the rectum appeared to be intact. There was also a cut over the right eye and blood in the left ear. He vomited beer smelling fluid material. At 11.45 p.m. a determination of plasma volume was started, and a value of 1.75 l., or about 2.1% of body weight (about 15 st.), was obtained. His haemoglobin was 14.1 g/100 c.c.m. At 11.55 p.m. he was given morphine gr 1/4, and at 12 a.m. a

transfusion of plasma was begun. At 12.10 a.m. his blood pressure was found to be 58/38 mm Hg and pulse rate 80. At 12.30 a.m. he was given morphine gr 1/4, but he got steadily worse. At 1.10 a.m. his blood pressure had fallen to 43/30 mm Hg and his haemoglobin to 11.9 g/100 c.c.m. after a transfusion of about one bottle of plasma. He died at 2.15 a.m. He was found at necropsy to have extensive crushing injuries across the left groin and hip, with a 14 in. long split from the groin through the perineum to the buttock. The left ilium was fractured, but no injury of internal organs was found.

**Case 2**—A woman aged 36 was kicked in the abdomen by a horse at 3 p.m. She was admitted to hospital at 5.30 p.m. complaining of severe abdominal pain. Unfortunately we did not see this patient alive but she was said to be very shocked on admission. The pulse was very weak—the rate about 130. The blood pressure was about 60/30 mm Hg. The abdominal wall was lax, especially in the left hypochondrium, where she was tender on palpation. No free fluid was detected in the abdomen and no other injury found. She was given morphine gr 1/6 and atropine gr 1/100 on admission, followed by morphine gr 1/4 at 6.55 p.m. At 9.15 p.m. her blood pressure had risen to 100/50 mm Hg, her pulse had fallen to 110, and her general condition was stated to have improved slightly. At 9.30 p.m. she was catheterized and almost pure blood was withdrawn. At 10.7 p.m. a determination of plasma volume was started, this gave a figure of 1.9 l., or about 3.3% of body weight (about 9 st.). The haemoglobin was 10 g/100 c.c.m. At this time the blood pressure had fallen again to 80/30 mm Hg, and the pulse to 90. She was given morphine gr 1/4 at 10.40 p.m. She was said to have improved slightly during the night, but at 7.5 a.m. she died suddenly. A coroner's post mortem examination was performed, and she was found to have a complete rupture of the left kidney with a large retroperitoneal haematoma of from one to two pints. There was a small rupture of the spleen, with fractures of the 8th, 9th, and 10th ribs near their costo vertebral joints.

**Case 3**—A woman aged 22 was admitted to hospital at 4.22 a.m. complaining of profuse vaginal bleeding, which began about midnight but her history was unreliable. She was conscious but collapsed and very pale with a pulse rate of 132 and a blood pressure of 95/45 mm Hg. She had extensive vaginal lacerations, apparently inflicted manually, but there was only slight bleeding when admitted. She was not pregnant. At 4.55 a.m. her condition was unchanged and a determination of plasma volume was begun which gave a value of 2.74 l., or about 4.5% of body weight (9½ st.). The haemoglobin was 10 g/100 c.c.m. The lacerations were subsequently sutured and she made an uninterrupted recovery.

**Case 4**—A woman aged 55 was beaten on the head and arms by a man with an iron bar at 10.30 a.m. The police reported finding a great deal of blood about. On admission at 12.10 p.m. she was conscious but apathetic and very pale and cold. The pulse was 80, regular and of small volume. The blood pressure was 70/50 mm Hg. She had multiple lacerations of the scalp, with little bleeding at this time, a fracture of the shaft of the lower third of the left ulna, and some cuts on the hands. A determination of plasma volume was started at 12.38 p.m., and a figure of 1.92 l. was obtained or about 3.8% of body weight (about 8 st.). The haemoglobin was 13.8 g/100 c.c.m. The blood pressure and pulse were unchanged. At 1.25 p.m. she was becoming restless and was given omopon gr 1/3 and scopolamine gr 1/150. At 1.55 p.m. a transfusion was started and she was given two bottles of blood. Her condition then improved steadily, and her wounds were dressed and the fracture set at 8 p.m. Ultimately she was discharged well.

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**Case 5.**—At 11.15 a.m. a man aged 54 fell 30 ft. from a building he was demolishing. He was semiconscious on admission to hospital at 12 p.m. and resisted attempts to examine him. His extremities were cold. His pulse rate was 156 and blood pressure 115/90 mm. Hg. There was a deep laceration of the right cheek, and cerebrospinal fluid was escaping from the left nostril. The pupils were equal, but the right reacted to light better than the left. Slight left facial weakness and slight spastic weakness of the left arm were present. The left plantar response was equivocal, but the right was flexor. There was swelling of the right wrist and the left ankle. Subsequent x-ray examination showed a fracture of the left malar bone running back into the anterior cranial fossa, involving the floor of the left orbit. There was also a fracture of the right radial styloid process and the left internal malleolus. The plasma volume, determined at 2.6 p.m., was 2.2 l., or 3.9% of body weight (about 8 st. 12 lb.). The haemoglobin was 13.4 g./100 c.cm. The blood pressure at this time had fallen to 115/80 mm. Hg and the pulse to 130. He was given morphine gr. 1/4 at 2.15 p.m. He gradually recovered consciousness during the next three days, but was found to have complete aphasia. He continued to improve, however, and the plasma volume was estimated again two weeks after admission. It was found to have risen to 3.1 l., or 5.5% of body weight. The haemoglobin had fallen to 9.5 g./100 c.cm.

**Case 6.**—A boy aged 14 fell in front of a bus and sustained a head injury at 5.10 p.m. He was admitted to hospital unconscious at 5.30 p.m. His skin was grey-coloured but warm and not sweating. His blood pressure was 156/110 mm. Hg and pulse rate 100. His pupils were deviated to the left, but otherwise there were no abnormal signs in the central nervous system. There was no evidence that he had lost any blood. At 6.30 p.m. he had recovered consciousness sufficiently to take sips of tea. The pupils were still deviated to the left. The blood pressure was 130/85 mm. Hg and pulse rate 96. A determination of plasma volume was started at 6.36 p.m., and was found to be 3.45 l., or 6.2% of body weight (8 st. 11 lb.). His haemoglobin was 11.6 g./100 c.cm. He continued to improve steadily, the deviation of the pupils disappeared, and he was finally discharged well.

### Discussion

A reduction of plasma volume is accepted as being characteristic of traumatic shock, the amount of the fall being proportional to the severity of the shock. In general this has been confirmed in the present series of cases, but the reduction is greatest when examined early, as shown by the first two patients, both of whom died of their injuries. In Case 1 the plasma volume had fallen from the normal level of between 4.5 and 5.5% of body weight to about 2.1% in 1½ hours. This patient died 3½ hours after a severe crushing injury of the pelvis. In Case 2 the plasma volume was about 3.3% of body weight 7½ hours after the patient sustained a ruptured kidney and spleen. She died 16 hours after the injury. In less severe cases the reduction of plasma volume may be slight, especially if not examined until some hours after the injury. This is demonstrated by Case 3, in which the plasma volume was about 4.5% of body weight some five hours after traumatic vaginal haemorrhage, from which the patient made an uninterrupted recovery.

Head injuries may also be accompanied by a reduction of plasma volume, but only when haemorrhage has occurred. In Case 4 the plasma volume was about 3.8% of body weight some two hours after the patient received severe lacerating wounds of the scalp, cuts on the hands, and a fractured ulna. It was not known if she had temporarily lost consciousness. She made an uninterrupted recovery. In Case 5 the plasma volume was about 3.9% of body weight some three hours after the patient sustained a fractured skull with cerebral contusion, deep lacerations of the face, and minor injuries of the wrist and ankle. In both these patients there had been obvious haemorrhage associated with the head injuries. In contrast to them, no haemorrhage occurred in Case 6, a patient who received severe cerebral concussion which was associated with a transient hypertension. The plasma volume was about 6.2% of body weight about 1½ hours after the accident.

Haemoglobin concentration falls following traumatic shock, but the fall is minimal immediately after the injury, and may not become marked until several hours later. In Case 1, the most severe example, it was normal—14.1 g./100 c.cm. at the time of estimation of the plasma volume 1½ hours after the accident. In Case 4 it was 13.8 g./100 c.cm. and in Case 5 13.4 g./100 c.cm. at the time of estimation of the plasma volume about two hours and three hours respectively

after the patients were injured. In both Case 3 and Case 2 it was 10 g./100 c.cm. some 5 hours and 7½ hours respectively after the injury. This series shows a progressive fall in haemoglobin concentration as the time since the injury increases. The fall must be due to dilution of the blood with extravascular fluids, so that the determination of plasma volume at a later time may give a figure which is appreciably higher than would have been found one or two hours after the injury. Thus in Case 5 the haemoglobin was 13.4 g./100 c.cm. and the plasma volume 3.9% of body weight some three hours after the accident. Subsequently the haemoglobin fell to 9.5 g./100 c.cm. when a second determination of plasma volume showed that this had risen to normal—5.5%.

The reduction of plasma volume in all the cases which we have examined could be explained by haemorrhage alone, but many workers have claimed that shock is a toxic condition associated with haemoconcentration (see Moon, 1944). Haemoconcentration as judged by increased concentration of haemoglobin or a haematocrit value above normal has not been observed in any of the cases in our series except when associated with burns or with the crush syndrome (Bywaters, Crooke, and Morris, 1943). Haemoconcentration in these cases is due to loss of serum into the damaged tissues without a corresponding loss of corpuscles. The conception that haemoconcentration occurs in traumatic shock in man is probably due to the cyanosed, viscid character of the blood in severe cases. We have found, however, that in contrast to this increased viscosity of whole blood the viscosity of plasma is below normal. In one instance a man aged 70 sustained multiple injuries. He had a fractured spine, pelvis, ribs, humerus, tibia, and fibula and a ruptured aorta and pericardium. A little blood was obtained for examination at the time when a transfusion was started some 45 minutes after the accident. It welled slowly from a vein in the leg when this was cut down upon. It was very cyanosed and viscid. The plasma viscosity was 1.62 at 20° C., which is significantly less than the normal—2.0 at 20° C.

Dr. E. R. Holliday kindly examined this plasma, and reported as follows: The plasma was examined in the Tiselius electrophoresis apparatus at pH 7.5 in 0.05 ionic diethyl barbiturate buffer at a dilution of 1 part of plasma to 3 parts of buffer. The migration diagram obtained by the Philpot modification of the "Schlieren" method was not entirely satisfactory. The ascending and descending diagrams showed considerable differences. The main abnormality of both diagrams is a deficiency in a component.

The increased viscosity of the blood with a decreased clotting time and a normal haemoglobin suggests a state of incipient clotting. The fibrinogen content of the plasma was, however, found to be normal by electrophoresis. The increased viscosity of the whole blood may therefore be due to an abnormal state of dispersion of the  $\alpha$  component, since it is known that both  $\alpha$  and  $\beta$  components readily form gels under certain abnormal conditions. This gel would be removed in the centrifugal separation of cells and plasma, and such plasma would have a decreased viscosity, a deficiency in a component, and a normal fibrinogen content. A further study of this problem is, however, necessary.

### Summary

Difficulties in the estimation of plasma volume in shocked patients and the methods employed in overcoming them are described.

The plasma volume may be reduced to about 2% of body weight in the most severe cases.

The haemoglobin concentration is generally reduced, except in some cases of burn shock and crush syndrome.

The reduction in haemoglobin concentration does not run parallel to the reduction in plasma volume. It is least pronounced immediately after the injury, but subsequently progresses as water is restored to the circulation from surrounding tissues. It is most pronounced after the plasma volume has been restored to normal.

The theory that haemoconcentration occurs in shock is discussed.

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# EUSTACHIAN OBSTRUCTION AND OTITIC BAROTRAUMA IN AIR-CREWS OF HEAVY BOMBERS

BY

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The following report is presented from the academically meagre but administratively important viewpoint of the medical officer because of the subject's interest and as possible guidance to civilian practitioners in the medical administration of aerial transport in the post-war era. The paper is based on the personal observation of 66 cases during recent 30 weeks period with a heavy bomber squadron of Royal Air Force.

These two conditions present one of the greatest problems to beset the medical officer on a flying station. The former condition, Eustachian obstruction, is so mildly incapacitating on the ground, unless the obstruction be sufficiently severe to form a complete block, that it is difficult to imagine how much administrative trouble may result therefrom. The limitation of the flying duties of one man may mean the cancellation of a sortie by a complete air crew. But the decision to let a man fly with established Eustachian obstruction may equally well result in otitic barotrauma—which is therefore a lesion directly attributable to Service conditions—quite apart from the man's discomfort and the inefficient performance of his duties. The following figures are eloquent. During the 30-weeks period under review 56 men suffering from Eustachian obstruction were passed as unfit for full flying duty for periods of 24 hours or more, with a total loss of 145 "man nights"—an average, therefore, of approximately 2.5 nights lost per man. But for otitic barotrauma the corresponding figures are 10 men removed or a total of 204 nights, which gives an average of 20.4 "man nights" lost.

The term "Eustachian obstruction" has been used to cover all those cases presenting a reduction in the patency of the Eustachian tubes, whether partial or absolute. Strictly, the term "Eustachian obstruction" should be confined to cases of absolute "block," but terminology here is not easy. "Eustachian catarrh" is convenient but not always pathologically accurate. The term "Eustachian tube insufficiency" has been suggested, but is cumbersome, and "insufficiency" belongs more happily in the endocrine system than to an anatomical structure. "Otitic barotrauma" is a more exact and accurate descriptive term, and refers to those cases presenting persistent abnormal drum appearances and hearing changes.

## Anatomy and Physiology

Some basic facts are worthy of recall. The Eustachian tube runs downwards, forwards and medially from the middle ear to the nasopharynx. There is a bony part derived from the skull and a cartilaginous portion which lies under the mucous membrane to produce an elevation, and the tube is narrowest at the junction of these two parts. It is lined with ciliated columnar epithelium continuous with the pharynx, and in the lower end of the tube are some mucous glands, and around the orifice some adenoidal tissue is present. Medial to the tube is the levator palati muscle and the tensor palati lies lateral thereto. The palatopharyngeus muscle arises from the inferior side of the cartilaginous portion and, in company with the former two muscles, is inserted into the soft palate. Consequently when these three muscles contract in swallowing the lower part of the tube receives a pull outwards in three directions and should normally open.

The tympanic membrane consists of two layers—an outer layer derived from the skin and an inner derived from the mucous membrane of the pharynx—with an intervening sandwich layer of fibrous tissue. The drum derives a nerve supply, among others, from the auricular temporal nerve, which also supplies the lining of the external auditory meatus, and this has an interesting practical application, as will be seen later. The drum normally appears slightly concave externally and the tubes are generally closed.

## Pressure Changes

On ascent, as the atmospheric pressure falls, there is a progressive increase of pressure in the middle ear, which is eased spontaneously by the opening of the Eustachian tubes and the expulsion of a volume of air sufficient to equalize the pressure. This occurs without any discomfort, and all the subject notices is a succession of "clicks" in the ears. In none of these cases has there been any complaint of pain on the way up. On reaching and remaining at a constant altitude equilibrium between the internal and external pressure on the drum is maintained by the above mechanism. On descent the external pressure on the drum builds up, and to restore normality air must enter the middle ear. But the tubes open more readily to an increase of pressure from the aural end than to a similar increase at the pharyngeal opening, and this is where the difficulty starts.

Swallowing is the normal physiological way of opening the tubes and is therefore the first manoeuvre tried. Certain people achieve greater success by manipulating the mandible in an antero-posterior plane or by wide chewing movements. In difficulty, however, the most universally effective method is auto-inflation, by Valsalva's method, in which there are several important points. First the cheeks should not be puffed out as the extra pressure is taken up in the buccal cavity, whereas it is in the post-nasal passage that the increase is desired. Secondly, the pressure should be slowly built up, as the tubes open more comfortably to a slowly increasing pressure than to a sudden short burst. Lastly, it is helpful to incline the head forward with the chin on the chest.

A greater change of pressure takes place between 10,000 feet and ground level than between 20,000 feet and 10,000 feet, and so auto-inflation is more necessary during the later stages of a descent than during the earlier, in practice it is usual to auto-inflate about six times from 20,000 feet to 10,000 feet and every 1,000 feet thereafter. Meteorological conditions do not affect the pressure very much and the greatest change that could be produced by barometric disturbances on a horizontal flight would equal a descent of 1,000 feet from London to Edinburgh.

## Clinical Findings

(1) *Eustachian Obstruction*—In the series of cases examined the Eustachian obstruction encountered has been due to naso-pharyngitis, either catarrhal or mucopurulent. The leading symptoms are monotonous in their consistency. The patient reports complaining of a cold and that his ears are "blocked" and if he has flown before reporting he states that his ears have caused him "trouble." The presence of a nasal discharge is variable. The throat is not described as sore, but there may be a tickle due to the irritation of the post-nasal discharge. On examination the throat may show injection and there may be, but not necessarily, a post-nasal discharge. The drum is always examined, and in pure Eustachian obstruction is only slightly invaginated in appearance, but if the man has discovered his condition only through flying there may be barotraumatic appearances as well. On attempting auto-inflation no movement is observed and no subsequent click is heard. An important point is that, even in normal people after prolonged attempts at auto-inflation the leash of vessels overlying the head of the malleus becomes engorged from venous-back pressure giving a spurious appearance of "injected drum head." But of course this is only a transitory phenomenon; a true injection of the drum from barotrauma persists much longer. The problem arises whether the tubes are patent when there is no movement of the drum on auto-inflation. It is doubtful if this is the case in experienced fliers, whose drums usually move with an audible click. No movement, however, may be found in less experienced air-crew and, further, a previously damaged and scarred drum will often fail to move. These last conditions render the diagnosis of Eustachian obstruction dependent in a few cases on the individual's own statements. This of course raises the awkward problem of possible psychological reactions to flying, which is beyond the scope of this report. (The following figures have since been supplied in a series of 2,000 ears examined: the tympanic membrane was visibly mobile in 91.7%, the tubes were audibly patent in 49.8%, and negative in 7.4%.) It is emphasized that

it is quite possible to have a "cold" and to experience no discomfort from the ears during flight owing to the Eustachian tubes remaining patent. Chronic rhinitis, mild forms of acute pharyngitis, and tracheitis do not necessarily curtail flying duties.

The pathology of the condition is conjecturally simple, although of course there has been no opportunity for verification in this series. The changes must either be a generalized catarrhal or occasionally inflammatory congestion in the epithelium—these cases give the sluggish response to auto-inflation—or there must be oedema of the adenoidal tissues at the pharyngeal orifice of the tube, giving a more substantial block. Among civilians, where the patients will not fall in the same healthy age group, the condition will be less simple. Adenoidal children will presumably present a special difficulty.

(ii) *Otitic Barotrauma*.—The symptoms are first a sensation of fullness in the ears, then increasing deafness, and lastly pain, which increases with the rate of descent and eventually becomes very severe. If no relief is obtained from opening the Eustachian tube the drum may eventually rupture. As the initial pain of a fracture may ease off in spite of persistent anatomical displacement, so may the initial pain of otitic barotrauma pass off to some degree in an hour or so after landing, giving rise to the false supposition that the Eustachian tube has opened. In mild cases many patients consider that there is wax in the external auditory meatus, and it is suggested that this is due to sensations from the auriculo-temporal nerve supply of the drum being referred to the lining of the meatus. Before proceeding further it must be admitted that, with the few cases seen, no hard-and-fast conclusions can be drawn. However, from these 10 cases certain tentative deductions can be made. Five only out of the 10 had colds before experiencing barotrauma, and so presumably there was no degree of Eustachian obstruction in the other five before flying. From the findings on examination of these 10 cases a rough classification under three headings has been made.

(a) *Slight*.—In heavy bombers this is the most common. There is slight impairment of hearing and the drum appears invaginated, injected, and indrawn. A number of the cases with Eustachian obstruction show mild degrees of barotrauma after discovering the disabling nature of their cold on short flying trips in the daytime, when there has been plenty of time for descent and repeated attempts at auto-inflation have been made. This stage is also seen in air-crew who have not had colds, but have lost the last 1,000 feet of descent rapidly. The majority of air-crew must have suffered from some trifling otitic barotrauma during their careers.

(b) *Moderate*.—The symptoms are the same, but height has been lost more rapidly and the trouble may have begun at a higher altitude and so there has been a longer strain on the drum. Hearing is more impaired than in the slight cases. An additional feature, however, is the appearance of haemorrhagic areas in the drum, usually in the postero-inferior quadrant, analogous to an ecchymosis of any other traumatized region. These haemorrhages are between the layers of the drum and may distort the drum features, or a solitary one may simulate a perforation. Recovery in these cases, as judged by the absence of symptoms on an air test, will take longer than in group a.

(c) *Severe*.—The findings are the same as above, but two complications can occur: first, a long-continued barotrauma may produce an effusion into the middle ear; and, secondly, the pressure may be so severe as to rupture the drum. The latter is very rare, and not one case has been seen in this 30-weeks period, nor, indeed, during twelve months with Bomber Command.

### Treatment

*Preventive*.—Prevention is of the greatest importance from the Service point of view, and time spent by the medical officer in instruction in these conditions is well paid by the saving of time lost to the air-crews. It is the practice to see every air-crew on arrival at the station and to give a standard lecture on aviation medicine, including this condition. It may be argued that to dwell too much on the possible sources of a disability may be to sow the seed of a neurosis, but in this 30-weeks period this was found to be not true. With the aid of a diagram the elementary anatomy is shown and the Eustachian tube is likened to "an inch and a quarter of flabby drinking-straw" through which with a funnel it is possible to blow but not suck. This gets over the problem of why the air can get down but not up the tubes, whether it be the strict truth or not. The essential points in auto-inflation as described above are stressed along with a very practical point—namely,

that the captain must tell his crew when height is about to be lost so that they can auto-inflate before the onset of symptoms. Only three of a crew can tell the altitude from instruments, and very often, if auto-inflation has not been carried out, the ears give the first intimation to the others that the aircraft is descending. It is obvious that methods of preventing nasopharyngitis are of paramount importance on flying stations, and at the lecture mentioned the equation "Infection + impaired individual resistance = cold" is stated as a binding truth. The infective factor is considered endemic, but the virtues of unimpaired resistance or positive health are stressed and attention is directed towards the three basic physiological requirements to achieve it—viz., food, sleep, and exercise. Facilities are also available for supplementing a very adequate diet by vitamin A and D capsules, which have an undoubted psychological effect on air-crew. Lastly, ultra-violet light is available, and a full course is recommended during winter months: colds do not exist among the really conscientious attenders.

*Curative: (a) Eustachian Obstruction*.—In the type of case most commonly seen pyrexia and systemic features are not necessarily present and in-patient treatment is not required unless there are urgent administrative reasons for intensive treatment. Eustachian obstruction arising from nasopharyngitis will disappear as soon as the congestion at the mouth of and in the lumen of the tubes has resolved. To facilitate this use is made of a standard treatment given in the out-patient department, and the patient reports three times a day. A sympatheticomimetic drug causing constriction of arterioles is used, and this can be supplied either with a nasal spray or in oily drop form. Opinion in this unit seems equally divided, but the oily drop method has the better theoretical chance of reaching the orifice of the Eustachian tube if given correctly. A prescription containing 0.75% ephedrine in liquid paraffin is used. It avails nothing if the patient sits in a chair and merely throws his head back; after blowing his nose he must lie horizontal over a couch with his head unsupported, and the head must be dorsiflexed on the neck until either the tip of the chin and the ear or the tip of the nose and the eye are in the same vertical plane. In this position three drops are placed in each nostril and have no option but to slide down into the nasopharynx when the head is raised with slight rotatory movements to ensure equal distribution. When the patient reaches an upright position proof of thorough administration is furnished by the desire to expectorate some of the solution that has slid over the soft palate. The patient waits three minutes for the ephedrine to act and then tries to auto-inflate. It may be argued that persistence in auto-inflation with nasopharyngitis may lead to the spread of infection to the middle ear. There has been no such unfortunate incident in this series. The patient now receives an inhalation. The standard inhaling earthenware pot is not necessary, for a saucer under a towel provides a wide evaporating surface, but of course does not give off vapour for so long. From observations in this series it is considered that the standard tinct. benzoin. co. is too weak for this purpose though of great use in other conditions. Better results are gained from vap. menthol et eucalypt. (N.W.F.), using a teaspoonful to a pint of hot water. When stocks are short a crystal of menthol in hot water is useful, as are a few drops, similarly used, of lin. methyl. salicyl., lin. terebinth., and even liq. picis carbon. Stocks of materials from which inhalations can be made are of paramount necessity at all flying stations. After receiving this treatment all sufferers feel their heads to be clearer, and it is necessary to detain them for a period before they proceed out of doors to meet a cold rush of air causing immediate hyperaemia of the nasal mucous membrane.

The man is examined after his first treatment and an opinion formed as to his fitness for flying duty. Even if the tubes are now patent a temporary limitation is given—not for barometric reasons, as will be understood from earlier remarks, but because it will ensure that he will only be able to fly on non-operational duties, where there will be plenty of time for descent and for auto-inflation should the obstruction recur. From the operational point of view, however, he is a "man night" lost. If there is still no patency of the tubes after treatment the patient is confined to ground duties. The average

time for recovery to fitness for full flying duty has been found, as stated to be 2.5 days. Dominion personnel are notoriously prone to catch colds, and recurrence of Eustachian obstruction is therefore common. In this series there have been approximately 17% of Dominion patients. After recurrence, evidence of possible sinus infection is looked for by transillumination and x-ray examination. The proprietary "benzedrine" or "karsodrine" inhaler is most convenient for air crew, and those who have difficulty in auto-inflation often derive considerable benefit by using these before and after descent. Politization has its place in the treatment of Eustachian obstruction, and will be discussed later.

(b) *Otitic Barotrauma*—The symptoms can be most satisfactorily relieved by immediate ascent to a height above that at which the barotrauma originally began and by subsequent slow descent with frequent auto-inflation. Indeed, many cases in which this has been done never find their way to the medical officer. But for military or meteorological reasons the danger to all the crew from delay caused by this manoeuvre may outweigh the advantage to the individual, and so ascent may not have been carried out. On landing the individual must report for examination and treatment at the earliest opportunity, as the first essential is to get the Eustachian tubes patent. The regime outlined above is tried, and many cases respond within 24 hours. Valsalva's method is persisted with forcibly. If these simple measures fail and there is no purulent nasopharyngitis then recourse to politization is necessary. The nasal olive is too small for many nostrils, and a fellow medical officer has suggested the very useful practice of slipping over the olive a pierced rubber cap of a 10-cm TABC vaccine bottle as manufactured by the Lister Institute. This has proved most successful in securing a good airtight fit. The last stage in the therapeutic crescendo is Eustachian catheterization. In this series, however, this has only three times been necessary, and in the type of flying that will be experienced in peacetime passenger transports it should similarly be seldom needed. After the tubes have become patent it is necessary to wait until the effects of the trauma to the drum have resolved before flying is recommenced, otherwise there will be pain on change of pressure. This is the time-consuming part of the treatment which is purely "masterly inactivity," and accounts for the 20.4 days average stated above. Discoloration of the drum at the site of the haemorrhagic areas mentioned earlier may persist after freedom from symptoms, and the point can therefore only be satisfactorily decided after an air test, which is generally carried out around the 14th day.

### Case Histories

*Case 1*—Warrant Officer D. Diagnosis: nasopharyngitis and slight otitic barotrauma. Had a cold before flying. While listening to music on descent from 20,000 ft noticed that the signals were getting weaker. Then felt pain in both ears, increasing till 2,000 ft. Rate of descent 1,200 ft a minute. Auto-inflation at 2,000 ft with only partial success. On examination after removal of cerumen both drums injected, indrawn, and immobile on Valsalva test. Received drops and inhalations till day. Next day right Valsalva was positive. Left Valsalva still negative and nose catarrhal. Continued on same treatment for two days and then politized. Two days later left ear was very easily inflatable. Resumed full flying duty after total absence of five days.

*Case 2*—Flying Officer W. Diagnosis: slight otitic barotrauma. No cold prior to flying. No record of altitude changes, and landed away from this unit with symptoms of barotrauma (left). Politization before return, and on arrival here complained of persistent nasal pain. On examination drum injected and wrinkled in appearance. Two days later ear still painful, auto-inflation increased pain and caused further pain in left mastoid region. Three days later this mastoid pain was more severe, and relief was obtained only from resting on a hot water bottle and from analgesics. Eventually fit for full flying duty after 12 days' absence.

*Case 3*—Pilot Officer W. Diagnosis: slight otitic barotrauma. No cold before flying. Descended from 21,000 ft and experienced pain in right ear to 15,000 ft. Pilot thereafter descended more slowly, but only partial success with auto-inflation. Three hours after landing flew again to 15,000 ft with some relief. Reported four days later. Right drum injected, indrawn, and immobile. Politized next day by E.N.T. surgeon, with good air entry and some immediate improvement. Continued to receive inhalations, and resumed full flying duties after 25 days' absence. When examined 20 weeks later there were no signs of impairment of hearing.

*Case 4*—Sergeant C. Diagnosis: severe otitic barotrauma. No cold prior to flying. No record available of altitude changes, but complained of immediate pain in right ear on descent. On examination the normal features of the tympanic membrane were obscured by "bubbles" due to a serous effusion in the middle ear. Received routine drops and inhalations, and two days later the Valsalva test became suddenly positive spontaneously, and on examination the bubbles were seen to have disappeared, to leave haemorrhage in the drum, which was mobile on auto-inflation. He then proceeded on nine days' leave, and on return the haemorrhages had resolved. He proceeded on non-operational flying duties, and after a satisfactory air test resumed full flying duties after a total absence of 20 days.

*Case 5*—Sergeant M. Diagnosis: severe otitic barotrauma. No cold before flying. Aircraft involved in fast dive from 13,000 ft, and pain developed in left ear, becoming very severe. Captain reascended to above 10,000 ft and pain eased off, but recurred again and was acute after landing. On examination the drum was intact and mobile on auto-inflation. Received drops and inhalations, and pain passed off completely. Six days later flew again and experienced pain from 4,000 ft at three quarters of previous strength. Next day, when examined by the E.N.T. surgeon, the drum was inflamed, was mobile on auto-inflation, and there were the remains of a serous effusion in the middle ear. Watch-tick heard only on contact, and Weber test referred to the right ear. Six days later the inflammation of the drum had subsided, and in a further seven days the hearing had returned to normal. Thirteen days later he resumed full flying duties after a total absence of 27 days.

*Case 6*—Flight Sergeant T. Diagnosis: nasopharyngitis and severe otitic barotrauma. Coryza before flying. Pain in right ear on descent from 23,000 ft, increasing to a maximum at 20,000 ft and then easing off. Reported next day. On examination nose inflamed, drum inflamed and indrawn with haemorrhagic posterior patch, and could just hear watch tick against the ear. Politized by the E.N.T. surgeon next day. Seven days later cold persisted and the Eustachian tubes were catheterized by the E.N.T. surgeon. Thereafter auto-inflation daily and politization at unit on "negative" days. Eleven days later still—i.e., 20 days after barotrauma—patch still present on drum. Four days afterwards his cold had cleared, his drum appeared normal, and his hearing had returned. Resumed flying below 5,000 ft. After a satisfactory air test resumed full flying duties after 45 days' absence.

### Conclusion

Once again it is stated that this paper does not attempt to give a comprehensive picture of otitic barotrauma, but merely depicts those features that have been observed with air crews of heavy bombers by a unit medical officer. There is much more that could be discussed in the way of treatment—for instance, by those who have the opportunity of seeing more of these cases. Inhalation of helium-oxygen mixtures, drum punctures and the implantation of radon tubes into the nasopharynx around the tubal orifices of patients with recurrent nasopharyngitis are all interesting remedial measures.

On R.A.F. stations there is no difficulty in the diagnosis or disposal of cases of severe otitic barotrauma, but the handling of air crew with nasopharyngitis presents a problem that will be found in any form of aviation. It is hoped, therefore, that the remarks on prevention may be of interest and may indicate one way in which the medical branch, by applying the science of aviation medicine, can join with the other sections at R.A.F. stations in helping the air crews to carry out their task in greater comfort.

### Summary

During a 30 weeks period with a heavy bomber squadron of the Royal Air Force 56 cases of Eustachian obstruction and 10 cases of otitic barotrauma have been encountered.

From this series the importance of these two conditions, their anatomy, physiology, pressure changes, clinical appearances, preventive and curative treatment, and some case histories, are described and discussed with reference to civilian aerial transport.

Cases of severe otitic barotrauma have been found to be rare, and the incidence of all cases can be lessened by instruction in auto-inflation, by the prevention of nasopharyngitis, and by curtailing the flying duties of patients with Eustachian obstruction.

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## A LABORATORY TEST FOR DIAGNOSIS OF SMALLPOX

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Experience of over 100 cases of smallpox studied in the Middle East has convinced us that a diagnosis of variola on the first and second day of the rash is often extremely difficult and that the differentiation of mild smallpox from varicella may be impossible throughout its course. The purpose of this paper is to describe the clinical application of a laboratory test which has helped us greatly in establishing the identity of variola in the first day or two. The test is based on certain points of distinction between the elementary bodies of variola and varicella found in the skin lesions of these diseases.

### Historical

The viruses of variola and vaccinia were discovered in 1886-7 by Dr. Buist, of Edinburgh University Bacteriological Laboratory, who practised as a public vaccinator in the city. Unfortunately Buist failed to appreciate the nature of the tiny bodies which he found and called spores of micrococci, and it was not until 19 years later that Paschen (1906), of Hamburg, stressed their aetiological significance and named them "elementary bodies," followed by Eagles and Ledingham (1932) and others. (For historical notes see Gordon, 1937; and Mackie and van Rooyen, 1937.)

While the existence of the minute organisms has been known for many years, it is strange that few bacteriologists have attempted to utilize them for the laboratory diagnosis of smallpox, despite the fact that their biological characteristics have been extensively studied. (For review of literature see Smadel and Hoagland, 1942.)

In the past, three laboratory procedures—namely, the variola-vaccinia flocculation, the complement-fixation, and Paul's rabbit's cornea tests—have been employed for the diagnosis of human variola in the late stages of the disease. Tanaka (1902) demonstrated that if smallpox vesicle fluid was mixed with vaccinia lymph a precipitate developed; and later Gordon (1925) showed that extracts of variola scabs exhibited a specific precipitation effect when added to vaccinia antisera. The flocculation phenomenon was applied in medical practice by Burgess, Craigie, and Tulloch (1929), who used it as a confirmatory test in mild smallpox as well as a laboratory procedure for the identification of clinically atypical cases occurring in Dundee (see also Craigie and Tulloch, 1931; Tulloch, 1934; Craigie, 1932a and 1932b).

Specific complement-fixation reaction for variola has been practised for many years, and in particular by Beintker (1908), Sugai (1909), and Kolmer (1916). In recent times Gordon (1925) proved that the specific deviation of complement by the interaction of extracted variola scabs (or vesicular fluid), as antigen, with antiserum derived from convalescent smallpox patients or vaccinated rabbits could be of diagnostic help. The modern technique of the variola-vaccinia complement-fixation tests is described by Craigie and Wishart, 1934a, 1934b, 1935, 1936a, 1936b, 1936c; and Tulloch, 1940.

Paul (1919) showed that, if a rabbit's eye was scarified with variolous material, after 48 hours the animal developed acute kerato-conjunctivitis, accompanied by the formation of acidophilic intracellular Guarnieri inclusion bodies (Guarnieri, 1892) in the epithelial cells of the cornea. Paul's test has been extensively used by Scott and Simon (1923), who have recommended a technique whereby the test can be completed within three days.

The present report deals with the prompt recognition of variola by identifying the causal agent of the disease in human

skin lesions during the early stages of the malady, when the virus is easily visible.

### Method of Examination

**Apparatus.**—A sharp-pointed scalpel and two highly polished slides cleaned with potassium bichromate and sulphuric acid solution are required for each case. **Microscope.**—The best instrument available should be employed, and should be fitted with a good substage condenser, a 1.4 N.A. apochromatic 1/12-inch oil-immersion objective; and a  $\times 10$  or  $\times 12$  compensating eyepiece giving a total magnification of 1,000 diameters. The ideal source of light for critical microscopy is the low-voltage high-intensity electric light bulb, used in conjunction with a light-blue ground-glass filter and condensing lens. For technical details of optical equipment suitable for virus research see van Rooyen (1937).

**Staining Reagents Required.**—**Löffler's flagellar mordant**, which is made up as follows: 20% aqueous solution of tannic acid, 100 c.cm.; saturated solution of ferrous sulphate, 50 c.cm.; and saturated alcoholic solution of basic fuchsin, 20 c.cm. It should be allowed to stand for three days and then be filtered before use. **Carbol Fuchsin Stain.**—Two stock solutions are stored separately; they consist of (a) 0.3 g. of basic fuchsin in 10 c.cm. of ethyl alcohol, and (b) 5 g. of phenol dissolved in 95 c.cm. of distilled water. One part of solution a and nine parts of b are mixed together and filtered before use.

**Collection of Specimens.**—Six early lesions are selected, preferably fresh vesicles containing clear fluid, and these are opened with forceps. The base of fully formed papules can also be scraped, and when opening these one must try to avoid drawing blood. If the lesion is a vesicle the fluid is first absorbed with cotton-wool. The base of the exposed cavity is then firmly scraped with a sharp knife or the corner of a glass slide, and the material obtained is rubbed with a rotary motion on the surface of a glass slide. Three such smears can be made on each slide. The best results are obtained by scraping the earliest papular and vesicular lesions of smallpox; consequently pustules should be avoided, as these often contain artefacts.

**Paschen's Staining Method.**—Slides are placed upright in distilled water for from 2 to 15 minutes, according to thickness of the smear, and then allowed to dry in air. They are treated with ether, and then with alcohol for two minutes. The alcohol is poured off and the films allowed to dry. **Filtered mordant** is added, the films are heated very gently, and the mordant is allowed to act for three minutes. They are washed repeatedly and very thoroughly with running water for two minutes. Diluted and filtered carbol fuchsin stain is poured on and gentle heat is applied until the steam rises; the films are left for seven to ten minutes, and then washed with water. (If necessary any excessive deposition of stain is removed by a rapid application of a few drops of alcohol and by washing in water.) They are dried, blotted, and mounted in neutral Canada balsam.

**Bad results** are attributable to failure to wash off all traces of the mordant with water before application of carbol fuchsin, or to drying of the mordant or stain by overheating and precipitation of carbol fuchsin dye so as to leave a granular background. (Such films should be discarded.)

### Essential Control Preparations

Before searching a stained slide from a suspected case of smallpox for elementary bodies it is imperative to familiarize oneself with the appearance of control slides—two negative and one positive. The former should consist of: (a) a slide showing a pure culture of *Staph. aureus* or *albus* stained by Paschen's method; (b) a good film showing the elementary bodies of varicella: these are not easy to demonstrate, and it may be necessary to make several scrapings before a characteristic film of varicella elementary bodies can be obtained from a case of chicken-pox. The positive control should be a film which is made from a typical case of variola stained by Paschen's technique and which shows "myriads" of elementary bodies.



### Points to be Remembered when Searching Films

In interpreting the results of stained films one should never state that elementary bodies are present unless masses of them are found. Moreover, these should be of uniform shape and of regular size and be clearly stained a deep red, identical in appearance with the positive control. Pleomorphic granules, deposited stain and isolated single or scattered elementary bodies, however suggestive in appearance, should be ignored. To diagnose variola on the presence of scanty elementary bodies in a suspected film will inevitably lead to disastrous conclusions.

In the event of doubt one must discard that particular film and examine the next preparation, hence the reason why at least six smears should be made from every suspected case. In the average case of variola at least three of the slides will show numerous elementary bodies without much searching, and their appearance is so striking as to leave no room for hesitation.

If all the slides are doubtful or completely negative then that can be interpreted as strong presumptive evidence against the diagnosis being one of smallpox. In such circumstances the laboratory examinations should be repeated the next day. An attempt can also be made to isolate the virus by rabbit inoculation, but this procedure is both uncertain and slow.

### The Elementary Bodies of Varicella, Variola, and Vaccinia

When viewed under the same optical conditions the elementary bodies of variola and vaccinia are identical in size but are larger than those of varicella. Certain other subtle differences can also be detected, such as avidity for carbol fuchsin dye and relative numbers in infected tissues.

The accurate measurement of stained microscopic objects of the dimensions of elementary bodies is a difficult task. Several technical methods have been evolved for the purpose, but none of them is perfect. One principle, advocated by Coles (1929), is Nelson's (1909) method of micrometric extinction performed with a dry high power objective fitted with a graduated iris diaphragm calibrated against an apertometer. Using such a device, van Rooyen and Rhodes (1940) estimated vaccinia virus to be  $0.25 \mu$  in diameter. In the present studies the elementary bodies of variola and varicella have been measured. The former were found to vary from  $0.3$  to  $0.24 \mu$ , and thus were of approximately the same size as vaccinia virus. We have also repeatedly noticed that the elementary bodies were not only easier to demonstrate during the papular eruption of smallpox but appeared to be larger than those demonstrated later in the same case, at the stage of pustulation.

Smears showing elementary bodies of varicella were also measured and compared with those of variola, and were found to range from  $0.125$  to  $0.175 \mu$  in diameter. This difference can easily be appreciated by the naked eye, and was first noted by Paschen (1933), who referred to the essentially smaller size of the elementary bodies of varicella, "as well as their poor staining affinity, in the following paragraph:

"Vor 15 Jahren habe ich auf der Versammlung der Vorstände der Staatlichen Impfanstalten berichtet, dass ich in Ausstrichen von ganzfrischen Varicellen Bläschen E.K. gefunden hatte die wesentlich kleiner als die bei Variolavakzine beobachteten waren und sich schlechter färben liessen."

We have confirmed Paschen's findings and have appreciated that the difference in size between these two varieties of elementary bodies is great enough to permit it to be utilized as a laboratory diagnostic principle. Subsidiary points of distinction observed by ourselves are as follows:

In variola they appear in "myriads," whereas the elementary bodies of varicella are relatively scanty, are hard to detect (stained by Paschen's method), and usually leave some doubt in the microscopist's mind whether they are real or artefacts. Moreover, only a small proportion of films made from typical vesicles in a case of varicella show elementary bodies, whereas in variola the reverse is true. In the early smallpox rash elementary bodies occur intracellularly in masses and clumps as well as in the form of clusters of extruded bodies in the proximity of ruptured epithelial cells. Another common appearance is the tendency to form long rows of

bodies stretching from ruptured infected cells across the film. These appearances are rarely observed in varicella.

Varicella cannot be diagnosed by the film method, and one must resist the temptation to try to do so. The elementary bodies of varicella are exceedingly small, are too scanty, stain with difficulty, are often hard to find in films prepared from vesicles, and are readily confused with stain deposit.

The elementary bodies of variola and varicella can also be demonstrated under the dark field-illumination microscope. Unfortunately artefacts are impossible to identify by this method, and consequently oblique illumination of unstained material should be restricted to the examination of infected tissue cultures and other special purposes. This unreliable method must never be employed in routine smallpox diagnosis, and far less for attempting to differentiate between the elementary bodies of variola and varicella (See van Rooyen and Rhodes, 1940).

**Vaccinia**—Since the elementary bodies of vaccinia are morphologically indistinguishable from those of variola, the direct film method is not applicable to their differential diagnosis. However, this is not a serious obstacle, because the natural disease is confined to agricultural communities, and large outbreaks of cowpox are (at least in Egypt) uncommon. Even if an occasional case were wrongly labelled as smallpox no damage would result from any preventive measures which might have been instituted at the time. As for generalized vaccinia following vaccination, the history of inoculation, together with the patient's clinical state, should be enough to exclude variola.

### Correct Wording of Laboratory Reports

It is imperative to adopt a uniform phraseology in recording results, so that both the bacteriologist and the clinician may serve the best interests of the patients. Two stereotyped examples of laboratory answers are recommended: (1) Positive for variola-vaccinia group. (2) Nothing found. If the case remains in doubt scrapings are repeated next day. Repeated negative results are suggestive of varicella—if the clinical diagnosis justifies it.

### The Test in Varicella

#### Egypt

(a) During March-April, 1943, approximately 2,000 cases of chicken pox and 3 cases of smallpox occurred in an isolated group of West African troops during sea transit from the Belgian Congo to Egypt. The R.M.O. in charge, Capt. Loge Bain, R.A.M.C., informed us that the whole unit had been well vaccinated within a year and that, except for the three typical instances of smallpox mentioned, the cases were in every way characteristic of varicella. Skin scrapings were duly obtained from 60 typical cases of varicella by Major Hartston, R.A.M.C., D.A.D.H. to the camp, as well as from the 3 cases of variola. The results showed that whereas in the cases of smallpox elementary bodies were easily demonstrable, they were usually absent or difficult to find in the patients suffering from chicken pox.

(b) A group of 6 cases with a vesicular rash not due to smallpox were investigated in another military hospital. Four of these had chicken pox, one a vesicular rash of unknown cause unlike smallpox, and one a fine pemphigoid rash very closely resembling smallpox. The test was of great value in these cases. In this area smallpox is ten times as common as chicken pox, and a diagnosis of chicken pox had to be made with great caution in view of the prevalence of mild modified smallpox in vaccinated personnel. One of the cases of chicken pox had a prodromal scarlatiniform rash and three vesicular lesions on the sole of one foot, but these lesions were not hard and shotty as those of smallpox, and the subsequent fully developed distribution of the rash showed that the case was one of chicken pox. The absence of elementary bodies of smallpox in the scrapings was a help in diagnosis. Another case of chicken pox had an unusual number of lesions on the forearm, giving rise to doubt about the diagnosis, but the absence of elementary bodies in the scrapings helped the diagnosis, which was confirmed by the distribution of the rash when it was fully developed. The pemphigoid rash was at first thought to be smallpox, but repeated scrapings from



lesions failed to reveal the elementary bodies of smallpox, and the subsequent course of the rash showed that it was septic in nature. The negative laboratory finding was therefore of as much value in these cases as were the positive findings in some of the cases of small pox.

#### England

Although the cases affecting West African and Belgian Congo soldiers were unquestionable examples of adult varicella, studied before epidemic smallpox had begun in Egypt, to be doubly assured of our facts we decided to obtain a second series of control scrapings from genuine chicken-pox cases from independent reliable sources in Great Britain, where all chance of possible contact with variola could be excluded. This was done in June and July, 1944, when Great Britain was free from smallpox according to published information on infectious diseases and vital statistics. Major (Miss) Janet Niven, R.A.M.C., and Dr. E. M. Young provided us with skin scrapings from a total of 16 different typical cases of adult and juvenile chicken-pox contracted in Wiltshire and the S.E. London area. All these were carefully stained and examined under identical conditions with similar scrapings obtained from cases of variola acquired by British troops in Egypt. The results showed that the morphological picture presented in stained skin scrapings from cases of varicella, whether acquired in Egypt or England, were the same. Of a total of 88 well-prepared smears from 16 patients, typical exceedingly minute varicella elementary bodies were found in 12 smears from 4 cases. The latter were compared with typical Paschen bodies of early smallpox, and the difference was immediately recognized.

#### The Film Test in 80 Cases of Variola

##### Results in 50 Test Cases affecting British and Other Soldiers

Scrapings from lesions were taken in 50 out of 100 cases of smallpox seen by one of us (R. S. I.) at a military hospital in the Middle East. The cases chosen for the test were of all degrees of severity. Eight of the 50 were extremely mild throughout, while 10 were of the very severe type, of which seven were haemorrhagic. In 10 of the 50 cases the rash was in the papular stage at the time when scrapings were taken, in 39 the rash was vesicular, and in 1 it was in the early pustular stage. In 47 (94%) the scrapings showed the elementary bodies of smallpox, and in 3 (6%) they did not. Every positive laboratory diagnosis was subsequently confirmed clinically. In 21 of the 50 cases the diagnosis of smallpox was obvious at the time when the scrapings were made. Scrapings were taken from these cases, which were early ones in the series, in order to check the validity of the method. In 23 of the cases the diagnosis was not obvious at the time when the scrapings were taken, but became so later. Thus the laboratory diagnosis was made before the clinical diagnosis was possible. In 6 cases the clinical diagnosis was not clear when the scrapings were taken, and from the appearance of the rash did not become so later, but the laboratory result was confirmed by other means—notably by the history of close exposure to infection at the appropriate interval before the development of the disease. Three of these six cases figured in an interesting local outbreak in which the laboratory test was of real value in diagnosis.

A Jamaican was admitted with a very sparse vesicular rash of about 20 to 30 spots, none of them on the palms or soles, which had been preceded by three days of fever. He had scratched almost all the spots, but an attempt was made to obtain scrapings from the remaining one or two unscratched lesions. The scrapings did not show the elementary bodies of smallpox, and it was not possible to repeat them as there were no remaining lesions suitable for the test. No new lesions developed, and it was never possible to distinguish the rash from chicken-pox, but the three-day prodromal fever made the diagnosis of smallpox likely. He was kept in an observation tent separate from known cases of smallpox, vaccinated, and notified as having smallpox so that unit precautions could be instituted. Twelve days after his admission two more Jamaicans were admitted with a still more sparse rash, which had appeared 1 to 2 days after the onset of fever. Chicken-pox was diagnosed, but scrapings showed the elementary bodies of smallpox. Neither developed further lesions, and it was never possible to distinguish them from chicken-pox by their appearance. But two days later three others were admitted—natives of Jamaica and British Guiana—

all with a vesicular rash, two of them characteristic of mild smallpox, with lesions on palms and soles, and the other indistinguishable from chicken-pox. All had developed the rash on the same day as the fever. Scrapings were taken from one of these cases, and they showed the elementary bodies of smallpox. It was then found that all these six cases had come from the same hut in the same unit. Twelve days later three others were admitted from the same hut, all with obvious mild smallpox, and the scrapings from all three showed elementary bodies of the disease. One of these three had the classical three-day prodromal fever before the rash developed. All the 9 cases had been very recently "vaccinated," and the clinical diagnosis was difficult at first in all and impossible throughout in four. The laboratory test was here of great value in establishing the nature of the outbreak.

The test was of great service in the early diagnosis of many of our cases. In 22 of them the scrapings were taken on the first day of the rash, at a time when a clinical diagnosis was usually difficult or impossible, and all these scrapings showed the elementary bodies of smallpox. In 4 of these 22 cases the laboratory diagnosis was actually made on the first day of the disease, because the rash had developed on the same day as the fever. One of our early cases which developed the rash—not a prodromal one—on the same day as the fever while in this hospital presented great difficulties in diagnosis. This patient developed a very severe form of the disease, which was fatal, and the laboratory report was a great help in the diagnosis, which was subsequently obvious.

In many of the cases the rash was extremely sparse when the scrapings were taken, there being 12 to 24 lesions in all. In a Cingalese boy there were only 12 vesicles when the test was made, the rash having appeared on that day. In another case 12 to 15 papules were found on the back of a man who had had fever for three days. They were non-specific in character, but, by carefully opening the papules without drawing blood, scrapings were obtained which showed the elementary bodies of smallpox. It was not possible to make a clinical diagnosis in this case until 36 hours after the scrapings had been taken, and he was therefore kept in an observation-room until the diagnosis became clinically obvious.

In 3 of the 50 cases elementary bodies of the disease were not found in the scrapings. Only one series of scraping was taken in each of these cases, and it is likely that if the series had been repeated a positive result would have been obtained. One was the Jamaican patient mentioned above in whom there was a scarcity of lesions suitable for the test. The other two were typical mild cases of smallpox.

##### Independent Observations in a Further 10 Selected Cases

At another military hospital the film method of diagnosis was put to a critical trial by Lieut.-Col. H. L. Wallace and Major R. W. Eason in 12 patients who had been admitted to the general wards of the unit, labelled pyrexia of unknown origin, and who subsequently developed a rash in hospital. Skin scrapings were made at the first signs of the appearance of the rash, usually on the second or third day of illness. Ten were reported as positive, and all ten cases subsequently proved to be typical smallpox. One patient had been admitted to hospital at the height of the typhus season, and the rash was strongly suggestive of epidemic typhus, but the diagnosis was changed to variola on the findings of the film test. This man later proved to be a case of haemorrhagic smallpox, and died. Another case was of particular interest. The illness was exceedingly mild, and the patient, who had been under treatment for another complaint, had fully recovered and, while waiting to be discharged as cured, was working as a voluntary helper in the wards distributing bedding and linen to other patients when it was noted that he had developed a few red spots on the arms and trunk. A film scraping proved to be positive, and seven days later the diagnosis became apparent. In the two remaining cases the film test was repeatedly negative; both ultimately proved to be septic skin conditions, and no secondary cases developed from them.

##### Results in 20 Civilian Cases of Late Smallpox

Twenty late fully developed severe cases of pustular semi-confluent smallpox affecting Egyptians were investigated. Films

were prepared from these subjects, duly stained and examined. The results showed that, although elementary bodies were present in considerable numbers, they are difficult to detect after pustulation and secondary infection has occurred. Prolonged immersion in distilled water is required to rid the film of excess serofibrinous pus, and the film tends to over-stain. Nevertheless even in late cases, by scraping the base of the pock, it is possible to obtain excellent stained preparations showing elementary bodies.

### Discussion

To perform either the complement-fixation test or the variola-vaccinia flocculation test vesicular fluid or dried scabs are required, or the serum of patients 7 to 10 days after infection. In consequence their use is restricted to cases in the stage of pustulation or desquamation. Moreover, both tests demand a high standard of serological technique with proper controls, and about 24 hours must elapse before results can be read. Paul's test likewise suffers from the disadvantage of the time taken to obtain an answer. Moreover, our experiences with Paul's test in true smallpox have been disappointing, and it is not as easy to do as the literature indicates it to be. The slide method provides a quick and easy test for recognition of smallpox from the first day of the rash, when it is in the papular stage before vesiculation. A smear preparation can be made from a suspected case of smallpox, stained, examined, and a reply handed to the physician in half an hour. To assess the relative merits and percentage of experimental error in different laboratory tests would be unfair without comparative trials over a large series of cases. However, we believe that if all the laboratory diagnostic methods for variola were put to a rigid trial and judged according to their merits the slide technique would surpass the remainder in speed and accuracy.

### Summary

We have confirmed Paschen's (1933) observation that the elementary bodies of variola are larger than those of varicella, and have utilized this finding to form the basis of a laboratory test for the identification of smallpox.

In Egypt, skin scrapings from 80 cases of smallpox ranging in severity from mild to fatal haemorrhagic variola were subjected to the film test for elementary bodies.

The laboratory and clinical findings corresponded in 77 cases (i.e., 96%). A negative result was returned in three cases of smallpox.

Variola elementary bodies were demonstrated with ease in the papular and vesicular stages of the illness, but after the onset of pustulation they tended to disappear.

In 32 cases of early smallpox the laboratory answer was positive on the first day of the rash, when it was very sparse and the clinical diagnosis was difficult or impossible to establish.

In no instance did a positive laboratory verdict disagree with the final clinical diagnosis of the case.

Control skin scrapings from 64 clinical cases of varicella occurring in Egypt, together with a further 16 cases of chickenpox contracted in England, have been studied under identical conditions and compared with similar material from 80 cases of variola in Egypt.

The film test is not applicable to the diagnosis of chickenpox, because the elementary bodies of varicella are too small, are too scanty, and show feeble affinity for Paschen's stain.

The principal conclusion reached is that the film method, when used with caution and discretion, can be of great value in the early recognition of variola, especially on the first day of the rash, when the clinical picture may so closely simulate chickenpox.

We have to thank Col. H. T. Findlay, D.D.P., G.H.Q., M.E.F., for his interest in our efforts and for the supply of material from cases of varicella from Egypt. Also for the technical assistance given by Sgt. D. Danskin, R.A.M.C., and Pte. G. R. Pollak, A.T.S., who examined and reported on many specimens submitted from units at all hours of the day and night. For permission to publish

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## AIR EMBOLISM - AS A COMPLICATION OF VAGINAL DOUCHING IN PREGNANCY

BY

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The potential dangers of air embolism during surgical procedures are well known, and are being constantly emphasized by all those responsible for surgical teaching. Within recent years the importance of this subject has increased proportionately to the frequency with which intravenous resuscitation therapy is employed. According to Hamilton and Rothstein (1935) the first case was reported by Beauchesne in 1818, and since then many other accounts of fatal accidents due to air embolism have been placed on record.

### The Causes of Air Embolism

When any large vessel containing blood under less than atmospheric pressure is opened and cannot collapse owing to rigidity of its walls, partial severance, or external fixation, the entry of air is possible and the mechanism easily understood. This may happen during operations in the region of the great vessels of the neck, as a sequel to their traumatic severance, and through opening the dural sinuses during operations on or within the skull. A somewhat similar situation exists when air enters the uterine venous sinuses during or after delivery. This may happen in normal healthy women during labour when the sinuses are open after detachment of the placenta (Osborn and Dawson, 1938), or up to 11 days post partum where retained membranes, clot, or placental fragments have kept the sinuses open and the entry of air into the uterine cavity has been facilitated by the adoption of the knee-chest position (Gough, 1924; Quigley and Gáspár, 1936; Stroh and Olinger, 1938; Redfield and Bodine, 1939). In these circumstances the air is sucked into the open vessel. Criminal abortions are often attempted by the injection of fluid into the uterus. If the fluid passes the cervix its force detaches the membranes or placenta and air may be driven into the open uterine sinuses, as precautions are seldom taken to ensure that the syringe is completely filled with fluid before use (Gonzales, Vance, and Helsen, 1937; Gough, 1924; Hamilton, 1936).

The fact that even quite small veins may, if damaged, serve as a point of entry for air is perhaps not so widely known.

This is particularly liable to happen if the air is under pressure. This mechanism operates when air embolism occurs during antral lavage (Gording, 1920; McGovern, 1941); during the distension of the bladder or urethra with air (Mathé, 1929; Rettig, 1930; Jeck, 1933; Dible *et al.*, 1938), while testing the patency of the Fallopian tubes by insufflation (Moench, 1927; Mansfield and Dudits, 1934), during therapeutic vaginal insufflation (Latham Brown, 1943; Peirce, 1936; Partridge, 1943), and as a result of perineal insufflation for diagnostic purposes (Weyrauch, 1940). In these circumstances the vessels may be either diseased from inflammation or tumour growth, or damaged before or during the operation. Finally, the injection of air into the peritoneal cavity or the administration of fluids intravenously may result in air embolism.

When air embolism arises under the conditions outlined above the gas accumulates in the right side of the heart and the emboli lodge in the lungs, except in those exceptional cases in which a patent foramen ovale or interventricular septal defect exists, when a proportion of the air may reach the main circulation. Cerebral and coronary air embolism are common sequelae of penetrating wounds of, and operations on, the lungs, and of the induction of artificial pneumothorax in the treatment of pulmonary tuberculosis (Chase, 1934; Hamilton and Rothstein, 1935). Many authors suggest that a proportion of the cases previously regarded as fatalities due to pleural shock have in fact been unrecognized cases of air embolism.

### The Mechanism of Death in Air Embolism

The effects depend on whether the pulmonary or systemic circulation is invaded. In the former case the air accumulates in the right auricle and ventricle, and emboli are impacted in the pulmonary arterioles. If the volume of air is large and it enters the circulation quickly death takes place rapidly. It is still apparently not settled whether death is due to mechanical interference with heart function, to blockage of the pulmonary artery by froth with arrest of the circulation in the lungs, or to multiple emboli choking the finer arterioles in the lungs. If the volume of air admitted is smaller or its entry slower and life is prolonged, the air blocking the pulmonary arterioles may be absorbed in part. The remainder may escape through the capillaries and veins, thus finding its way to the left side of the heart and into the systemic circulation, to produce cerebral and coronary infarction. In the ordinary case of pulmonary air embolism this is rare, and the experiments of Jung and Pierre (1935) confirm that opinion. The work of E. and A. Curtillet (1939) and of Chase (1934) tends to show that the actual obstruction occurs in the arterioles, and that while there impacted the air bubbles become smaller owing to absorption. After a time the bubble, now reduced in size, escapes into the capillaries and so to the veins. In the average case, however, life is not prolonged sufficiently for this to happen. When the systemic circulation is invaded from the vessels of the lung, either primarily or as a sequel to pulmonary air embolism, the mechanism of death and the symptoms are different. The air blocks the vessels of the brain, interfering with the nutrition of the vital centres, and/or it lodges in the coronary vessels, producing cardiac infarction.

### The Volume of Air

There seems to be no measure of agreement as to the volume of air required to bring about a fatal issue. Hamilton and Rothstein (1935) assert that small amounts of air can be introduced into the venous system with impunity, while Mathé (1929) believes that small volumes cause only mild transitory symptoms, which resolve when the air is absorbed. These opinions seem reasonable when one considers the numerous occasions on which intravenous therapy is administered, often by comparatively inexperienced operators, and the relative rarity of fatal air embolism during such a procedure. It seems almost incredible that in nearly all cases the operation is carried out without some small leakage of air into the vein through faults in the transfusion apparatus or directly when the vein has been opened to insert a cannula. Dible *et al.* (1938) consider that in nearly all cases of recorded fatalities considerably more than 100 c.cm. of air was introduced in a short period of time. Coles, Richardson, and Hall (1937), applying to man the results they obtained in experiments on

dogs—which may perhaps not be justifiable—conclude that a minimum of 480 c.cm. of air is required as a lethal quantity. It is probably not possible to arrive at a definite figure. According to Simpson (1942) the total volume of air that can be tolerated depends on the person's general condition and on how quickly the air is admitted. He claims that sometimes even 10 to 15 c.cm. may be fatal. In Mathé's (1929) opinion marked differences in resistance to air embolism exist in different individuals and different species.

### Case Report

**History.**—Recently a case occurred which in several respects was unusual and which points to a danger probably not generally recognized: A woman aged 34 who had had three previous pregnancies complained of feeling in poor health on June 30, 1943, but attributed her symptoms to the onset of menstruation. She usually had dysmenorrhoea severe enough to require two or three days in bed. She began to menstruate on July 1. Next day no fresh symptoms appeared till 9.50 p.m., when she collapsed on her way to bed and died a short time later. No further details were available at the time of the necropsy, and there was nothing to suggest what the cause of death might have been.

**Necropsy.**—The examination began at 3 p.m. on July 3—i.e., 17 hours after death—and putrefaction had not started. There was a blood-stained sanitary towel between the legs, but the external examination revealed nothing of significance. On opening the abdomen a retroverted gravid uterus was observed which was not impacted and could easily be lifted out of the pelvis. The peritoneal surface of the genito-urinary organs was uninjured. The bladder and urethra were healthy and free from injuries, and the ureters and kidneys were also healthy. The external genitals and vagina were free from abnormalities. The cervix was soft, and an erosion was seen round the external os. The cervical canal was open, but the cervix showed no sign of injury. On opening the uterus the placenta was found low on the right lateral wall, and its lower edge was detached to a depth of one inch. The membranes were separated to a depth of two and a half inches. The uterus contained a foetus of three months' gestation in intact membranes. In the wall of the uterus there were a few small subserous fibroids. The ovaries and tubes were healthy, and in the right ovary there was a large corpus luteum of pregnancy. The trachea contained some fine froth, and the pleural cavities were dry and normal in every respect. The lungs were very oedematous. The pericardium appeared normal. The right side of the heart was dilated, and on opening it the auricle and ventricle were found to be filled with frothy blood. The pulmonary artery contained identical material. The tricuspid valve was relatively incompetent. The foramen ovale was patent, but the opening was valvular. The left side of the heart was healthy, as were the coronary vessels and the myocardium. The alimentary system presented no significant abnormality. The meninges were normal, but there was some congestion of the brain. No haemorrhages were seen on the surface or in its substance.

Histologically the brain was free from abnormalities. Sections of the lungs showed numerous small areas of infarction with normal lung tissue intervening. In the infarcted areas there was intense congestion, with abundant oedema fluid in the alveoli. Some of the alveoli were filled, partly or entirely, with packed red cells.

### Discussion

In the entire absence of any history to suggest it, the possibility of air embolism was not thought of before the necropsy and consequently the special technique usually followed in such cases was not adopted. However, the findings indicate conclusively that this was the cause of death. In the light of this discovery the obvious suspicion was that this case was one of criminal abortion, and further inquiries were instituted. These revealed that this woman had not missed a menstrual period and on June 3, 4, and 5 she was medically attended for dysmenorrhoea. So far as can be ascertained neither her husband, relations, intimate female friends, nor her doctor knew that she was pregnant. There is definite evidence also that during one of her previous pregnancies she continued to menstruate for three months after the pregnancy began. From all the circumstances of the case there seems, therefore, to be some genuine doubt whether the deceased realized she was pregnant. She was accustomed to using a Higginson's enem syringe for vaginal douching and, though no definite evidence on this point was forthcoming, it seems likely that she douched immediately before retiring at 9.50 p.m. on July 2. The fatal douching which was responsible for the air embolism must have occurred shortly before her collapse, and the above seems a reasonable hypothesis. It therefore appears fairly certain that

this death was accidental, the woman being in ignorance of her condition and police inquiries having failed to reveal the possibility of interference by any third party.

It is of course accepted that air embolism may occur when an attempt is made to inject air or fluid, or both, through the cervix with the object of producing an abortion. There are three cases on record in which therapeutic vaginal insufflation during pregnancy had resulted in death from air embolism. So far as can be ascertained, however, there is no previous report of an instance in which simple vaginal douching led to air embolism from detachment of the placenta.

This case is one of pure pulmonary air embolism. The finding of the patent foramen ovale at once raised the possibility that air would be found in the cerebral vessels also. Presumably the valvular nature of the very slight septal defect prevented this.

### Summary

The causes of air embolism are reviewed and the mechanism of death due to this condition is discussed.

A case of accidental death from air embolism due to vaginal douching during pregnancy is recorded.

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## ACTIVE CONVALESCENCE OF HERNIAL REPAIRS

BY

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During investigations into the causes of the high incidence of post-operative respiratory complications in Service cases it was shown that the incidence and intensity of symptoms were lessened in those cases specially liable by early movement and, in particular, by getting up out of bed. The type of case with the highest incidence was the group of hernial repairs and to a lesser extent appendicectomies. It was therefore determined to get all these men up the next day after operation, and the consent of the consulting surgeon of the Command was obtained to take a course of action contrary to the usual practice and contrary to the instructions later issued in the *Army Medical Bulletin*.

At the beginning of this investigation various operations were used—viz., Bassini, simple removal of sac, fascial graft, and finally the slide repair as described by Tanner (1942). As the series went on the operation of choice became the simple removal of sac, and the value of this decision was later emphasized by the survey given by Maj.-Gen. Max Page (1943) and others at the Royal Society of Medicine, which had not been published when this step was taken.

It has generally been agreed that the results of operations are not as satisfactory when a thorough investigation is made as is the impression of many surgeons who have not kept strict figures. Various critical reports have shown a recurrence rate between 0 and 20%, but among the most valuable published figures are those of St. Thomas's Hospital of 12% (1943).

The cases described have been an unselected series in men of military age. The great majority of them have been indirect inguinal herniae. Direct herniae have been operated upon only when there is evidence of a funicular sac coming down into the scrotum. Those with only a diffuse bulge have been advised against operation, as it is felt that the likelihood of strangulation is negligible. Nevertheless, some errors of diagnosis were made earlier in this series.

Many factors are involved in producing successful results, and in all probability no one factor is paramount. Much stress has been laid on the type of operation, but probably the truth is that no one type will meet all conditions and that a certain number of recurrences are the result of a faulty choice of operation.

There are several recognized factors of importance, of which some are the care of adequate haemostasis, strict aseptic technique, and the removal of the whole sac as far back as the "corn" which marks the position of the neck of the sac. I deprecate the use of gauze dissection as a means of separating the sac, though some have argued that good results follow the formation of a firm mass of inflammatory scar tissue. This, however, will certainly stretch under strain in a way normal tissue will not.

The great value of the Tanner slide operation where the inguinal ring is much enlarged is that the action of the arcuate fibres of the internal oblique is not interfered with. If their attachment to the conjoined tendon is slackened before suture their direction of pull remains normal. The hernial ring is closed against intra-abdominal pressure by the constriction of the arcuate fibres of the internal oblique, which, in contracting between its two attachments on Poupart's ligament and the conjoined tendon, flatten the arch, approximating the top of the arch to Poupart's ligament. It is essential that this muscular mechanism should be maintained in good activity. Therefore every opportunity must be taken, by free movements of the patients, to prevent adhesions forming between the internal and the external oblique. This is a matter of great importance, seeing that the likelihood of respiratory complications is so high. The strain placed on the inguinal canal by coughing is considerable, and it is apparent that anyone who could cough and vomit after operation certainly could sit in a chair without any increased risk and with greater comfort.

There is much difference of opinion in regard to the choice of suture material, and there are responsible advocates for the use of catgut or of more permanent sutures such as silk or linen thread. In this series I have used catgut throughout. Floss silk, so enthusiastically described by Maingot (1941), has not been employed at all, for I have had through my hands three cases of prolonged sepsis and sinus formation after the use of this material. Whether thread or catgut is chosen is probably a matter of no great importance so long as strict aseptic precautions are maintained. The post-operative dressing which has been used as a routine has been a thin layer of gauze stuck on healthy skin by mastisol. This has been done to avoid the inevitable moisture from sweating which is present when both elastoplast and bulky wool and bandage dressings are employed.

In the previous article (Martin *et al.*, 1943) we demonstrated that the choice of anaesthetic is a matter of little importance. I feel that the choice of an anaesthetist is of far greater moment. The only break with convention has been in the after-care. Active convalescence has been found to be of value in many conditions, and is practicable after herniotomies and appendicectomies when a muscle-splitting operation has been done. It has been found to accelerate recovery in bronchitis, pneumonia, and even cardiac, where functional activity, carefully graduated, enhances convalescence. The scope of this form of convalescence has proved to be far more practicable than we imagined a few years ago. Hospitals with enthusiastic rehabilitation departments have demonstrated the value of this form of treatment.

The routine of activity that these men are encouraged to accept is as follows:

On the first day after operation they get out of bed and walk a few steps to a low armchair. There they find they could sit in greater comfort than in bed and that the greater flexion of the hips helps to support the inguinal canal so that they can cough with less strain. They are allowed to sit up as long as they enjoy it. On

the next day they get up for two similar periods, and are told that they may walk to the lavatory if they want to. Not many avail themselves of this permission until the third day. From that time they are told that they may do anything that they can do, and are up the greater part of the day. Many play billiards, help with light ward duties, and walk about the grounds. They are given no specific exercises until the eighth day, when they are transferred to J.W.O. Convalescent Hospital, and begin graduated physical training with a sergeant instructor. An interesting side-light has come from the nursing staff, who are able to predict with a fair degree of accuracy which patients will have post-operative respiratory complications before operation has taken place. They have noted that the anxious, miserable, worried, unhappy patients who are afraid of hurting themselves will get respiratory complications, while the happy active type will succeed in avoiding them. This point has also been noted by Lucas (1944). If it should be thought that this regime is unduly rigorous the details of the recovery of my daughter, who had a simple herniotomy done, may be of interest. She followed this routine exactly, and had been told from the outset that she might do anything that she was able to do so long as it did not hurt. She got out of bed readily after 24 hours and was walking with confidence on the third day. She left hospital on the eighth day and travelled by train across Britain. From that time she was running about with her brothers and swimming from a beach one and a half miles from home. On the fourteenth day she turned six cartwheels in succession without any hesitation or thought of having recently had an operation. She went back to school without any complaint.

It is notoriously difficult to follow up Service cases, but a questionnaire has been sent out to 200 consecutive cases one year after operation, and reports have been received from 123. Among these there have been 8 recurrences—i.e., 6.5%. Among the remainder, information is given that many of them are serving over-seas, and it may be assumed that recurrences had not occurred among these men—at any rate before they sailed. Of the rest it is fair to assume that those who have a recurrence or are in any way disabled are more likely to answer questions than those who are quite well. Answers have been received from every battlefield where British troops are engaged. It would appear that a routine of early activity has not increased the recurrence rate.

#### Summary of Conclusions

1. The rate of recurrence of operations for inguinal hernia is higher than is often realized.
2. Early activity is not a factor leading to recurrence.

My thanks are due to the Director-General, E.M.S., for permission to publish this report.

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## Medical Memoranda

### A Case of Locked Twins

The following case of locked twins appears to be unusual enough to warrant publication.

The patient, a secundipara aged 30, was seen by me several times during her pregnancy for routine antenatal examination. Her last normal menstrual period was from May 24 to 28, 1943, but she had a further period of vaginal bleeding from July 18 to 22 before she consulted me. This made it difficult to estimate the correct date for the expected confinement, but according to the size of the uterus it appeared that she was due to be confined about March 15—i.e., four weeks earlier than the actual labour. At my last consultation on the expected date, March 15, I informed the patient of the possibility of twins, owing to the large size of the abdomen and the difficulty of ascertaining the foetal position.

On April 17 at 3.30 a.m. the waters broke, and at 9.30 a.m. she started getting weak pains. Towards 7 p.m. the midwife made a rectal examination and thought she felt a foot presenting through the fully dilated cervix. I confirmed this finding with a further rectal examination at 7.15 p.m., and, to the right of the foot, felt what I took to be the half-breech. The patient was bearing down strongly with good five-minute pains. On abdominal examination no definite positions could be distinguished, as foetal parts could be felt everywhere, and in the left flank there was an ovoid mass which the midwife insisted was a head, but this was subsequently disproved. One foetal heart was heard in the right flank below the umbilicus, and another in the left flank at the level of the umbilicus. The difference in rate between the two was not enough to be significant. A diagnosis of twins was made, and I anticipated no

trouble. However, after about an hour the pains became weaker and less frequent, and there was no apparent progress. The patient showed signs of exhaustion, and at about 9 p.m. I decided to make a vaginal examination to find out what was holding up the progress of labour. I found a leg lying in the vagina, and could feel along the leg as far as the mid-thigh; but, to my surprise, lying to right of the leg was a head covered by a bag of membranes, and it was apparent that the head of the one twin and the half-breech of the other had entered the pelvis together and become locked. What I had taken for the buttock, on rectal examination, was now disclosed as the second head covered by a "bag of waters." The latter bag of membranes, incidentally, was formed by a fold of membrane being caught between the two twins, as we subsequently found only one placenta and chorion.

I sent for the aid of Dr. David Gamsu, and under deep ether anaesthesia he pushed the presenting head up out of the pelvis with his vaginal hand and held it up with his external hand. We there upon pulled the half-breech of the other twin down and delivered this twin as a breech presentation. The infant was a female weighing 5 lb. 3 oz. and, like its sister, exhibited only slight blue asphyxia. Delivery was complete at about 10.30 p.m., a single placenta being born about 30 minutes after the second foetus, and the post-partum haemorrhage was normal in amount.

The puerperium was normal, and the patient got up on the 10th day, both babies doing very well. The case appears to be interesting because of (a) the comparative rarity of locked twins—the usual incidence given being 1 in 90,000 pregnancies; (b) the unusual method of locking.

I am indebted to Dr. D. Gamsu for the delivery of a difficult case and his help with these notes.

Johannesburg, S. Africa,

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### Quinsy, complicated by Deep Pharyngeal Thrombosis, Multiple Infarcts of the Lungs, and Myocarditis

Quinsy appears to be a fairly common complaint among Service personnel, but the complications in this case are unusual and should be of interest to readers. I am unable to find a similar case in the literature.

#### CASE RECORD

On July 15, 1943, a W.A.A.F. was admitted to hospital as a case of diphtheria. On the previous day she was admitted to the R.A.F. sick bay complaining of nausea, vomiting, sore throat, and general malaise; temperature 101°, pulse 84. The throat was inflamed and there was exudate on both tonsils. The temperature rose to 105° despite tepid sponging.

On admission the patient was ill and extremely pale. Examination showed: no oral fetor; right cervical adenitis and right tonsillar gland acutely tender; throat very inflamed, with gross oedema of right tonsil; right anterior faucial pillar pushed well forward; left tonsil much less involved; no membrane; stream of pus down post-pharyngeal wall coming from the right tonsil. The condition was characteristic of quinsy with good drainage. Swab H.S. and K.L.B. negative; Schick test negative. Course of sulphamidamide started. Patient developed a swinging temperature, 102°, 104°, to 97°; trismus. Pulse septicæmic in type.

July 17.—Despite the fact that the throat condition improved, the patient became much worse and developed a fine tremor of the left leg.

July 19.—Pulse septicæmic—very full and bounding. Extremely toxic; rigors. Temperature 104°, but throat condition improved and oedema well reduced. Patient's manner very strange. Resistant to examination. Quinsy still draining. W.B.C., 9,884 per cmm. On July 20 sulphamidamide was stopped: total 14 g.

July 21.—Condition deteriorated. Rigors; profuse sweats; quinsy almost resolved, but temperature continued to swing—102°, 104°. Tremor of left leg continued. Liver palpable 1/2 in. below costal margin. W.B.C., 29,952. A radiograph of the chest revealed some fluffy densities in the right upper zone; the right diaphragm was raised and flat, and the illumination of the right lower zone was poor. Diagnosis: thrombosis of pharyngeal plexus involving the veins close to the internal jugular vein. Sulphapyridine begun.

July 23.—Blood culture positive for non-haemolytic streptococci. Patient complained of pain in right side of neck. A tender swelling felt in the region of the right jugular vein. W.B.C., 23,000.

July 26.—Large tender mass palpable along right jugular vein just above the level of the tonsillar gland. Palatal and right tonsillar oedema; stream of pus coming from the old quinsy opening. Next day a transfusion of one pint of fresh blood was given. Sulphapyridine was stopped on July 29: total 40 g.

July 30.—Acute left-sided pleurisy. Dyspnoea well marked; very slight haemoptysis. The neck condition improved—not tender; a hard knotty mass about 3/4 in. long palpable along the jugular chain. Quinsy dry. W.B.C., 14,040. A course of sulphadiazine started on Aug. 2.

Aug. 3.—Dry unproductive cough with pain in the left chest. Crepitations ++ left lower lobe. Throat tender; some pus again leaking from quinsy. X rays showed massive density in the right upper zone laterally and densities in the right middle and lower zones. The appearances were not like a tuberculous lesion and were compatible with infarcts.

Aug. 4.—Sulphadiazine stopped: total 25 g. Sulphapyridine started. E.C.G. showed gross myocarditis. Between Aug. 23 and 30 the patient had three attacks of pleural rub.



Sept. 27.—Mild laryngitis. Streaks of pus on post-pharyngeal wall. Three days later the throat condition cleared up completely.

Oct. '5.—Radiographs of chest showed previous densities completely cleared up. The right diaphragm was still raised and flat, but apart from this there was nothing abnormal.

The patient was discharged on Oct. 15 for three months' rest. His myocarditis was still present, but had improved. The total amount of sulphonamides given was 103 g. over a period of 26 days. The only toxic symptom was vomiting. These drugs were discontinued when the white count fell to 12,000.

## COMMENT

In this case of quinsy, venous thrombosis resulted in suppuration in the deep pharyngeal plexus, which eventually drained back into the pharynx through the original thrombosed vessel. This was demonstrated by the fact that light pressure produced green pus via the superior tonsillar fossa. Further complications resulted in extensive relatively sterile thrombosis throughout almost the whole of the cervical portions of the internal jugular vein.

It is suggested that the rigors resulted from almost sterile pieces of clot and that the ensuing metastases produced sterile pulmonary infarcts.

My thanks are due to Dr. George Hurrell, medical superintendent, City Hospital for Infectious Diseases, Newcastle-upon-Tyne, for interpretation of the films. I am indebted to Dr. J. A. Charles, medical officer of health, Newcastle-upon-Tyne, for permission to publish this case.

R. R. J. R. CLARKE, M.B., B.Ch.,  
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## Purpura Fulminans

The following account of a case of purpura fulminans is thought to be of interest because of the rarity of the condition.

## CASE REPORT

The patient, a girl aged 6½, was admitted in a stuporous condition on June 25, 1944, with a diagnosis of acute purpura. Two days previously she had developed purpuric spots, but had felt perfectly well, her only complaint being a slight headache on the night before admission. She had had no recent illness. On the morning of admission her mother had suddenly found her unconscious.

On examination the patient was very restless and almost unconscious. The temperature per rectum was subnormal and the pulse was raised only during bouts of particular restlessness. There were large symmetrical purpuric ecchymoses on the arms and legs and a few on the trunk. A very few minute spots were present in the buccal cavity, which was examined with difficulty owing to a tightly clenched jaw. The pupils were then equal and the retinae showed gross haemorrhages, especially on the left side. There was an internal strabismus. Nothing abnormal was found in the chest, but the heart gave a haemic murmur. The abdominal wall was collapsed and there was guarding in all quarters, but no rigidity. The child resisted abdominal palpation, especially over the left upper quadrant. Nothing abnormal was found in the central or peripheral nervous system except a dorsiflexed plantar response. There was no neck rigidity. Lumbar puncture produced a heavily blood-stained fluid at negligible pressure, and in view of this it was decided that blood transfusion would be of no avail. The bleeding time was 8 minutes and the clotting time was normal. The capillary fragility test was positive.

The patient's condition deteriorated throughout the day and finally a generalized spasticity set in. All reflexes were very brisk, though at no time were the abdominal reflexes present. The left pupil was dilated and Cheyne-Stokes breathing began, with occasional laryngeal spasm. The temperature gradually rose to 103° just before death. The pulse was weak and very irregular, and the patient vomited once or twice, producing mucus with a few streaks of blood. She became incontinent of urine. Nephritic, 5 minims, was given to control restlessness. At 4.15 the next morning she died.

*Post-mortem Examination.*—The brain seemed large for a child of her size, but it was not congested or oedematous. The ventricles were filled with blood and clot, which had burst through the brain substance in the region of the posterior horn of the left lateral ventricle. The meninges were normal. The heart was normal. The right lung was healthy, but the left was collapsed and engorged with blood. There was free blood in the left thorax. The stomach showed a patch of submucous haemorrhages, through which perforation had occurred. This was considered to be due to post-mortem digestion. The gut revealed a few haemorrhages, and one or two were present in the bladder mucosa. There was slight congestion in the liver and spleen, but apart from these the organs were normal. The kidneys, adrenals, and bone marrow appeared normal. There were no joint effusions. Microscopic examination of blood and cerebrospinal fluid showed one or two lymphocytes per c.c.m. in the latter, but no other abnormalities. Death was due to spontaneous cerebral haemorrhage.

I should be grateful to glean any information from others with experience of this condition.

C. R. OYLER, M.R.C.S., L.R.C.P.,  
House Physician, Worthing Hospital.

## Reviews

## LYMPH NODE METASTASES

*Lymph Node Metastases. Incidence and Surgical Treatment in Neoplastic Disease.* By G. W. Taylor, M.D., F.A.C.S., and Ira Theodore Nathanson, M.S., M.D. With foreword by S. Warren, M.D. (Pp. 498; illustrated. 42s.). London: Oxford University Press.

Metastasis to neighbouring lymph nodes is such a fundamental feature of most forms of malignant disease that one may perhaps question the wisdom of writing a book which concerns itself exclusively with the secondary lymphatic involvement divorced from the primary lesion. The primary principle in the surgical treatment of malignant disease that the growth itself, the secondary (usually lymphatic) extensions, and the intervening tissues should be removed *en masse* whenever possible still remains unchallenged. In situations where this is technically impossible the treatment of the glandular involvement has to be accomplished by a separate operative approach. Here there may be some justification for considering the glandular problem as an entity in isolation from the disease as a whole, though even so we feel that anything which tends to divide the conception of a single disease process into two compartments must be fundamentally unsound.

This criticism of the scope of *Lymph Node Metastases* by Taylor and Nathanson of the Harvard Medical School must of course not be regarded as applying to the actual matter or presentation of the subject, for which we have nothing but praise. A large amount of information has been collected, in the book which would otherwise need prolonged search through the literature. Statistical tables compiled from studies of large numbers of cases are numerous and valuable, especially as they include some rather unusual aspects, such as the size of the lymph nodes in relation to metastases, and so on. The uncertainty of palpation as a guide to lymph node involvement is clearly brought out, as is the relation of pathological grading to the incidence of metastasis.

The book is divided into three parts, the first of which deals with general considerations, and gives a review of the normal lymphatic anatomy. Part II is concerned with lymph node metastasis on a regional basis, and Part III with certain of the commoner operative techniques. There are some sixty illustrations of anatomical and surgical details. A valuable volume for the surgeon's reference library.

## A BOOK ON ANAESTHESIA

*Practical Anaesthetics for Students, Hospital Residents and Practitioners.* By J. Ross Mackenzie, M.D., D.A. (Pp. 150; illustrated. 10s. 6d.) London: Baillière, Tindall and Cox, 1944.

According to the preface this book is intended to form a foundation on which medical students, hospital residents, and occasional anaesthetists can build a "practice of anaesthesia." Yet in this book of 130 pages and with this title such readers will find a disproportionately large amount of space devoted to splanchnic anaesthesia, helium therapy, and anaesthesia for thoracic surgery—subjects of little interest to any but the experienced anaesthetist. The novice will search hard for detailed guidance on everyday practice, and it avails him little to find a description of unilateral anaesthesia for pneumonectomy, caudal anaesthesia for childbirth, and splanchnic anaesthesia by the abdominal approach. Those who want to know practical details of how to use the Boyle machine, or pass an endotracheal tube, or give a spinal anaesthetic, will be disappointed at the sketchy descriptions. One searches in vain for answers to questions which casualty anaesthetists (often junior M.O.s) ask so frequently, such as how to deal with a man with a bleeding wound in the mouth or a straightforward sucking wound in the chest. Here and there the author touches on physiological or physical points, but some of his statements are open to question. He says, for example, that the concentration of anaesthetic required for maintenance varies with the weight of the patient; that the dials of a McKesson machine measure the volume of gases flowing; that the Oxford vaporizer delivers warm ether; and that the main function of the expiratory valve of "a Boyle"



is to control rebreathing. Dr. Ayre will surely be surprised to learn that an endotracheal tube which is too small for efficient respiration becomes satisfactory when his T-piece is affixed.

It seems that the author forgot the title when he set pen to paper. Before the next edition he must make up his mind whether he really wants to guide the novice or whether the D.A. candidate is the reader he has in view. If the former, then the book must be rewritten; if the latter, it must be factually correct.

### SIDELIGHTS ON WAR MEDICINE

*Clinics*. Volume II. February, 1944, No. 5. Edited by George Morris Piersol, M.D. (Pp. 266. Six volumes a year commencing June of each year. One volume every two months. £4 10s. per year.) London and Philadelphia: J. B. Lippincott Company.

Several interesting discussions are recorded in this volume, which is devoted to war medicine. The subjects are chemotherapy, venereal disease, fatigue, fractures, plastic and reconstructive surgery, war wounds and burns, and gastro-intestinal disorders. If there is nothing startlingly new brought forward in the discussions it is interesting to read the views of men actively engaged in dealing with the problems in the various theatres of war which are now spread over the whole world. With the rapid development of practice some of the questions raised—for example, those relating to the very early use of penicillin—seem almost out of date already; and the most valuable part of the discussion deals with the experience of more or less well-established methods not all of which have stood up to the test of extended trial. Unfortunately a large part of the section on fatigue, especially relating to desert warfare, has had to be cut by the censor; but the remainder, dealing with the nutritional value of American field rations and the advantages of the physical training of operational flying personnel, is highly interesting. The gastro-intestinal section deals with the dysenteries, epidemic jaundice, and peptic ulcers in relation to the neuroses.

On the whole the American experiences seem to have been very much on a par with those of the British Medical Services and will be of interest to everyone concerned with war medicine, which will obviously not end with the cessation of hostilities. Six original contributions are included in the volume: on diagnostic cardio-roentgenography in Army examinees, on a walking cast, on burns, on the management of purpura (a useful review of the subject), on the effect of shock upon intramuscular pressures, and on ochronosis.

### Notes on Books

*Handbook of the R.N. Sick-Berth Staff* (H.M. Stationery Office; 7s. 6d.) is a guide book for the sick-berth attendant both when training and after he has qualified. It has been evolved from the earlier *Manual of Instruction* (1930) and in some respects is more formative. For one thing it contains more padding, some of which is, however, quite attractive—e.g., a brief history of the sick-berth staff and a page on "the nursing code," which may be said to propound the golden rule from the aspect of the sick-bay man. In other respects, however, it is less comprehensive. The previous manual of instruction contained matter which is omitted from the handbook and now found in another volume, *First Aid in the Royal Navy* (noticed in these columns in 1943). This separation of what the sick-bay man should know into two volumes has given rise to duplication; bandaging, for example, is dealt with in both books. The methods of performing artificial respiration are not mentioned in the handbook, and he is referred for these to the first-aid book, but the treatment of fractured clavicle or fractured ribs, for example, is again dealt with in both books. While there may be something said for a nursing manual apart from a first-aid book, this division and elaboration has its disadvantages in loading the potential male nurse with two volumes instead of one and making his task appear more difficult merely by the amount of the reading matter. Both books, however, are admirable so far as each goes, though classification is not always very happy—e.g., fractures of the skull appear under orthopaedic surgery. The section on anatomy and physiology is worthy of special note as an admirable exposition to the uninitiated. The book is clear, concise, easy to read, and well bound, having in these respects a distinct advantage over its precursor, the manual of 1930.

Mr. McNEIL LOVE has produced a second edition of his book on *Minor Surgery* (H. K. Lewis; 15s.). In the preface (there is only the one for the new edition) he disarms criticism as to what constitutes minor and what major surgery, but it will be generally agreed that at least the field of so-called minor surgery is well covered in this attractive little handbook. Special chapters are contributed on minor surgical operations, genito-urinary surgery, and fractures and dislocations, by Messrs. R. E. Norrish and A. W. Bone, A. W. Badenoch, and F. P. Fitzgerald respectively, while the chapter on anaesthetics previously written by Donald Blatchley has been revised by H. Woodfield-Davies. Revision has been thorough, and the book can be recommended as a sound guide to residents and others who are called upon to practise minor surgical procedures.

The literature on medical mycology is widely scattered and often difficult to consult. For twenty years and more the *Review of Applied Mycology* has abstracted papers mainly on the systematic aspect, while the *Tropical Diseases Bulletin* and the *Bulletin of Hygiene* have reviewed selected papers from the medical point of view. An *Annotated Bibliography of Medical Mycology, 1943*, issued by the Imperial Mycological Institute, Kew, Surrey (price 5s. post free) lists all papers on the subject which were either published or noted by abstracting journals in 1943. This first experimental issue is edited by Dr. S. P. Wiltshire, Director of the Institute, in collaboration with Dr. Charles Wilcocks and Mr. J. T. Duncan, F.R.C.S.

### Preparations and Appliances

#### MODIFIED SOUTHEY'S TUBE

Dr. PROTHEROE SMITH writes from Redditch:

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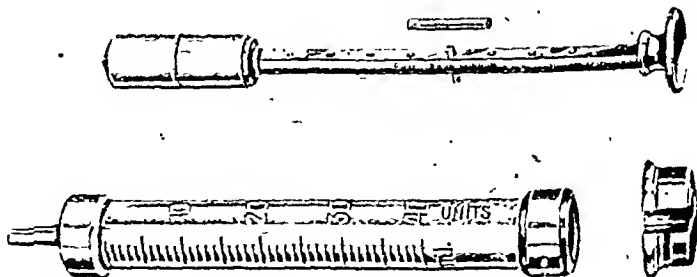
lateral apertures in the 1-inch-long shaft. The needle, inserted in the rubber drainage tube and then sterilized, can be introduced sucutaneously without handling. No trocar is necessary and so no hole is made in the rubber tube and no leakage of air-locks occur. Drainage is quick. A piece of strapping across the junction keeps the needle in place parallel to the skin and harmless to the deeper tissues.

These needles have been made for me and can be obtained from Philip Harris, Ltd., of Birmingham.

#### ADJUSTABLE INSULIN SYRINGE

Dr. C. T. ANDREWS, F.R.C.P., honorary physician to the Royal Cornwall Infirmary, Truro, writes:

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cerebrovascular degeneration, and senile patients who find it impossible to arrange for someone else to give them their injection of insulin.

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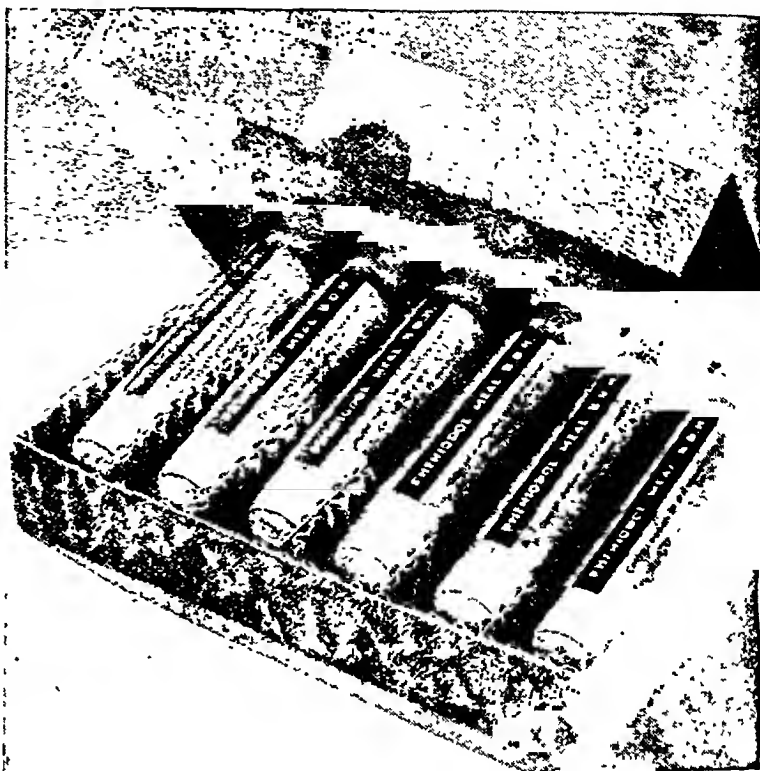
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## BRITISH MEDICAL JOURNAL

LONDON

SATURDAY OCTOBER 21 1944

## DRUGS AND THE DOCTOR

One of the most noticeable hiatuses in the White Paper is the failure to consider the bearing of a National Health Service on the supply of drugs and apparatus. It is true that it suggests that pharmacy may be represented on the Central Health Services Council and that the Council may appoint small groups or subcommittees for special purposes. It also indicates that the existing system under National Health Insurance, under which panels of chemists are formed in each area, is likely to continue. Nevertheless, the White Paper does not consider the general problems that will arise if medical care is provided free by the State but at the same time the supply of drugs is left to private enterprise. It is a little difficult to see how doctors are "to encourage a new attitude to health" if the patent medicine industry continues to spend £3 million a year on advertisements suggesting to people that they are ill and that they can only be cured by proprietary remedies.<sup>1</sup> As a result of this campaign, apparently, three out of four people in this country are taking drugs without medical advice and in many cases to the detriment of their health.<sup>2</sup> The use of proprietary remedies has increased since the introduction of National Health Insurance, and sales are much more closely correlated with factors such as the level of wages, the expansion of the popular press, and the development of mass advertising, than with the standard of medical care. The proprietary medicine industry employs a capital estimated at more than £100 million and the annual turnover is thought to reach the figure of £20 million.<sup>3</sup> By and large its effects on personal and social health are harmful, but no Government has ever had the strength or courage to control it. The Pharmacy and Medicines Act, 1941, was merely a cartel agreement between the pharmaceutical profession and the proprietary medicine industry, which divided the retail market for drugs. It was better than many cartel agreements in so far as it was signed publicly in Parliament and not behind closed doors. The net result, however, was that proprietary remedies can now be sold without licence or duty over the counter of any shop in the country.

A second problem that arises is whether a National Health Service is compatible with the advertisement of pharmacopoeial drugs such as soluble barbitone or sulphanilamide under proprietary names. It is true that under the Pharmacy and Medicines Act such drugs cannot be sold by retail unless the label also bears the B.P. or B.P.C. description, and that a medical prescription is required for their supply to the public if they come

within the Poisons Rules, but there is nothing to prevent concentrating publicity on the brand name. As a result of this practice sulphanilamide was being offered in this country under fifty-odd names at the last time of recording. Most of the firms engaged in this trade were buying sulphanilamide from a common source and merely labelling and packing it independently. The object was to make a profit, and not to supply a consumer need, for when a drug is sold under a proprietary name it costs on the average three times as much as when sold under the official name. A third problem arises out of the change in prescribing habits which has occurred during the war. A generation of doctors has grown up which is completely unfamiliar with many of the galenic preparations such as gentian, ipecacuanha, and the vegetable diuretics. Quinine has been banned except for malaria, and even in malaria it has been declared inferior to mepracrine (atcbrin) in a recent official American pronouncement.<sup>4</sup> Bismuth salts have been forbidden here for dyspepsia and replaced by magnesium trisilicate and aluminium hydroxide. Sulphonamides and penicillin have ousted other antiseptics and chemotherapeutic agents in local, general, and urinary infections. During the war the Therapeutic Requirements Committee of the Medical Research Council has dealt out rough justice in this field, and permission to import or to manufacture has largely depended on the assessment of drugs in M.R.C. War Memorandum No. 3, "Economy in Drugs in Wartime." What is to happen when controls are relaxed after the war? No medical service is likely to be a success unless it leaves the individual practitioner considerable freedom in prescribing. Is the doctor to become the unsuspecting victim of pressure groups interested in restoring the sales of iodine, bismuth, quinine, or borax? Is his post-box to be crammed with expensive advertising matter, and will he need to set aside a whole morning a week when he will be at home to the travellers? Or is the supply of drugs to depend on a judicial appraisalment of the best interests of the consumer as well as the producer?

The difficulty is that no one has a vested interest in sane pharmacotherapeutics, and therefore active steps must be taken by the profession or the community to redress the balance. The individual doctor or patient must be supplied with unbiased information. The Americans manage these things better than we do, and a recent account of the Council on Pharmacy and Chemistry of the American Medical Association deserves serious study in this country.<sup>5</sup> The Council has no legal powers, but most readers will agree with the claim that no single body in modern times has brought about so much change in the practice of therapeutics. The Council derives its influence largely from the important group of medical journals published by the American Medical Association, whose pages are closed to advertisements or names of preparations which are not approved by the Council. Its success has been such that it has become a model for the Council on Physical Therapy, the Council on Foods and Nutrition, and the Council on Dental Therapeutics.

<sup>1</sup> Thompson, D. *Voice of Civilisation*, London, 1943.<sup>2</sup> Davies, J. N. P., *British Medical Journal*, 1944, 2, 87.<sup>3</sup> Chapman, H. E., *The Law Relating to the Marketing and Sale of Medicines*, Bedford, 1942.<sup>4</sup> Report by Board for the Co-ordination of Malarial Studies, National Research Council, *J. Amer. med. Ass.*, 1944, 125, 977.<sup>5</sup> Smith, A. E., *Ibid.*, 1944, 124, 433.

It consists of 17 members, chiefly professors of medicine and pharmacology in the American medical schools, who work without remuneration but with a whole-time medical secretary. The Council does not initiate clinical trials, and as a general rule the manufacturer must submit the evidence for therapeutic or other claims, which is then reviewed by the members of the Council, together with advertising material and other pertinent data. All the Council's actions, whether of acceptance, rejection, or omission, are published in the *Journal of the American Medical Association*, and later in the book *New and Non-official Remedies* or in the annual reprints of the reports of the Council. The Council's work has been of immense educative value to the members of the American Medical Association, for, however keen an observer the individual clinician may be, he cannot research on all the diseases all the time. It has overcome the kind of difficulty which occurs when new and potentially dangerous drugs, such as thiouracil, are introduced to the profession. We agree with a recent letter in our own columns to the effect that once these drugs are put on the market there can be no arbitrary selection of those doctors who use them.<sup>6</sup> At the same time there is need for a mechanism for supplying information about them and for seeing that they are properly labelled. It is above all in the practice of correct nomenclature that the Council on Pharmacy and Chemistry has done most good, and it must be confessed that the advertising pages of medical journals and the demonstration stands at medical exhibitions in Great Britain compare unfavourably with their American counterparts.

Another step which might be taken to redress the balance against tendentious advertising is to improve the official teaching of pharmacology. In most medical schools, in the words of the Goodenough Committee, inadequate staffing provision has been made for the proper teaching of pharmacology. In improving this staffing it must be remembered that continuous postgraduate education is necessary in a subject which changes so rapidly as therapeutics. The universities must strengthen their pharmacology departments both with a view to research in a field here we have hitherto lagged behind the Germans and the Americans, and with a view to what might be called the adult education of the profession. Few papers are so well received by a medical society as a good presentation of recent advances in therapeutics, and university pharmacologists should be provided with the time and the encouragement for frequent lectures of this kind.

## PARTIALLY SIGHTED CHILDREN

It is now accepted as axiomatic that special provision has to be made for the care and education of "problem children." Schools for deaf-mutes and blind children were evolved during the last century, but such schools only touched the fringe of a much wider problem. No provision was made for the handicapped as distinct from the grossly crippled child. In these days of child guidance clinics it is difficult to visualize an educational system without special provision for children suffering

from defects which prevent them from benefiting fully from the ordinary school curriculum. Yet that was substantially the position at the beginning of the century, as is well shown by the history of the educational service in London. In 1907 Mr. Bishop Harman, recorded at the Second International Congress of School Hygiene that his investigation in schools for blind children in London had shown that many were not blind but had been placed in these schools for high myopia. With the active support of the then Medical Officer (Education), the late Dr. James Kerr, who died three years ago, and of Miss Nettie Adler, a member of the Education Committee of the London County Council, special schools were established for these myopic children. These myope schools aimed not only at the education of the partially sighted child—as distinct from the blind child—but also at preventing the further development of myopia from misuse of the eyes. It is questionable how far this second objective is valid, but there can be no doubt about the validity of the first aim. In fact the London myope schools have since become designated as schools for partially sighted children; names like "preservation of sight classes" and "sight-saving classes" are falling into disuse.

While the pioneer work was being done in London Edmond Redslob of Strasbourg was responsible for similar developments on the Continent, and the movement rapidly spread to the United States. Mrs. Winifred Hathaway has been associated with American developments from their inception, and in her *Education and Health of the Partially Seeing Child*<sup>1</sup> she gives a balanced survey of the whole problem as seen by an educationist. Even now it is a formidable problem both in dimension and in its wealth of conflicting tendencies. She finds that in the United States there are still some 50,000 children who require special educational provision because of defective sight, and this in spite of the fact that there are some 630 special classes in 31 States. Early in the history of this movement two types of special classes appeared. In some places the partially sighted children were segregated so that full attention could be given to their special needs. Elsewhere such children were taught as much as possible in ordinary classes so that they should not lose the advantage of mixing with more normal children and participate in their activities. The first course made the organization of special facilities easier, but the second course is more in keeping with present-day tendencies to study the personality and problems of the child. Mrs. Hathaway's treatise covers fully both these aspects. The type of classroom, the equipment, the lighting, the curriculum—in short what may be called the mechanical aspects—are fully discussed, even to the inclusion of dictaphones and fluorescent lighting. All this is competently done, but what is of special interest to the ophthalmologist is the clear statement of the point of view of the educationist. If the school for the partially sighted child is not to function as a sort of educational waste-paper basket, Mrs. Hathaway's stress on the potentialities of the handicapped child and his need for sympathetic and individual handling will have to be heeded. This is a timely plea, for not to overdrive a

<sup>6</sup> See, e.g., *Dr. Kerr's Medical Journal*, 1944, 2, 92.

<sup>1</sup> Published for the National Society for the Prevention of Blindness by Columbia University Press (\$2.50); London: Oxford University Press (17s).

handicapped child is hardly synonymous with a charter of rights for such children.

This finely conceived and well-written treatise leaves one conscious of a gap in ophthalmic literature. An authoritative account of the technical requirements and potentialities of the school for the partially sighted as seen by the ophthalmologist has still to come. Perhaps Mr. Bishop Harman might be persuaded to produce the necessary complementary volume to Mrs. Hathaway's study.

## OVULATION AND FERTILIZATION

Ovulation in woman usually occurs about  $14 \pm 1$  days before the onset of the ensuing menstrual period. Although it is a spontaneous process, brought about by a hormonal stimulus from the pituitary, its timing is probably subject to considerable variations, and on occasion ovulation may apparently be precipitated by coitus and other forms of local stimulation—the usual mechanism in such animals as the cat and rabbit. In assessing the time of ovulation no fewer than fifteen methods, with major differences in principle, have been employed. When we last commented on this subject<sup>1</sup> methods based on changes in electric potential and the excretion levels of various hormones were in vogue. Since then there has been a return to methods involving careful macroscopic and microscopical study of the ovary, the ova themselves, and the uterus. Recovery of ova by reverse flushing of Fallopian tubes, employed in animals by Allen and Corner some twenty years ago, has been attempted in the human being, and altogether ten free human ova have now been found, studied, and reported on in detail. The latest report on work of this kind comes from W. J. Hamilton, Josephine Barnes, and Gladys H. Dodds,<sup>2</sup> who describe, with beautiful illustrations, two ova, one of which had been recently fertilized. The recovery of ova from the tube has not only in every case so far confirmed the accepted view as to the time of ovulation but has provided information on associated phenomena. Thus it is confirmed that the ovum does not survive longer than 24 hours after ovulation unless it is fertilized. Again, there have long been differences of opinion as to whether maturation of the oocyte occurs before or after it leaves the ovary. Rock and Hertig<sup>3</sup> report the finding of two, out of several hundred ova removed from ovaries, undergoing the first maturation division. Hamilton and others<sup>2</sup> now demonstrate one of their tubal ova at the stage of the second maturation spindle. In fact, of the ten tubal ova so far described this process has been found in three. It would appear, therefore, that the first division occurs while the ovum is still in the ovary, and the second when it is in the tube. But it is undecided whether fertilization is necessary before it undergoes the second maturation division.

Coincident with the study of tubal ova there has been a renewed search for early human embryos in the uterus. Whereas in the past the discovery of such specimens as the Bryce Teacher ovum was accidental and rare, the present-day search has become systematic and deliberate, operations for pathological conditions of the genitalia being timed in relation to ovulation and possible conception. And so Rock and Hertig,<sup>3</sup> working in association with the Department of Embryology in the Carnegie Institution of Washington, were able in 1942 to describe 12 human embryos, varying in age from  $7\frac{1}{2}$  to  $16\frac{1}{2}$  days. Moreover, many single specimens have been reported in recent years,

and Hamilton and others,<sup>2</sup> along with their two tubal ova, describe a uterine pregnancy of 10–11 days' development. The study of such early embryos confirms previously held beliefs based on the changes seen in animal ova, and adds to our knowledge concerning implantation and early development. The time taken for the fertilized ovum to reach the uterus has been generally regarded as being about 7 days. Rock and Hertig<sup>3</sup> now conclude that the time is variable and may be from 5 to 8 days. The occurrence of "implantation haemorrhage," long recognized by the clinician, has been seen in microscopical sections. Moreover, Studdiford<sup>4</sup> found haemorrhagic degeneration in the decidua capsularis in a  $26\frac{1}{2}$ -day ovum—a process which probably accounts for the haemorrhage sometimes seen in the early weeks of pregnancy, and also possibly explains some cases of early abortion.

It is possible to mention here only a few aspects of the fascinating story of ovum ripening, ovulation, maturation, fertilization, and implantation, but understanding of these phenomena grows apace. So far as direct observation is concerned there remains at least one gap—no one has yet seen a fertilized human ovum undergoing early segmentation or during the morula and free blastocyst stages, when it is still in the tube. But with the continued search of tubal washings there can be little doubt that specimens of 2 to 7 days' development will be found and reported in detail in the not-too-distant future.

## OPERATIVE REDUCTION OF GASTRIC SECRETION

There is much evidence that the immediate cause of peptic ulcer is excessive and continuous secretion of gastric juice both during digestion and, more important, during the interdigestive period. A copious secretion at night when the gastric glands are normally quiescent is especially dangerous, since the buffering effect of food is absent. Medical treatment is largely designed to neutralize this acid by diet and alkalis, or in persistent cases by a continuous drip of milk or alkalis into the stomach. The operations of gastro-enterostomy and gastrectomy also act mainly by neutralization. After gastro-enterostomy there is no significant change in the ability of the gastric glands to secrete hydrochloric acid, and after gastrectomy it is rarely much reduced.<sup>5</sup> The results of these operations are on the whole not unsatisfactory, and, however desirable the complete resection of the acid-bearing area might be in theory, it is rarely attempted in practice owing to the technical difficulties. Attempts have, however, been made to reduce the secretion of acid by disturbing the hormonal control of the stomach. The ordinary gastrectomy profoundly modifies the mechanism of gastric secretion by removing the pyloric area which produces the hormone responsible for the chemical secretion; at the same time the surgeon divides branches of the vagus nerve which carry impulses for nervous secretion. The importance of the hormonal activity of the antrum was shown some years ago when Ogilvie<sup>6</sup> devised an operation in which the antrum was preserved, though it was widely separated from the fundus, and much of the acid-secreting mucosa was resected. The results were unfortunate: a high proportion of the patients did badly, and those who were reinvestigated all had a high acid curve. It seems as if the antrum still secretes its hormone, although it is excluded from contact with the acid chyme.

An entirely different principle is proposed by Andrus, Lord, and Stefcio.<sup>7</sup> These workers implanted pedicle grafts

<sup>1</sup> *British Medical Journal*, 1938, 1, 344.

<sup>2</sup> *J. Obstet. Gynaec. Brit. Emp.*, 1943, 50, 241.

<sup>3</sup> *Amer. J. Obst. Gynec.*, 1942, 44, 973.

<sup>4</sup> *Amer. J. Obst. Gynec.*, 1943, 46, 230.

<sup>5</sup> Heuret, G. J., and Holman, C., *Ann. Surg.*, 1943, 118, 551.

<sup>6</sup> *Lancet*, 1938, 2, 295.

<sup>7</sup> *Ann. Surg.*, 1943, 118, 499.



of the jejunum into the wall of the stomach of dogs and found that thereafter there was a reduction in the amount of acid secreted by the stomach in response to histamine and alcohol. Similar grafts from the duodenum were much less effective, and grafts from the colon or ileum had no action. The effect of the pedicle jejunal grafts was lost in the presence of a gastro-enterostomy or pyloroplasty, and it was not produced by an ordinary gastro-jejunosomy. If the latter was converted into a pedicle graft, and the normal continuity of the gastro-intestinal tract re-established, the secretion was promptly altered. Later it was observed that three dogs with pedicle grafts were immune to injections of a histamine-beeswax mixture, which had caused duodenal erosions and ulcerations in nine control animals. Finally, a jejunal pedicle graft was performed on two animals with duodenal erosions. One died within 24 hours of the operation. The other was killed three weeks later and was found post mortem to have a normal duodenum, despite the fact that injections of the histamine-beeswax mixture had been continued till the day it was killed. After these experiments a pedicle jejunal graft was performed on four patients with duodenal ulcer. A symptomatic cure was obtained in every instance, and in one case there was a reduction in the amount of acid secreted in response to histamine five weeks after operation. A physician reviewing these cases would say that in none of them was there an incontrovertible indication for operation, while the surgeon would stress that it may require years to evaluate a new operation. The procedure is obviously a bizarre one, and it is difficult to see its rationale. The results of further observations of the patients will therefore be awaited with interest.

### DUST IN STEEL FOUNDRIES

Men employed on some of the processes in steel foundries are exposed to the risk of silicosis, and with the rapid extension of the manufacture of steel castings during the war there has been a substantial increase in the number of cases of this disease among steel-foundry workers. This rise in the incidence induced the Chief Inspector of Factories to call together a committee of employers and workers, a technical adviser, and members of the Factory Inspectorate to advise on preventive measures. Solutions to some parts of the problem remain to be found, but the committee has already reached certain conclusions, which are set out in the report now issued.<sup>1</sup>

Dust arises in many of the operations in steel foundries, but the main dust-producing processes are those connected with the removal of the moulds and cores and the subsequent cleaning and dressing of the castings. The principal methods of combating the risk in these processes are: (1) by substituting other materials for those containing free silica where that can be done; (2) by reducing dust production to a minimum; and (3) by preventing the inhalation of dust. The report discusses in detail the possibility of applying these various methods, and special attention is paid to the first one mentioned. The chief constituent of the foundry moulds is sand, which is a form of free silica, and for the body of the moulds it is at present impossible to recommend any practicable substitute containing no free silica. Some parts of moulds for the larger castings are often made from special moulding compositions which contain free silica. Satisfactory "compo" can be made from calcined aluminous fire-clay instead of from siliceous material; and it is therefore recommended that, as soon as sufficient supplies of the non-siliceous materials become

available, no material containing free silica should be used as a constituent of steel-moulding compositions. Silica in very finely divided state is present in some sands employed for core-making, and experiments are now in progress to determine whether this silica flour can be replaced by non-siliceous material. Separation of parts of the mould is made easier by dusting the joints with parting powder, some of which have a high percentage of silica. It is not practicable, efficient, and economic to employ parting powders which have no free silica; and the use of the former, containing free silica, should therefore be prohibited. The internal surfaces of moulds and cores are often coated with paints containing free silica, so as to prevent fusing of the moulding material to the casting. Experiments confirm that paints containing no free silica can be successfully substituted, and this step is recommended as soon as enough non-siliceous materials are available. Another recommendation is that sand or other substance containing free silica should no longer be used as an abrasive in any blasting apparatus. Normally, the linings of acid steel converters are rich in free silica, so that workers employed in repairing and renewing the linings are exposed to the danger of inhaling dust in a confined space: the possibility of using non-siliceous lining is under consideration.

Besides these substitutions of harmless materials for siliceous ones, other protective measures are advocated. For instance, the existing regulations on "sand-blasting" operations should be tightened up, and a set of precautions is presented which, it is urged, should form the basis of statutory regulations—prevention of escape of dust from blasting apparatus into occupied rooms; exhaust ventilation and the disposal of the collected dust; provision of protective helmets and gauntlets; prohibition of the employment of persons under 18 years of age on blasting operations. It is further recommended that persons engaged in the fettling and dressing of steel castings should be provided with suitable respirators.

If the precepts of this report are put into practice silicosis risks in steel foundries should be much reduced.

### PLANS FOR CANCER SERVICES

The annual report for 1943 of the Christie Hospital and Holt Radium Institute, Manchester, records a remarkable increase in the number of new patients, which has almost doubled since 1938. This organization has built up a very efficient cancer service covering a large and thickly populated area; and other hospitals and authorities, when formulating plans and schemes, are increasingly availing themselves of its accumulated experience. The Director of the Holt Radium Institute has visited Sydney at the invitation of the New South Wales Government to advise on the planning and organization of a Cancer Institute for the State. Other Australian States extended similar invitations. The new plans for New South Wales and Victoria would provide for the building of single institutes in Sydney and Melbourne with ample clinical accommodation, departments for radium and x-ray treatment, and extensive facilities for research. In Queensland, where the geographical position of the capital is less central and the population is small, the provision of a special wing at the Brisbane General Hospital is contemplated. In view of the vast area of Australia a clinic service based on air transport will be a post-war necessity. Small special skin treatment centres will also be required, for cancer of the skin, especially in the Northern regions of Australia, is far more prevalent than it is in England.

<sup>1</sup> *Dust in Steel Foundries*. Final report of a committee appointed to consider methods of preventing the production or the inhalation of dust and the possibility of reducing the use of materials containing free silica in steel foundries. H.M. Stat. P., C. 65 (1944).

## PREVENTIVE MEDICINE IN THE AIR FORCE

## AIR MARSHAL WHITTINGHAM'S ADDRESS

The president (Sir Stanley Woodwork) and the council of the Royal Institute of Public Health and Hygiene held a reception on September 21, the guests including representatives of the medical and public health services of the Allies and other nations and of the Dominions and Colonies. Air Marshal Sir Harold E. Whittingham, D.G., R.A.F., M.S., gave an address, which was illustrated, on aviation's contribution to preventive medicine. It embraced a far wider range than his paper given before the Medical Society of London earlier in the year (*Journal*, March 11, p. 369). Outside the Institute's building in Portland Place a mobile ophthalmological unit and a mobile dental unit as used in the Royal Air Force were available for inspection.

Sir Harold Whittingham described the work done on nutrition in relation to flying aptitude. In 1941 a special physician was employed for the detection of states of pre-malnutrition, and there were biochemists to assay materials and determine in what respect food was defective. Thus faulty diets had been very quickly rectified. It was particularly important to see that people engaged in flying did not suffer from night blindness, and a useful lead was obtained from experience in the siege of Malta, when those suffering from night visual defects recovered on being given oranges. There was also a certain amount of evidence that deprivation of vitamin B was connected with fatigue. If any group of men—not single individuals—was found with a high incidence of vascularization of the cornea it could be said that the diet was deficient in some respect, but beyond that he did not think it possible to go.

He went on to describe the precautions taken against malaria. In mosquito-infested parts screening was carried out, not only of dormitories but of ablution rooms, and this had proved well worth while. He pointed out what a dangerous vehicle the aeroplane might be, in view of the rapidity of travel from one country to another, in spreading various severe infections, including those with the shortest incubation periods. Effective measures were taken for disinfecting aeroplanes by spraying with insecticides.

## Predisposition to Air-sickness

Turning to air-sickness, Sir Harold Whittingham said that about 7% of those who suffered regularly had a definite neurosis, but in general the psychological make-up of the individual played no great part. Air sickness he thought was due mainly to hypersensitivity and overstimulation of the utricle by variations of pressure at right angle to its floor. Air-sickness on the part of the navigator had been diminished by the tilting of the bench at which he worked, so that he was looking straight forward and not down. During a first flight about 17% of people would be air sick or very near it, on a second flight only 4%, and after two flights about 0.5%.

Discussing accident proneness he said that this was due most frequently to temperament unfortunately only those most seriously predisposed (3%) could be detected by psychiatric interview. However, about 20% of aviation candidates were accident prone because they were heavy of hand and foot such types could be detected by a sensori motor test and so eliminated. Others were prone because of visual defects, such as ocular muscle imbalance. Notwithstanding instrumental flying, night vision remained important to the aviator, because he had to take off and to make his final landing by vision, and avoid "taxiing" accidents and collisions over the target. The night-vision standard had been lowered as much as practicable because, after all, it was only one attribute of night-flying.

Another study had been that of "crash" positions. The idea was that everyone concerned should know his "crash" position. Service members were trained in this respect, and posters put up for the information of others. On the subject of burns he emphasized the protective effect of clothing. Even a small amount of clothing, if not soaked with petrol, would protect the skin from a flash burn. Gloves should be worn, or rather gauntlets protecting the wrist, and on the risk of a crash the face should be covered.

Finally, he described the "Mac West" jacket and how it would save from drowning even unconscious individuals and various other items of protective clothing. Frost-bite had ceased to be a problem in the R A F, during the last two years. Only 0.05% of the people concerned got frost-bite even under the worst conditions. Some interesting experiments on "black out" and oxygen requirements had been carried out in a flying laboratory. At as low an altitude as 4,000 ft., if no oxygen was taken, night visual acuity was reduced by 5%, at 6,000 ft. by 10%, and at 8,000 ft. by 15%. He added that all this work was carried out by a team of doctors, physiologists, chemists, physicists, textile experts, and others. It was also an Allied enterprise, people from the Allied and Dominion Services having co-operated most heartily, and he ended with a tribute to some medical officers who had lost their lives in their zeal for experiment.

## Nova et Vetera

## JOHN DALTON, 1766-1844

Every medical student has heard the name of John Dalton, indeed all educated persons know it as that of the founder of a rational atomic doctrine based on measurements, and most medical men associate the name with colour blindness. Few, however, know what kind of man the bearer of the name was, and many will read with pleasure Dr E. M. Brockbank's pleasant biography<sup>1</sup> and pay the biographer a compliment not many biographers earn—viz., a wish that the book had been longer.

John Dalton (1766-1844), the son of a Cumberland weaver, owed nothing to academic instruction, his father taught him the elements of mathematics, and he was also taught by a Mr. Elihu Robinson, but, as he began to earn his living by teaching younger children at the age of 12 and at 15 became a regular school teacher, we may fairly class him as self-educated in the strict sense of the word. In 1785 he joined his elder brother in school teaching in Kendal, where he remained until 1792, when he became a teacher of mathematics in the Manchester New College—the ancestor of Manchester College, Oxford. One wonders—it is only a matter of speculation—whether during his residence in Kendal Dalton made the acquaintance of another self-taught mathematician, John Dawson of Gardale (1734-1820), the Sedburgh doctor who took private pupils and numbered among these eight who became senior wranglers. Although Dalton remained in straitened circumstances most of his life his genius was recognized fairly soon, and he was elected a corresponding member of the French Academy of Sciences in 1816, 14 years later, on the death of Sir Humphry Davy he was chosen one of the eight foreign associates, and when his name was announced by the president all the members rose—a compliment not paid either to Napoleon or to Lord Brougham.

That science is measurement is, perhaps, an epigram rather than a satisfactory definition; but it is certainly true that interest in precise measurement was a primary quality of Dalton's mind, it can be seen in his early meteorological studies and, of course, in his classic researches. It is worth noting that Joule was once a pupil of Dalton.

As a human being Dalton was something of a character, cheerful and loving a joke amongst intimate friends but apt to be silent in a large company and by no means a brilliant lecturer. Dr Brockbank tells us that in a book on English grammar Dalton published in 1801 gender as expressed by a change of termination is illustrated by "prince, princess; poet, poetess, executor, executrix, phenomenon, phenomena, etc." One would like to think this was a little joke. We have read a story somewhere that Dalton, who was a Quaker, flatly refused to wear court dress when presented to the king, but consented to wear his D.C.L. gown, not knowing it was scarlet. The italicized words we suspect to be a facetious addition, for

<sup>1</sup> John Dalton. Some Unpublished Letters of Personal and Scientific Interest, with Additional Information about his Colour-Vision and Atomic Theories. Manchester University Press. (7s. 6d. cloth, 7s. boards.)

Dalton would certainly have known that the colour was called scarlet by other people. Dalton's reply to the king's question: "Ah! Dr. Dalton, how are you getting on at Manchester?" was: "Well, I don't know: just middlin'." Dr. Brockbank prints some hitherto unpublished letters; they are without any literary airs and graces, but the composition of a thoroughly clear-headed man and say exactly what he meant to say.

### ROBERT BRIDGES, 1844-1930

Robert Bridges, physician and Poet Laureate, was born on Oct. 23, 1844. There have been many medical poets, but though they have been good doctors not many of them have been great poets. Bridges was both, and it was fitting for the History of Medicine Section of the Royal Society of Medicine to commemorate the centenary of his birth, when the outgoing president, Sir Walter Langdon-Brown, gave the address. From Eton and Oxford Bridges went to St. Bartholomew's Hospital, where he became house-physician to Dr. Patrick Black and afterwards casualty physician. In the latter capacity he wrote in the Hospital Reports for 1878 a powerful indictment of the running of the casualty department. This ensured that he was *never given another post at Bari's, but also led to reforms*, albeit slowly. But he was elected assistant physician to Great Ormond Street Hospital and the Great Northern Hospital. In 1881 he had pneumonia and emphysema, which led to his retirement from medical practice. He had always intended to devote himself to literature, but was convinced that he would be a better poet if he practised medicine in order to be brought into close contact with human life. He evidently wished his poetry to expound the philosophy he acquired from natural science in general and from medicine in particular.

In early life Robert Bridges was closely associated with his kinsman Digby Dolben, a poet of much promise who was drowned when only 19, and at Oxford with Gerard Manley Hopkins. He was responsible for the posthumous publication poems of them both. It is a curious association since their approach to poetry was emotional and religious, while his was intellectual. He was fascinated by the sonorous rhythms of the great poets, but intellectually he was a Platonist. In 1900 he was elected a Fellow of the Royal College of Physicians, and in 1913 became, rather unexpectedly, Poet Laureate, thus restoring prestige to an office which had suffered from the apparently cynical appointment of Alfred Austin. Apart from poetry Bridges did much for the encouragement of pure English, and favoured a simplified spelling. But his enduring monument will be *The Testament of Beauty*, published on his 85th birthday, which summarizes his philosophy of life. That a man of his age should have written such a poem is in itself remarkable enough, but that he should have assimilated recent work on astronomy, archaeology, physiology, and psychology, and have welded them into new forms of beauty is indeed amazing.

Sir Henry Newbolt described him as one of the most remarkable figures of his age, who appeared distinguished in any company, not only because he was strikingly handsome but because his extraordinary charm lay in his transparent sincerity. There was always visible the strength of a towering and many-sided nature, at once aristocratic and unconventional, virile and affectionate.

The question of preparing for expansion in training for pharmacy after the war was dealt with by the Dean of the College of the Pharmaceutical Society, Prof. H. Berry, in reviewing the work of the past year at the opening of the College's 103rd session on Oct. 4. He said that pharmacy was continually expanding and diverging from the old channels of retail and hospital practice in order to cope with developments in medical practice. This expansion must be reflected in the training of the student if pharmacy was to keep pace and maintain its place. Pharmaceutical chemistry was developing rapidly as the study proceeded of the relation between chemical structure and therapeutic activity, the standardization and assay of medicinal substances, and the introduction of new synthetic medicinal substances. It was hoped that in the post-war era there would be a great expansion of the attention given in this country to the production of new medicinal chemicals. Firms were already training graduates in pharmacy of greater use in this field of research than those holding a pure chemistry degree.

## Correspondence

### "Dissident Doctors"

SIR,—Returning from a lengthy meeting of the committee entrusted by our Association with the task of running the B.M.J., I read in its pages, with some astonishment, that "is more than disquieting that, at a time when the shortage of doctors is acute, a number of them are prepared to spend time, money, and paper in fomenting political activity and indeed in directing it." I had believed that in giving my time spending a little of my money, reading many pages of documents, and listening to many points of view on the Joint Committee, I was genuinely helping the political activities of the British Medical Association. I have rarely failed to answer the call of that Association to play my part in its work, and I did not expect to be thus criticized in the official *Journal* for so arranging my ordinary work that it leaves some time for duties within my professional association. Surely it is the duty of all of us to play our part in the management of the affairs of our country and of our profession—in short, to take part in all political activities that concern our way of life.

Let us, however, get one or two things stated accurately and the position clearly defined. The action of Dr. Sam Smith is surely the ordinary activity of any person or group who wish to influence opinion. I have in my possession a paper sent out by the B.M.A. suggesting precisely the same sort of activity as those suggested by Dr. Smith. Is not that one of the functions of the Public Relations Committee? Dr. Smith stood alone instead of being backed by many B.M.A. members his action would still be of a type carried on by the B.M.A. itself. Secondly, Dr. Smith may be fortunate enough to "belong to that small minority of doctors who fit themselves within the fold of the Socialist Medical Association," but he is certainly not "one of the drivers of the S.M.A. machine," nor is the work of which you complain part of the S.M.A. programme. Dr. Smith's group is composed entirely of members of the B.M.A., and is an attempt to crystallize that 60 or 70% of opinion within the B.M.A. which is all too unvoiced but which voted in the Questionnaire in favour of Health Centres organized as part of a complete service for 100% of the people.

Of more importance, however, is your reiteration in your annotation of the very attitude towards the M.P.A. of which Dr. Smith complains. The M.P.A. has declared its intention to capture the B.M.A., and has had some notable victories in certain reactionary Divisions. It must be attacked if the B.M.A. is to continue its work; for here we must distinguish between the legitimate work of the S.M.A., which exists to spread a knowledge of Socialism within the profession, and an organization which seeks to destroy our chief professional society. The S.M.A. and all progressive doctors will continue to attack the M.P.A., and would the more readily back the Council in so doing if the Council does not seek, as does your annotation, to excuse and justify it as a reaction to the work of the S.M.A. The crux of the question is whether we stand for true democracy or can support even in the smallest degree the curious mixture of Fascism and individualism (with more than a dash of anti-Semitism) which passes for a policy with the M.P.A.

Lastly, why the anxiety about Gordon Malet? Was not his attack on the M.P.A. one you should have welcomed? And are not your own leaders unsigned?—I am, etc.,

D. STARK MURRAY,  
Richmond, Surrey. Chairman, E.C., Socialist Medical Association.

\* \* We have criticized Dr. Samuel Smith—we did not know there was a group until informed by Dr. Stark Murray in the above letter—for using an "individualistic" machine of his own instead of the democratic machinery of the B.M.A. through its Divisions and Branches, to one of which Dr. Smith presumably belongs. We criticized the action of the Socialist Medical Association because it "exists to spread a knowledge of Socialism in the profession." \* Other small self-appointed groups of "political" doctors will soon sprout up to spread their political doctrines if this example

of misplaced enthusiasm is followed; and we shall see the existence of the "Conservative Medical Association," the "Liberal Medical Association," the "National Liberal Medical Association," the "Common Wealth Medical Association," the "I.L.P. Medical Association," and so on. There are political organizations in plenty to give medical men what political information they need, and to offer them scope for political activity. Dr. Murray obscures the issue by confusing medical politics with politics in the familiar use of that term. Finally, we should like to make it quite clear that no attack on Socialism is intended.—Ed., *B.M.J.*

SIR.—I shall be grateful for an opportunity to reply to your annotation concerning me. The errors of fact and surmise in it I shall leave to be dealt with by others better qualified than I am. I wish only to draw attention to a fundamental issue—the right to hold my own views on the National Health Service and to put these views to whomsoever will listen, even as you, Sir, enjoy that privilege.

I am shortly entering H.M. Forces, and, feeling as strongly as I do, have tried, with, I hope, a certain measure of success, to persuade others who think as I do to become articulate on the subject. There are many doctors to my knowledge who for a number of reasons have not expressed themselves other than by means of the Questionary. That I am not in a "small minority" is shown by the figures of the Questionary.

It would appear that a "dissident" doctor is, according to your interpretation, one who opposes the views of the Council of the B.M.A. If that is correct, then I plead guilty to being one of a number whose ranks I believe will increase. If and when there is a clear-cut majority vote by the rank and file of the profession for a particular issue I shall accept that decision, but reserve the right, as in all democratic organizations, to attempt to reverse it by means of legitimate persuasion and not by coercion or hysterical outbursts.—I am, etc.,

London, E.9.

S. SMITH.

### Antenatal Health and the Unborn Child

SIR.—In your report on schemes for medical and social research (Sept. 30, p. 444) child welfare is conspicuously prominent in "Social Adaptation" and "Infant Diets." This is all to the good, as the future of the race depends on the rising generation, and a sound foundation is essential for any enduring progress.

It seems to me that much more might be done by research into antenatal conditions which determine the perfection of the newborn child and minimize the risks of labour to the mother so that she may be at her best immediately to undertake the care of her baby. Ante-natal clinics are doing a great service by giving advice and providing vitamins to expectant mothers, but much more might be done if the methods, as to statistics, of the Mellanbys with once were observed: a close follow-up of results in recording the effects of diet and treatment on mother and child; as to deformities, physical and mental; lactation; maternal morbidity and mortality; and the effects of illnesses, especially sepsis, during the early weeks of gestation when deformities are determined.

During the past eighteen years it has been my practice to see every expectant mother each week from the time of booking, and to maintain her health at the optimum by advising her on diet, rest, exercise, external and internal cleanliness, and especially by actinotherapy from the earliest possible date. The most obvious and immediate effect of this course is the improvement in the appearance of the woman. Her skin becomes darker, of a better colour, and shines like silk. There is a better tone to her tissues generally. Her posture is more erect and she evidently enjoys life.

Sickness is either cured or much relieved and does not last so long, though there are exceptions. Good muscle tone of the uterus shortens labour and reduces loss of blood to a minimum. The teeth are preserved as the improvement of calcium and phosphorus metabolism by photosynthesis protects the skeletal calcium reservoir from depletion. Raising the immunity from infection protects her from sepsis, and one rarely sees even a slight rise of temperature and wounds

rapidly heal. After parturition most of these women feel that they could get out of bed and resume a normal life. This is only as it should be, but, of course, is not allowed in modern practice. A striking feature is early lactation, even in those who could not feed previous babies.

As a general practitioner in an industrial town material and time have been very limited, but there has been an advantage in having cases for a long time under individual attention. The development of the child after a good start has been most interesting. I am convinced that results have been better than they would otherwise have been. Ossification is well advanced, cranial bones firm, and fontanelles closing well; dentition normal and muscle tone good. Walking sometimes starts earlier than expected, and in one case was well established at 8½ months.

What is most striking is the healthy state of the mental faculties during the past few years; each child has either gained a scholarship to the Bolton School or passed the entrance examination. I have pressed the use of actinotherapy where there is mental defect in the family history of either parent, and results so far have justified this course.

The Government is making great plans on new housing schemes and preparing to spend freely on these, but the bodies we live in have the first claim on our attention, and the future citizen is of more importance than the shell he inhabits from time to time and which is not indispensable. Educational reforms are of less importance than good material.—I am, etc.,

Bolton

WM. HARVEY BENNETT.

### Wound Fractures in Plaster-of-Paris

SIR.—I would like to support Prof. Willan in what he says about wound fractures in plaster-of-Paris. At the Royal Victoria Infirmary, Newcastle-upon-Tyne, we have had a large number of war casualties with compound fractures of limb bones enclosed in plaster-of-Paris. The bulk of these cases arrived in splendid condition thanks to the magnificent surgical treatment they have previously received, aided by the sulphonamides or penicillin. But a small minority are not in this category. They arrived in a rather poor toxic condition, running a temperature, and with the plaster stained and odorous. Some of these we know must have the plaster removed and the wound inspected, but in between are cases where one is really in doubt whether to interfere or not. X rays perhaps show the bones to be in good position, and one is afraid of spoiling this, although one is unhappy about the condition of the wound or wounds. This is the sort of case where Prof. Willan's suggestion would be most useful if carried out. The "blister" or "protuberance" would show one the site of the wound and the plaster over it can be easily removed, the wound inspected, and any necessary local treatment carried out without disturbing the position of the fracture. Of course one knows that in many cases the site and position of the fractured bones are drawn on the plaster, and this method is most useful, but it does not, perhaps, show the site of the wound or wounds. I think that Prof. Willan's suggestion is a very good one, and if carried out will be most helpful.—I am, etc.,

Newcastle-upon-Tyne.

J. HAMILTON BARCLAY.

### Early Cancer: Difficulties of Hospital Admission

SIR.—Mr. Wilfrid Adams in his letter (Sept. 30, p. 450) rightly points out that the alert general practitioner is more likely to be responsible for the early diagnosis of cancer than is the institution of numerous cancer clinics. A further point I should like to make regarding the prognosis of cancer is that, having diagnosed it, the general practitioner has great difficulty in obtaining early treatment for his cases. The patient is seen at a local hospital and put on a waiting list for admission. According to the locality, he or she may be kept waiting a matter of weeks or even months. Meanwhile the disease progresses and may become inoperable or beyond the aid of radium.

Until cases of suspected or proved cancer are treated as urgent admissions for the purpose of investigation and treatment, the death rate and suffering from this disease will continue at its present high level.—I am, etc.,

Scarborough.

ANNE M. ROXBURGH.

### London Medicine

SIR.—Dr. Rowland Hill's letter (Oct. 7, p. 479) must in general command such a measure of approval that his particular somewhat critical reference to the Institute of Child Health cannot be allowed to pass without comment. He is clearly under a misapprehension as to the prospective scope of the institute.

The conception in the minds of its originators has always been just as comprehensive as Dr. Rowland Hill suggests it should be, even to the full title of "The London University Institute of Child Health." It is true that the plan for such an institute emanated from the Hospital for Sick Children, Great Ormond Street, and that this hospital has been most active in furthering it. We are proud of the fact. But the design has always been on the broadest lines, aiming at co-operation between all concerned with the health and well-being of children.

A present collaboration between the University of London, the L.C.C., the Postgraduate Medical School, and the Hospital for Sick Children would seem to assure an adequate breadth of vision, which certainly aims at embracing in the future every paediatric activity in and around London.

All would agree with Dr. Rowland Hill that this great project must be made truly worthy of the capital city. I hope he may be convinced that the foundations are being well and truly laid, and that he may come to share the confidence in the builders, which has induced the Nuffield Trustees to subscribe £100,000 to the work.—I am, etc.,

Hospital for Sick Children, Great  
Ormond Street, W.C.1.

T. TWISTINGTON HIGGINS.

### Intravenous Anaesthesia

SIR.—Major Maidlow (Sept. 30, p. 432) has put forward several criticisms of our apparatus for continuous intravenous anaesthesia which we described in the *Journal* of Dec. 25, 1943 (p. 813). We should be grateful for the opportunity to answer his criticisms. We believe that his remarks can only be based on armchair critical perusal of our paper, as the majority of the faults he has to find do not occur in practice.

There is no flow of oxygen except to the patient via the flowmeter. There is merely back-pressure in the saline bottle caused by constricting the flow between the "Y" piece and flowmeter; therefore Major Maidlow's dogmatic and terse dismissal of this method with the words "besides being wasteful" is quite unjustified. If the rubber bung of the saline container does not fit well, it can happen that the pressure in the bottle is enough to blow the cork out. A

flitting cork or a little intelligent use of adhesive strapping obviate this. In practice there is no need to turn off oxygen, nor any need to fit an automatic mercury manometer or blow-off valve, and therefore the complications or disadvantages which spring to Major Maidlow's mind do not exist and consequently do not need obviating.

Let us answer his enumerated list of disadvantages one by one:

1. The tubing, punctured at each injection, can be kept sterile by covering with a swab soaked in antiseptic; in any case the delay caused by wiping a piece of tubing with a swab is not worth discussing.

2. While we entirely agree with Major Maidlow on the prime importance of maintaining a clear airway, in the vast majority of cases some position of the patient's head can be found which will ensure a clear airway without the constant holding of the jaw by the anaesthetist. In his gravity-drip days, how did Major Maidlow drag his heavy metal stand to and fro without taking his hand from the patient's jaw and his attention from the patient's general condition?

3. There is usually a vein available in a limb not in the vicinity of the operation, surgeon, or assistant, and towels may be arranged so that the anaesthetist may have access without intruding on the operative field.

4. The last question in this section surely does not need an answer. The second shows the goat-straining qualities of Major Maidlow's drip technique. He cheerfully swallows his camel's head in his own method by allowing a gallipot containing pentothal for intravenous injection to be open to the air.

5. We agree with this criticism, especially with wartime rubber tubing.

In return may we offer a few criticisms of Major Maidlow's method:

1. The aspiration indicator Major Maidlow admits is most useful but he makes a rule to avoid using it.

2. A three-way tap we tried and abandoned because: (a) it tends to leak from the tap and each of the four rubber-metal joints; (b) to avoid dead space of saline or pentothal it must be closed; the needle, and there it is heavy and tends to drag on the needle and dislodge it.

3. Pentothal in an open gallipot, besides being liable to dust contamination and airborne infection, dissociates much more rapidly than pentothal kept free from air in a syringe.

4. Unless the pressure in his bottle is unduly high there is no more reason why the saline level in the drip bulb should rise to high using positive pressure than when using gravity. However, I admit the possibility but see no use for the employment of side tube and clip—which, of course, give perfect control over the level under all circumstances.

5. Why bother to insert an air filter between bellows and bottle while the pentothal is left in an open gallipot?

6. Why wait 15 minutes to obtain the benefit of supplemental gas and oxygen? The patient can be "settled" much quicker with far less pentothal if supplementary gas is used immediately after induction.

In conclusion we should like to point out that all these differences of opinion are on minor points of technique, in which there must always be a considerable degree of personal preference. Generally speaking, we are in absolute accord with Major Maidlow on the indications and contraindications of continuous intravenous anaesthesia, and we should especially like to endorse his statement that for prolonged laparotomy the anaesthetic of choice is some form of regional analgesia combined with light pentothal, or pentothal, gas, and oxygen anaesthesia.—We are, etc.,

F. W. ROBERTS.  
B. A. SELICK.

Middlesex Hospital, W.1.

### Pentothal in the Shocked Case: A Warning

SIR.—I have recently returned from North Africa and Italy where for the past year I was anaesthetic specialist to one of the Services. It was my lot during that time to see a number of anaesthetics given by medical officers who were not trained anaesthetists, and two things struck me very forcibly while observing their technique. The first was that in the giving of inhalation anaesthetics many of these officers showed little indication of recognizing the importance of that first principle—the maintenance of a clear airway—and were quite content in many cases to let the patient continue with some degree of obstruction.

The second was to my mind of much greater importance and was the thing which prompts me to write this letter. It was the failure to appreciate the appropriate dosage of pentothal in cases suffering from shock. It seemed to be their attitude that "a shocked case needs a little less pentothal than a 'cold' case," with the result that if it had not been for the presence of an experienced anaesthetist overdosage and grave risk to the patient might have occurred. No criticism of these medical officers is implied, but it is suggested that teachers should stress that while technically pentothal is the easiest of all anaesthetics to administer, it is also "fatally easy to administer an overdose, and what might be considered a normal dose for the robust person might well be fatal to the same individual shocked or exsanguinated.—I am, etc.,

HOWARD BRUCE WILSON.

### Urethral Lesions in Enuresis

SIR.—The interesting article by Lieut.-Col. Backus at Capt. Mansell on enuresis in the Army (Oct. 7, p. 462) refers to me as finding that congenital stricture in children is a causal factor of enuresis (p. 465). This, I am afraid, is a misrepresentation of what I have said on this subject. I certainly hold the opinion that urethral examination reveals a high percentage of urethral abnormalities, which are most chronic inflammatory in origin, and that laboratory reports on the urine generally fail to give any indication that such

is the case. I notice that in this report there is no reference to urethroscopic findings; these are important in relation to treatment. Nor is there any indication that observations were made with regard to residual urine in the bladder; the presence of the latter is important for the same reason. I have had more than one patient under my care who was discharged from one of the Services because of enuresis, and in whom posterior urethral lesions were found, the treatment of which caused a cessation of the enuresis.—I am, etc.,

London, W.1.

H. P. WINSBURY-WHITE.

### Oestrogens and Cancer

SIR.—I read with interest the article on synthetic oestrogens and advanced cancer (Sept. 23, p. 393), and I note the authors' statement that the effect of giving stilboestrol provides an incentive to further investigation. The administration of stilboestrol is scientifically correct, but in the study of the genesis of cancer there has been a failure so far to give place to other important physiological considerations.

I am convinced that the cause of malignant change is inherent in the organism, and that it is an error in the metabolism of two interdependent bodies—fats and sugar. It has been truly stated that the fats are the cement which holds together the organized matter of the protoplasm, and in the pre-cancerous condition the cells and their protective oily envelopes are starved of fat and so rendered more sensitive to biochemical agents. At the same time the faulty fatty metabolic error results in an increase of non-saturated fatty acids, which combine with the alkalis of the tissues to form saponins. Incidentally, B. Moore and others have observed an increase in the alkalinity of the blood and tissues in cancer. That saponins are irritating and can cause increased mitosis has been proved by experiments which readers must study for themselves.

In pre-cancerous states there is also an excess of sugar in the system, for I have frequently found recurring glycosuria in patients some years before the growth appeared. This is not likely due to lack of insulin, which, after all, does not burn sugar but only prepares it for combustion. Rather is it due to: (1) over-activity of the anterior pituitary, and (2) imperfect preparation of the fats. Sugar and fats cannot burn one without the other, and both must be prepared for the burning by their respective enzymes.

I have an idea that if we could correct the faulty metabolism of these two substances the result of the stilboestrol treatment would be more satisfactory. And in the pancreas we have the necessary enzymes staring us in the face: they are the lipolytic enzyme and insulin. Why, then, not use them? They could be introduced by intramuscular injection of pancreatic extract (whole gland). I am no chemist and therefore cannot say whether in the course of preparation of the extract the activity of the more important ferment—the lipolytic—would be destroyed; if so, the extract would be useless. It all sounds very simple and easy, just as the solution of the cancer problem will appear to be. This will not come until we pay more attention to physiological principles. Indeed,

"Life is no crazy pathway. Every bit  
Is planned beyond our human ken to fit."

—I am, etc.,

J. THOMSON SHIRLAW.

Wigan.

### Familial Leukaemia

SIR.—Dr. Meikle's report (Oct. 7, p. 468) of two varieties of leukaemia in one family is extremely interesting, but familial incidence is not quite as rare as he suggests. Thus, Dameshek, Savitz, and Arbor (1929) have recorded chronic lymphatic leukaemia in twin brothers aged 56; and Jelke (1939) gives details of acute lymphatic leukaemia in identical twins. And Decastello (1939) reported six cases of chronic lymphatic leukaemia in two generations of one family.

Such familial incidence is a good deal commoner in lymphatic leukaemia than in the myeloid form (Ardnashnikov, 1937); but, so far as I am aware, there is no previous report of two varieties of leukaemia in the same family. Even so, it is just possible that Dr. Meikle's cases were both of the Naegeli type of

monocytic leukaemia—that is to say, that in Case 1 there was a monocytic increase in a primarily myeloid leukaemia, while Case 2 was continuously myeloid.

It is interesting to recall that Richter and MacDowell (1935) have shown definite influences of genetic factors in experimentally induced leukaemia in mice.—I am, etc.,

London, W.1.

A. PINEY.

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SIR.—I have read with interest Dr. Meikle's article (Oct. 7, p. 468). There are, Dr. Meikle's case included, 28 incontrovertible cases of familial leukaemia reported in the literature. Last year I had the opportunity of diagnosing two cases of monocytic leukaemia in one family. A full account of them and a review of the literature will be published elsewhere. The occurrence of two cases of monocytic leukaemia in the same family has, to my knowledge, never been recorded before. Familial cases of leukaemia are probably more common than is usually supposed. To establish this more extensive genetic studies and systematically repeated blood examinations of all the relatives of leukaemic patients in different generations will be necessary.—I am, etc.,

London, E.17.

B. JUHN.

### Words and Clear Thinking

SIR.—Clear thinking is largely determined by clear expression. Those who deliberately misuse words are enemies to science. Pre-eminent among these miscreants are the teachers of medicine who persist in the use of the phrase "hyperglycaemic coma." Their pupils are led: (1) to assume that sugar is a toxic substance; (2) to inform examiners that diabetic coma is due to hyperglycaemia; (3) to give insulin for this state without a corresponding quantity of sugar.

I wish to bring these facts to their notice, and to ask all such teachers to expunge the noxious phrase from their minds, their books, and their tongues.—I am, etc.,

London, W.1.

GEOFFREY BOURNE, M.D.

### Functional Hypoglycaemia

SIR.—Dr. Wilfrid Oakley (Oct. 7, p. 479) has seen fit to pass judgment against the term "reactive hyperinsulinism" coined by Dr. F. T. G. Prunty (Sept. 23, p. 398) for those cases of hypoglycaemia not due to organic causes, such as islet-cell tumours. Dr. Prunty preferred the term "reactive hyperinsulinism" to that of "functional hyperinsulinism" of Conn (1940), since the word "functional" has other less well defined associations.

There is abundant evidence to show that these cases of "functional hypoglycaemia" occur in psycho-neurotics, very often as the presenting feature, and for this reason they are often referred to as the nervous type of hypoglycaemia—open to the same objection given for "functional."

Since the condition is not uncommon it is important that terminology be simple as well as accurate. Dr. R. D. Lawrence, in a letter in your columns (Dec. 11, 1943, p. 760), used the term "spontaneous hypoglycaemia," and this seems preferable to those suggesting either a functional basis or hyperinsulinism.

May I suggest as an alternative "reactive hypoglycaemia."—I am, etc.,

Guy's S.A. Hospital.

GEORGE R. W. N. LUNTZ.

### Service Medicine

SIR.—In the correspondence on this subject officers, almost invariably of high rank, have gone to great trouble to defood the Services—risking the obvious inference. It appears that in all these letters hospital treatment has been held up as the be-all and end-all of efficiency. Surely hospital treatment is a very small fraction of the sum total of medical treatment, and it is at the greater aspect of the medical care of personnel that criticism might well be levelled.



The opinions of individual medical officers—of whatever rank—are of little value in the matter, merely expressing a personal belief or opinion. The opinions of Service patients would be of much greater value, and I venture to suggest that they would be far from flattering. This unhappy result is not solely the fault of individual medical officers, who are without doubt handicapped by veritable avalanches of regulations, instructions, amendments, and memoranda, etc., *ad nauseam*, which results in "playing safe and passing the buck."

The opinion of your correspondent Capt. Hall bears little weight—Capt. Hall would do well to remember that the war has been in progress for considerably longer than his two years of service. The point is that it has taken five years of futile struggling to produce the state of mind reflected in the letters of earlier correspondents. This point is, I think, borne out by the fact that this correspondence is recent.

The point raised by your correspondent R. G. Gordon is interesting. And it will always be a source of wonder to me why men with the most efficiency, the most expensive and most lengthy training of any branch of the Service, are required to inspect latrines, which task needs no medical knowledge whatsoever and merely entails inspection for dirt, flies, etc., which should be within the scope of any administrative officer.

I do not think that there is any real inefficiency among medical officers but rather a tragic state of disinterested resignation—tragic because of its long story of slow disillusionment, of blasted ideals and hopes, and of smothered enthusiasm and initiative. Generally speaking, the system works comparatively well, but the cost in post-war clinical inability and lack of knowledge through being out of touch has still to be reckoned, and will, I feel sure, be colossal.—I am, etc.,

India

GILBERT FRASER.

SIR,—“Service Doctor” in his letter (Sept. 30, p. 451) is, in my opinion, grossly unfair to the average Royal Air Force N.C.O. and medical orderly who work in station sick quarters. His five years’ service must have been unfortunate in this respect. The many R.A.F. medical officers, including myself, would have made many more clerical errors (of some importance), especially in our early months of apprenticeship, were it not for the medical N.C.O. Civilian secretaries can also be inefficient, and they have to be paid.

The pilot flying his plane up has to take it on his charge. Other officers in other branches of the Service are in the position of having vast quantities of stores on their charge, for which they are responsible. “Service Doctor” ought to be reminded that there is a fair-wear-and-tear ruling for his electric light bulbs!

Never have I seen in the R.A.F. Medical Service red tape obstructionism intervene when the life or future health of a patient was at stake. I can only conclude that accusations of this kind made on this very important aspect of red tape

be due partly to lack of initiative of the M.O. concerned. Any of us who are in the Service for the duration of present hostilities will be glad to be free again to go as we please; but while the chaos of war remains and is likely to for some time, it seems only fair to serve patiently, especially in a Service with such a fine record as the R.A.F. Many others, besides the younger members of the medical profession, did not want their individual ambitions and desires frustrated by the war.

In concluding, it seems only fair to do away with anonymity, for it provokes fear of reprisals, and surely fear is one of the things we are fighting— I am, etc.,

GLYN DAVIES,  
Fl. Lieut., R.A.F.V.R.

SIR, I admire the succinct summary which Dr. G. M. Hodges (Sept. 23, p. 417) accords my letter of Sept. 9. I wish I could admire his logic as well. He first states there are “buts,” and then produces—but one, and that occurs after the man is discharged from the Service. Is there any fundamental reason why one should not get on as well with the officials of State as one does with the “higher ups” in Service medicine? Aren’t some of us, even at the present time, supervised? A D.M.O. is responsible to the guardians committee and/or the local M.O., a panel doctor is responsible to the local

insurance committee and to the R.M.O. Wherein lies the difference?

As to my being fortunate in my superior officers, I have in five years (not four as previously stated) as C.M.P. to the R.A.F. seen and experienced a vast number of changes in the personnel, but, without exception, I have always had a fair and polite association with them.—I am, etc.,

Norwich.

P. B. CORBETT.

### Need for Reform in Clinical Teaching

SIR,—With regard to the problems of medical training and various projected reforms in the curriculum, I feel that you may be not unwilling to publish the views of a student on these somewhat controversial topics. The opinions I express are, I should stress, based on individual observation and experience: they are not intended to be representative of general opinion among medical students.

My own conviction is that clinical teaching, not pre-clinical, stands in most urgent need of reform. A pre-clinical student is taught along the lines accepted as being the most practical and coherent in nearly all science faculties of nearly all universities: a course of lectures, supported by laboratory classes and demonstrations, with optional or semi-optional “tutorials” for advanced students. Yet for a clinical student there are seldom, if ever, systematic courses of lectures on any of the basic subjects; teaching rounds in the wards provide a hopelessly inadequate substitute for the valuable methodological exactitude of the laboratory; and, worst of all, the student is expected to “pick up” knowledge by dint of individual push and initiative. In the latter process we may find that the lazy take discreet avoiding action, the shy or diffident are suppressed by belligerent house officers and sisters, while a few tenacious spirits collect odd fragments of “knowledge,” which are about as homogeneous as “liquorice all-sorts.”

The remedy for all this is, surely, the bringing into line of clinical teaching with pre-clinical. It is sometimes argued that clinical material cannot be made available in such a way that the teaching can be formal and systematic. To some extent this may be true, but not true enough, surely, to justify the present chaotic methods. The lack of readily available demonstrators in the wards is one of the most conspicuous flaws: overworked house officers cannot be expected to fulfil this function, but why should there not be young postgraduate teachers who make teaching their full-time job?

As to reform of the curriculum, what strikes one as most obvious is that a “little learning” of some highly complex subjects, notably psychiatry and dermatology, is a waste of time which could be devoted to a more searching acquaintance with casualty practice and so-called minor maladies. Not long ago I arranged for a young woman troubled by warts on her fingers to see an eminent dermatologist, who cured her without the slightest difficulty; she had been treated by an extremely competent G.P., who had, nevertheless, failed to remedy the nuisance. Would it be heresy to anticipate that, in due course, enlightened members of the general public, afflicted with psychological problems or skin troubles, will go straight to the appropriate person without the cumbersome intervention of the G.P.?

The essence of efficiency, few would surely deny, is to avoid “knowing less and less about more and more”; if the curriculum were to be much further burdened this dilemma could hardly be averted. But it would take a genius to sort out the existing confusion at a single stroke.—I am, etc.,

London, S.W.10.

J. A. FLETCHER.

### Lay Psychiatry

SIR,—As a reply to the letter of Mr. D. H. Kitchin on the subject of lay psychiatry (Sept. 30, p. 450) I would like to stress the point that psychiatry must be strictly amoral, and must dispel guilt-feelings so often linked to ethical issues. It would therefore seem that a clergyman would usually be the last person desirable to practise psychological medicine, which should be reserved solely for the qualified physician, who also has recourse to such methods as intravenous narco-analysis.—I am, etc.,

T. H. HARGREAVES.

## Obituary

### ALEXANDER BREMNER, CBE, M.C., T.D., M.D.

Col Bremner died suddenly at his home in Sheffield on Sept 29 aged 54. He had led an adventurous and unselfish life in two spheres of action—as a physician and as a soldier in two wars.

He was educated at the Anderson Institute in Shetland and at Edinburgh University, where he graduated M.B., Ch.B. in 1913, and was a prominent member of the O.T.C. When war broke out in 1914 Bremner joined the Army as a sergeant major and as unofficial M.O. to a battalion raised in Hull by Sir Auckland Geddes. He was later transferred to the R.A.M.C. and went to France. After a few months he was invalided home with typhoid fever, and later was attached as M.O. to the Dublin Fusiliers, with whom he stayed for the remainder of the war and saw service at Suvla Bay, Salonika, Egypt, and Palestine. For valour in rescuing wounded under fire he was awarded the Military Cross and later was mentioned in despatches for gallantry in the field.

In 1919 he married Miss Ella Elphinstone, herself a graduate in medicine of Edinburgh, and in the same year they went to live in Sheffield, where Bremner took over the practice of his uncle, Dr Inkster. In 1925 he was appointed deputy medical director of the Edgar Allen Institute and in 1926 honorary physician to the Children's Hospital, Sheffield. Later he became lecturer in diseases of children at Sheffield University. He took his M.D. and the D.T.M. & H. at Edinburgh in 1919 and the D.P.H. in 1920. The after-care and rehabilitation of rheumatic children was one of his constant preoccupations, and he was instrumental in organizing the clinic for rheumatism under the Sheffield School Medical Service. His most important work was probably in connexion with children's diseases, not only as a physician but as a committeeman and as an administrator. He had a talent for getting things done.

He joined the Territorial Army as M.O. to the 71st Field Brigade, R.A., about 1925, and continued to serve with them until the early part of 1940. He was then promoted to lieutenant-colonel and proceeded to France as O.C. of a field ambulance and acting A.D.M.S. Although his division was largely untrained he led his command from the south of France to Belgium when the Germans broke through in May, 1940. Here he became involved in heavy fighting, was again mentioned in despatches for gallantry, and was severely wounded in the retreat to Dunkirk. Back in England Bremner spent some months in hospital, mending his fractured legs. He was promoted colonel, A.D.M.S., in charge of a general hospital, and with this unit he landed with the first British troops in North Africa. The transport containing his equipment was sunk in harbour by enemy action, but under heavy aerial bombardment he organized the salvage of enough stores to erect a hospital which was receiving casualties within a few days. He was again mentioned in despatches for gallantry in the field and later was awarded the C.B.E. Among his other achievements in North Africa he organized the hospital medical services disinfecting station. He returned to this country in October, 1943, after his services had been asked for by his hospital and by the university. He threw himself immediately into organizing means to assist those now in the Forces when they returned to civilian life.

A correspondent writes Bremner loved soldiering when there was something to be done, he could not find an outlet for his energies in the peacetime Army. In many ways he remained very youthful. He had a large practice in the West End of Sheffield, but probably had more non-paying patients than any other practitioner in the district. He was a first-class physician who used laboratory aids only when they were essential to the diagnosis. Apart from his skill as a physician his constant cheerfulness and his kindness helped greatly to restore many people to health. Whatever group or society he belonged to, he was always the chief driving power behind the organization.

### WILLIAM A. BREND, M.D.

We regret to announce that Dr William Alfred Brend, barrister-at-law of the Inner Temple, died on Oct 5 at Charing Cross Hospital, where he had been lecturer in forensic medicine for many years.

Born in Kensington on April 29, 1873, son of William Brend, M.R.C.S., he was educated at St Paul's School, Sidney Sussex College, Cambridge, and King's College, London. He took a first in the Natural Sciences Tripos in 1895, and a year later the B.Sc. Lond. with honours, taking the M.B., with honours in forensic medicine, in 1903, and the M.D. in State Medicine

(with gold medal) in 1915. He received the M.R.C.P. in 1939. During the last war he served as temporary major, R.A.M.C., and was inspector of hospitals in France and Belgium for the Croix Rouge. Brend was a member of the British Psychological Society and the British Psycho-Analytic Society, and served for some time as Neurological Deputy Commissioner of Medical Services under the Ministry of Pensions, he had also had charge of the special Medical Board for Functional Nervous Disorders. Apart from his teaching post at Charing Cross Hospital he examined in forensic medicine for the Universities of London and Edinburgh, was an active member and at one time vice president of the Medico-Legal Society, and wrote a *Handbook of Medical Jurisprudence and Toxicology* for the use of students and practitioners, which reached a seventh edition ten years ago. He also contributed to the *Nineteenth Century*, the *Edinburgh Review* and to medical journals, and published in 1915 an inquiry into the statistics of deaths from violence and unnatural causes in the United Kingdom, and in 1917 a book, *Health and the State*.

Dr Brend served at the headquarters of the B.M.A. on the Ministry of Pensions Subcommittee, and on the subcommittee on Amendment of Coroners' Laws and Death Certification, and was vice-president of the Section of Public Medicine at the Annual Meeting held at Bath in 1925.

Dr ARCHIBALD GORDON GULLAN, consulting physician to the Liverpool Stanley Hospital, died on Sept 9 at his home at Formby. He had been a member of the Liverpool City Council and was chairman of the Liverpool Division of the B.M.A. in 1928-9. He was born at Swansea on Oct 15, 1871, and from Berkhamsted School went to study medicine at University College, Liverpool, where he won the Holt Scholarship after qualifying in 1894. Two years later he graduated M.B. Lond. and proceeded M.D. in 1899, he obtained the F.R.C.S. diploma in 1897 and the M.R.C.P. in 1901. His early appointments in Liverpool were those of medical tutor and registrar at the Royal Infirmary, assistant physician to the Infirmary for Children, and demonstrator of anatomy and of physiology in the University. He served during the last war with the rank of lieutenant-colonel, R.A.M.C.(T), as officer commanding the 1/3 West Lancs Field Ambulance, he was later in charge of the Military Hospital at Gibraltar, and described in these columns the epidemics of cerebrospinal meningitis and of influenza on the Rock. In addition to his long service on the visiting staff of the Stanley Hospital Dr Gullan was also consulting physician to the Waterloo Hospital and lecturer on clinical medicine in the University. He represented his Division at the Annual Meetings of the B.M.A. at Oxford, Leicester, and Exeter in the early years of this century, and held office as secretary of the Section of Medical Sociology when the Association met at Liverpool in 1912.

NORAH BORE, B.A., M.R.C.S., L.R.C.P., L.R.A.M., who died on Sept 12, had had, alas, only five years of medical practice. Before that she had had a career in the musical and educational world where she showed the remarkable qualities of mind that won the admiration and love of many colleagues. It was as a teacher that her interest first turned to child psychology, for she felt the futility of an educational system which concentrated only on intellectual training while neglecting the child's emotional needs. She therefore took up the study and practice of psychology, only to become convinced that she could not make her full contribution to this work without a medical training. Hardly had she begun as a medical student when she was attacked by the disease which finally killed her. With full knowledge of the odds against her, she decided to go on. She qualified in 1939 and undertook a year's general practice in a Welsh mining district and a further year as medical officer in a mental hospital before she considered herself ready for her chosen work. She brought to it a sureness of touch and profundity of understanding that at once gained recognition. Her services were sought after in child guidance clinics all over the country. Her unstinting response probably hastened her end, but, as always, it was a deliberate choice. She preferred not to hoard her life. In these last three years she achieved what seemed to those who knew her a miraculous ascendancy over pain and weakness. While she was working she was so effortless and easy that an outsider would not have known that she was ill. Her work in this time was more than can be measured in quantity or duration. Although death cut it short, her grateful patients and her at least, equally grateful colleagues feel that its value will live on.

The tragic death, on Sept. 24, of Brevet-Col. JOHN OSCAR THOMAS, M.C., T.D.—drowned whilst bathing—is a great loss to his many friends and colleagues in and around Rochester, where he had been in practice since 1923. Born in 1891, Thomas was the younger son of the late Mr. and Mrs. Walter Thomas of St. Blazey, Cornwall, and received his medical education at the Westminster Hospital, London, where he was a scholar and prizeman. Qualifying in 1914, he served throughout the last war, during which he was awarded the Military Cross, subsequently returning to the Westminster Hospital, where he held all the resident house appointments, became the first resident medical officer, and took his M.D. and M.R.C.P. Lond. Thomas settled in Rochester in 1923. Early in 1927 he was appointed honorary assistant physician to St. Bartholomew's Hospital, Rochester, and has been an active member of the medical committee for many years. In 1933 he established the department of electrocardiology. Later he was appointed honorary physician with charge of in-patients, and recently became full honorary physician. Despite the heavy calls of an extensive consulting practice Thomas kept up his close association with the Territorials, holding for some years command of the County of London 140th Field Ambulance, and on the outbreak of the present war he was called up from the Reserve of Officers and left his practice to organize a general hospital of 1,200 beds, with which he went to France in October, 1939. In the withdrawal of the B.E.F. he was one of the last to leave St. Nazaire. In September, 1940, he mobilized another medical unit, which he took to the Middle East, serving there for three years, first in command of No. 5 Convalescent Depot in Sinai Peninsula, and later commanding No. 16 General Hospital (A.M.S.). Always a keen horseman and a strong swimmer Thomas's busy life gave him little leisure for these relaxations. He leaves a widow and one daughter, and in their grievous loss may they find some consolation from the high personal regard in which he was universally held and the large number of those who gathered at the memorial service in Rochester Cathedral to pay their tribute.

## Medical Notes in Parliament

### E.M.S. Hospitals

Hospitals in the Emergency Hospital Scheme are administered by their normal governing authorities and not by the Ministry of Health. The scheme now includes 1,640 hospitals, of which 671 are controlled by local authorities. Medical officers attached to a local authority hospital are under the discipline of the hospital authority, which is generally exercised through the medical superintendent. The scheme as originally planned provided for the treatment of civilian casualties from enemy action and of persons transferred from one hospital to another to afford accommodation for the treatment of such casualties. The treatment of these cases is provided for under sections 50 and 53 of the Civil Defence Act, 1939. The scheme has since been extended under agency arrangements made with the Government Departments concerned and authorized by the Treasury, to include Service casualties and sick, members of the Merchant Navy, and various groups of civilian patients engaged on work of importance to the war effort in this country. This information was given by Mr. Willink on Oct. 11 in answer to an inquiry by Sir Ernest Graham-Little.

### Production of Penicillin

Replying on Oct. 11 to Mr. A. Edwards, Sir ANDREW DUNCAN said the volume of penicillin production both in this country and in North America had substantially increased during the past three months. Total supplies amply covered Service needs. Increased quantities would become available for civilian use. A large-scale plant now being erected in this country would be managed by the Distillers Company for the Ministry of Supply and would begin production in the spring of next year. Inquiries about civilian supplies should be addressed to the Ministry of Health. Dr. HADEN GUEST reported that Mr. Willink had made penicillin available when required in a large number of cases, and that a circular to that effect had been issued to all medical men in the country.

### Psychiatrists for Duty in Prisons

Mr. HERBERT MORRISON announced on Oct. 12 that the Prison Commissioners have appointed two consulting psychiatrists to act as part-time medical officers at Wormwood Scrubs and Holloway Prisons. Medical officers at all prisons have been instructed on the types of cases in which psychological treatment may be beneficial. These cases are transferred to Worm-

wood Scrubs or Holloway for assessment and treatment. The psychiatrist at Wormwood Scrubs, who was appointed in February, 1943, examined in that year 60 male prisoners, of whom 18 received full courses of treatment. The psychiatrist at Holloway, who began work in April, 1944, has investigated 25 cases, of whom 7 are receiving active treatment.

### University Representation

The House of Commons went into committee on Oct. 1, on the Redistribution of Seats Bill. Mr. PRITT moved to omit the clause relating to university constituencies. He contended that if persons who had university education were specially represented in the House, there should also be special representation for scientists and doctors. Prof. SAVORY recalled that his predecessors in the representation of Belfast University had been Col. Sinclair, a most distinguished surgeon, and Sir William Whitla, whose *Dictionary of Treatment* forms part of the library of every doctor. Sir ERNEST GRAHAM-LITTLE said there was a strong view that political qualifications should not be considered in a member of a university. He followed that rule himself. He pointed out that Prof. A. V. Hill was a link between the Royal Society and the House. Mr. PEAKE pointed out that the Speaker's Conference on Redistribution had agreed that the representation of the universities should continue. Mr. Pritt's amendment was defeated by 152 to 16. The Bill passed through Committee and was read a third time.

*Treatment of Silicosis.*—On Oct. 10 Mrs. TATE asked the Minister of Fuel and Power whether he had any information about the discoveries that had been made at McGill University, Montreal, concerning the prevention and cure of silicosis. Major LLOYD GEORGE said he was aware of the experiments going on in Canada on the treatment of silicosis by the inhalation of aluminium powder, which were probably what Mrs. Tate had in mind. These experiments were being closely watched both by his Department and by the Medical Research Council, but he was advised that the results were not yet conclusive enough to justify the adoption of this method of treatment at British mines. Mrs. TATE asked if the Minister would get into touch with McGill University to see whether these were the same experiments. Major LLOYD GEORGE said he would certainly do so, but he believed that our people had been in touch. A report was recently published in South Wales dealing with the question of silicosis, and as a result of that he was satisfied that every possible research was being made.

### Notes in Brief

A substantial additional tonnage of paper has now been allocated for educational books.

A free grant of £477,500 has been made under the Colonial Development and Welfare Act for the construction of a new hospital of 1,100 beds at Mulago, Uganda. The Governor proposes to increase the present accommodation to 700 beds in temporary buildings while the new hospital is under construction.

## The Services

The King of Egypt has conferred the Insignia of the Third Class of the Order of the Nile on Lieut.-Col. A. G. Harsant, O.B.E., R.A.M.C., on the occasion of his retirement from the professorship of anatomy in the Faculty of Medicine at Fouad University.

Capt. (Temp. Major) D. G. C. Whyte, R.A.M.C., has been awarded the D.S.O., and Capt. R. R. Lal, I.A.M.C., the M.C., in recognition of gallant and distinguished services in Burma.

### CASUALTIES IN THE MEDICAL SERVICES

*Killed in action.*—Capt. Matthew Donald Murrrough Bergin, R.A.M.C.

*Died.*—Capt. William Dinwoodie Speedy, War Subs. Capt. Ian Malcolm Hill, R.A.M.C.

*Previously reported missing, now reported to have died while a prisoner of war.*—Capt. Percival Binnington, R.A.M.C.

*Missing, presumed lost at sea, while prisoner of war in Japanese hands.*—Major John Moore Officer, R.A.M.C.

*Reported missing.*—Capt. T. F. Redman, R.A.M.C.

*Reported missing, believed prisoner of war at Arnhem.*—Col. G. M. Warrack, A.D.M.S., 1st Airborne Division.

*Missing at Arnhem.*—Capt. J. G. Jones and B. Brownscombe, R.A.M.C.

*Missing at Arnhem, believed prisoner of war.*—Capt. G. B. D. Scott, R.A.M.C.

*Missing from operations in N.-W. Europe.*—Capt. C. A. Simmonds, R.A.M.C.

*Missing in Italy.*—Capt. E. Haigh, R.A.M.C.

*Wounded.*—Major R. L. Harward, War Subs. Capt. D. H. Swayne, I. S. Dalton, M. MacIntyre, I. F. Thompson, Lieut. W. L. Cooper and J. H. Orr, R.A.M.C.

*Repatriated.*—Surg. Lieut. A. P. B. Waind, R.N.V.R.

No. 39

## INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended Sept. 30.

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year, for: (a) England and Wales (London included), (b) London (administrative county), (c) Scotland, (d) Eire, (e) Northern Ireland.

Figures of Births and Deaths, and of Deaths recorded under each infectious disease, are for: (a) The 126 great towns in England and Wales (including London), (b) London (administrative county), (c) The 16 principal towns in Scotland, (d) The 13 principal towns in Eire, (e) The 10 principal towns in Northern Ireland.

A dash — denotes no cases; a blank space denotes disease not notifiable or no return available.

Disease	1944					1943 (Corresponding Week)				
	(a)	(b)	(c)	(d)	(e)	(a)	(b)	(c)	(d)	(e)
Cerebrospinal fever ..	39	4	18	2	2	30	1	17	3	1
Deaths .. ..	—	—	—	—	—	—	—	—	—	—
Diphtheria .. ..	545	14	159	90	29	724	26	192	60	28
Deaths .. ..	6	1	2	2	—	10	1	1	—	—
Dysentery .. ..	351	28	145	—	—	337	91	62	—	—
Deaths .. ..	—	—	—	—	—	—	—	—	—	—
Encephalitis lethargica, acute .. ..	2	1	—	—	—	3	—	—	—	—
Deaths .. ..	—	—	—	—	—	—	—	—	—	—
Erysipelas .. ..	—	40	7	5	—	—	63	6	1	—
Deaths .. ..	—	—	—	—	—	—	—	—	—	—
Infective enteritis or diarrhoea under 2 years .. ..	—	—	—	—	—	—	—	—	—	—
Deaths .. ..	63	1	24	14	6	69	10	20	26	12
Measles* .. ..	2,015	27	201	46	42	465	32	42	14	1
Deaths .. ..	—	—	—	—	—	—	—	—	—	—
Ophthalmia neonatorum .. ..	67	2	11	—	—	80	3	19	—	—
Deaths .. ..	—	—	—	—	—	—	—	—	—	—
Paratyphoid fever .. ..	11	—	—	—	—	7	—	—	1	—
Deaths .. ..	1	—	—	—	—	—	—	—	—	—
Pneumonia, influenza (from influenza) .. ..	479	14	8	2	2	409	16	18	1	2
Deaths .. ..	9	1	2	1	—	12	1	1	—	1
Pneumonia, primary .. ..	—	15	216	20	5	—	18	155	8	8
Deaths .. ..	—	—	—	—	—	—	—	—	—	—
Polio-encephalitis, acute .. ..	2	—	—	—	—	3	—	—	—	—
Deaths .. ..	—	—	—	—	—	—	—	—	—	—
Poliomyelitis, acute .. ..	20	1	6	4	1	13	2	9	—	—
Deaths .. ..	1	—	—	—	—	—	—	—	—	—
Puerperal fever .. ..	—	2	15	—	—	—	4	17	—	—
Deaths .. ..	—	—	—	—	—	—	—	—	—	—
Puerperal pyrexia† .. ..	143	4	17	—	2	143	12	20	1	1
Deaths .. ..	—	—	—	—	—	—	—	—	—	—
Relapsing fever .. ..	—	—	—	—	—	—	—	—	—	—
Deaths .. ..	—	—	—	—	—	—	—	—	—	—
Scarlet fever .. ..	1,838	39	372	41	63	2,956	282	381	45	88
Deaths .. ..	—	—	—	—	—	—	—	—	—	—
Smallpox .. ..	—	—	—	—	—	—	—	—	—	—
Deaths .. ..	—	—	—	—	—	—	—	—	—	—
Typhoid fever .. ..	11	1	5	6	1	7	1	3	4	5
Deaths .. ..	—	—	—	—	—	—	—	—	—	—
Typhus fever .. ..	—	—	—	—	—	—	—	—	—	—
Deaths .. ..	—	—	—	—	—	—	—	—	—	—
Whooping-cough* .. ..	982	55	55	21	12	1,583	106	140	32	13
Deaths .. ..	8	3	2	2	—	10	1	1	—	—
Deaths (0-1 year) .. ..	316	26	55	36	13	316	35	64	39	34
Infant mortality rate (per 1,000 live births) .. ..	—	—	—	—	—	—	—	—	—	—
Deaths (excluding stillbirths) .. ..	3,895	467	537	209	84	3,915	571	551	167	135
Annual death rate (per 1,000 persons living) .. ..	—	12.3	13.6	5	—	—	12.4	11.0	5	—
Live births .. ..	6,332	430	923	395	28	6,387	757	866	451	264
Annual rate per 1,000 persons living .. ..	—	18.8	25.6	5	—	—	17.7	29.6	5	—
Stillbirths .. ..	182	14	32	—	—	205	24	36	—	—
Rate per 1,000 total births (including stillborn) .. ..	—	—	24	—	—	—	—	40	—	—

\* Measles and whooping-cough are not notifiable in Scotland, and the returns are therefore an approximation only.

† Includes primary form for England and Wales, London (administrative county), and Northern Ireland.

‡ Includes puerperal fever for England and Wales and Eire.

§ Owing to evacuation schemes and other movements of population, birth and death rates for Northern Ireland are no longer available.

## EPIDEMIOLOGICAL NOTES

## Discussion of Table

In England and Wales notifications of scarlet fever and measles continue to mount; this week they are 142 and 506 respectively higher than last, the incidence having almost doubled since the end of August. Notifications of whooping-cough fell by 77, and the total is now about one-third of the level last June. Lancashire reported 47 more cases of scarlet fever than last week, but 41 fewer cases of whooping-cough. Glamorganshire's total for the latter went down by 31. There were 21 fewer notifications of diphtheria than last week, and the only local variation of any size was a rise of 19 in Lancashire. Measles was particularly prevalent in the north, especially in Durham, Lancashire, and Yorks West Riding, where notifications went up by 192, 86, and 61 respectively.

There were 14 fewer cases of dysentery than last week. The chief centres of infection were Glamorganshire 57, Essex 42, Derbyshire 31, London 28, Lancashire 27, Carnarvonshire 23, Hertfordshire 21, Surrey 19, Suffolk 16, Kent 13.

In Scotland the incidence of scarlet fever went up by 50, of measles by 45, and of dysentery by 11. In Edinburgh the notifications of dysentery dropped to 31, while in Glasgow they rose to 71.

In Eire 39 more cases of measles, 8 more of scarlet fever, and 4 more of diphtheria were reported than last week. The incidence of diarrhoea and enteritis remained unchanged; 44 of the 69 cases were recorded in Dublin C.B.

In Northern Ireland there were 23 more cases of measles and 9 more of scarlet fever than last week, but 7 fewer of diphtheria.

## Cerebrospinal Fever

The falling trend of the incidence of cerebrospinal fever has been checked during the last two quarters. The incidence of this disease steadily diminished after the violent outbreak in the beginning of 1940, and the successive peaks and endemic levels fell until 1943. Although the number of cases in the first quarter of this year were only three-quarters of the number in 1943, the returns for the second and third quarters showed little improvement on the totals for the corresponding quarters of last year. The number of notifications for recent years are:

	Average of 1936-9	1940	1941	1942	1943	1944
1st quarter ..	427	5,093	4,332	2,412	1,287	978
2nd " ..	333	4,190	3,415	1,859	916	873
3rd " ..	224	1,793	1,780	929	542	526

The trend for 1944 is similar to that of the pre-war years, but at over twice the level. The rates for each quarter are 2.3, 2.6, and 2.3.

## Quarterly Returns for England and Wales

The birth rate for the second quarter was 19.3, and was the highest rate for a June quarter since 1925. The average birth rate for the second quarters in the five years before 1943 was 15.7. Infant mortality was 43 per 1,000 live births, 11 below the average of the ten preceding June quarters, and was the lowest rate ever recorded for a second quarter. Stillbirths formed 2.7% of the total births. The general death rate was 11.2 per 1,000, being 0.3 greater than the rate for the June quarter of 1943, but 0.8 below the average rate for the second quarters of the five years 1938-42. The natural increase—excess births over deaths—was 83,801, compared with 7,228, 50,674, and 67,802 for the second quarters of 1941-3.

## Week Ending October 7

The notifications of infectious diseases in England and Wales during the week included: scarlet fever 1,932, whooping-cough 860, diphtheria 509, measles 2,492, acute pneumonia 628, cerebrospinal fever 24, dysentery 390, paratyphoid 7, typhoid 7, poliomyelitis 19.

According to the U.S. Office of War Information, orthopaedic surgeons at Camp Wolters, Texas, have developed a new technique for treating "march fracture" when this occurs in the second and third metatarsal bones. A thin flat iron is built into the non-weight-bearing portion of the sole of the shoe, a felt or rubber pad sometimes being included as well. They call this device a "march bar," and claim that it produces rapid healing by protecting the bone from strain. The man is not sent to bed but kept on duty.

## Medical News

At the annual general meeting of the Medical Society of London, to be held on Monday, Oct. 23, at 4.30 p.m. the presidential address on "Subjective Disorders of Sensation" will be given by the incoming President, Dr. Anthony Feiling.

Mr. R. A. Butler, Minister of Education, will address the School Medical Service Group of the Society of Medical Officers of Health at the Town Hall, High Holborn, London, W.C.1, on Friday, Nov. 3, at 2.30 p.m. He will speak on "The Place of the School Medical Service in the Education Service of the Future." The annual general meeting of the group will be held immediately after Mr. Butler's address.

The National Conference on Maternity and Child Welfare, which was postponed in July last owing to the restriction on travel, will be held on Thursday and Friday, Nov. 23 and 24, in the Big Hall of Friends House, Euston Road, N.W., with Sir George Elliston in the chair. The subject for discussion is "The Rebuilding of Family Life after the War." Mr. Henry Willink, Minister of Health, will give his presidential address on the second day at 10.30 a.m. Tickets, 3s. each for one day, 5s. each for two days, may be obtained from Miss M. R. Lovelock, secretary of the National Association of Maternity and Child Welfare Centres and for the Prevention of Infant Mortality, 117, Piccadilly, London, W.1.

A demonstration of some of their recent work will be given at the Inoculation Department of St. Mary's Hospital, W.C., by Sir Almroth Wright and Sir Alexander Fleming on Tuesday, Oct. 24, at 8 p.m. Owing to technical considerations the attendance will be limited to members of the Polish Medical Association in the United Kingdom and to members of the Paddington Division of the B.M.A.

The annual general meeting of the Middlesex County Medical Society will be held at Chase Farm Hospital, The Ridgeway, Enfield, on Thursday, Oct. 26, at 3 p.m., when an address will be given by Dr. C. Allan Birch on "Medical Emergencies." Visitors, including members of the American and Canadian Forces at present in this country, will be welcome.

At the next meeting of the Medico-Legal Society, to be held at Manson House, 26, Portland Place, W.1, on Thursday, Oct. 26, at 5 p.m., Dr. Eric Gardner will read a paper on "Death in the Bathroom." Members may introduce guests to the meeting; tea at 4.30.

The Personal Service League has consulted the British Hospitals Association in regard to the distribution of a substantial gift of dried banana. The League has accepted the suggestion that some of the dried banana should be held in reserve against its requirement for use in cases of coeliac disease or other emergency. Application may be made for supply to the Personal Service League, 41, Lowndes Square, London, S.W.1 (telephone, Sloane 6291) by day or night.

The twentieth annual report of the Nursery School Association of Great Britain for the year 1943 is a 16-page pamphlet, obtainable from the new headquarters at 1, Park Crescent, London, W.1.

Dr. James Deeny, F.R.C.P.I., has been appointed Chief Medical Adviser to the Department of Local Government and Public Health, Government of Eire.

## Universities and Colleges

### ROYAL COLLEGE OF SURGEONS OF ENGLAND

At a quarterly meeting of the Council held on Oct. 12, with Sir Alfred Webb-Johnson, President, in the chair, Dr. Rupert A. Willis, pathologist at the Alfred Hospital, Melbourne, Australia, was appointed as the first Sir William H. Collins Professor of Human and Comparative Pathology. Prof. Matthew Stewart was elected Moynihan Lecturer for 1945. Mr. P. H. Lovell was nominated as the fifty-second Jenks Scholar. Votes of thanks were given to Sir Buckston Browne for an augmentation of the endowment for the annual dinner of Fellows and Members of the College; to Mrs. Cecil Joll for a silver-gilt loving cup, once the property of William Cheselden; to Miss B. C. Crookshank for a fire-screen panel embroidered with the arms of the College; and to Mrs. King for pictures and busts of Sir William Blizard.

Diplomas of membership were granted to R. Astley, F. Batley, M. F. Bethell, P. H. Friedlander, Alison B. Hay-Bolton, Adrian Hill, J. G. Kendall, R. J. P. Pugh, Irvine B. Smith, A. McR. Walker.

## Letters, Notes, and Answers

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### ANY QUESTIONS?

#### Sulphonamides and Sterility

**Q.**—*I have heard it stated that the sulphonamide group of drugs induce sterility. Is there any truth in this? If so, how long would the sterility so induced last?*

**A.**—There are animal experiments which suggest that the sulphonamide group of drugs may reduce spermatogenesis, but the bad effect is only temporary and not likely to last more than a few months. It is difficult to give clinical evidence of this because the infections for which sulphonamides are given are themselves likely to reduce fertility.

#### Cockroaches and Infection

**Q.**—*How far are cockroaches known to serve as carriers of human infection?*

**A.**—Several experiments have shown that cockroaches can transfer germs mechanically on their legs, and it has also been reported that the following bacteria can be passed through the alimentary canal of a cockroach, quite unharmed: *B. tuberculosis*, *B. leprocyticus*, *Entamoeba histolytica*, and *E. coli*. Transmission of human infection is liable to occur under the following conditions: (1) if the cockroaches have access to human food; (2) if they have access to sources of infection. Condition 1 must be very commonly fulfilled, as cockroaches are mainly troublesome in kitchen. The sources of infection (2) vary from one situation to another: there may be particular danger where there are cases of illness present, as in a hospital. A habit of cockroaches which makes them likely to pick up germs is their frequent searching for water, which leads them to visit sinks, drains, slops, etc.

#### The Psychology of "the Presser"

**Q.**—*What is the mental process involved in the phenomenon known as "pressing" in the game of golf? Carried to its logical conclusion the emotions obtain complete sway over reason. The same psychological process is seen under different disguises in every day life. What is the remedy?*

**A.**—"Pressing" in golf is the physical result of the longing to do superlatively well. The cure is not "Don't press," but "Be content to go by easy stages from tee to pin." The better-class players and professionals do not "press" because they have a confidence in their own ability, born of aiming at the possible and not the impossible. The "presser's" muscles are taut and poor co-ordinated because he aims at an ideal and is apprehensively aware that this is pitched too high. The "pressers" in everyday life are aiming too high and refusing to face their limitations. Reason must control the emotions if the source of the anxiety to succeed can be faced and checked—e.g., where an adolescent deems it necessary to live up to a parent's ambitions. Emotions outrun reason when the source of the ambition presides in a modified "Lady Macbeth complex," to succeed in order to stamp out shame or guilt. The "pressers" in everyday life strain not so much the muscles of the upper extremities as their autonomic system, which reacts with irregular peristalsis and is registered as nervous dyspepsia or nervous colitis. The remedy is simple persuasion in the first group, more intensive psychotherapy in the second (if this is not contraindicated) and small doses of luminal to help them through special periods of stress.

#### Erb's Paralysis

**Q.**—*What is the treatment of Erb's paralysis in an infant—result of a very difficult confinement?*

**A.**—Erb's paralysis is usually caused by traction of the upper part of the brachial plexus, leading to tearing of the nerve fibres and subsequent paralysis of the muscles which surround the shoulder—particularly the deltoid and the spinati, and the forearm muscles particularly biceps, brachialis anticus, and the supinator longus.



Treatment depends upon how long the paralysis has been present and upon whether it is thought that neurosurgical treatment is likely to be of benefit. It is a very difficult problem to decide whether it is going to be worth while to expose the nerves in the hope of approximating the ends in order to encourage regrowth of nerve fibres. The results are not sufficiently good to make one advise this procedure wholeheartedly. Some say that it is best when the paralysis is severe to explore as soon as possible in the hope of effecting a reasonable union; others recommend waiting for about six months to see whether any recovery is taking place. The physician should be guided in this by the severity of the paralysis. In any case the affected arm should be put up in a light splint producing abduction of the shoulder and flexion of the elbow—the so-called aeroplane splint. The condition of the muscles should be maintained by light massage and by adequate galvanism, which has been found to be effective in preserving muscle bulk. Later on, if paralysis persists, orthopaedic treatment can do much to improve the usefulness of the arm, particularly by transplanting muscles and by limiting the mobility of the shoulder-joint. Unfortunately many cases will require some such intervention.

#### Saline Infusion Into Tibia

**Q.**—Could you advise me on the technique of saline infusion into the marrow of the tibia?

**A.**—Technique of saline infusion into the marrow of the tibia is similar to that of blood transfusion. An ordinary administering or taking needle as used in the apparatus for taking or giving blood supplied to the E.M.S. can be employed if ground to a proper length. If preferred the Salal sternal puncture needle is quite satisfactory. Splint the leg with a straight splint applied to the outer aspect of the leg and keep in position by ties from the foot to mid-tibia and from the lower to the upper thigh. The site of puncture is the antero-medial surface of the tibia at the level of the tibial tubercle, which can be easily felt even in the youngest infant. The skin is cleansed with soap and water and iodine or alcohol, and a local anaesthetic injected into the skin subcutaneous tissues and periosteum. The puncture needle is then inserted at right angles to the plane of the antero-medial surface of the tibia as nearly as possible halfway between the anterior and medial borders of the tibia. The needle should be inserted distally—i.e., away from the epiphyseal line—but a needle absolutely vertical in all planes should miss the epiphyseal line. The soft bone of an infant is punctured easily and gives the feeling of stale cheese; no marked give is noted when the marrow cavity is entered. Entry is usually attained about 1/8th to 3/16th of an inch below the periosteum and can be proved by the aspiration of marrow. The procedure is then the same as for sternal puncture. The infusion tends to be slow at first and to increase in rate spontaneously after 5 to 10 minutes. The infusion, therefore, in infants usually has to be slowed from time to time rather than quickened as in the adult. Reference may be made to the papers by Tocantins, O'Neill, and Jones, *J. Amer. med. Ass.*, 1941, 117, 1229; Hamilton Bailey, *British Medical Journal*, 1944, 1, 181; and Janet Gimson, *ibid.*, 1944, 1, 748.

#### Dehydration

**Q.**—What is the pathology and treatment of the clinical entity known as dehydration?

**A.**—A most readable account of dehydration with full references to the literature is given in the chapter on thirst in Macdonald Critchley's book *Shipwreck Survivors*, London, 1943. Many of the symptoms of disease which were formerly ascribed to toxæmia are now regarded as the effects of dehydration. About 70% of the body weight consists of water. If more than 10% of this water is lost—i.e., 6% of the total body weight—the patient shows signs of serious dehydration—scanty urine, dry skin and tongue, and sunken eyes. Dehydration may occur from a diminished intake of fluid, as in the shipwrecked sailor or the stuporose patient; or from increased loss, as from a high internal or external temperature, vomiting, diarrhoea, or polyuria. Dehydration is an important factor in states of acidosis and alkalosis.

Two good rules for avoiding dehydration are never to pass a febrile patient without offering him a drink and never to purge a really sick man. Treatment is the restoration of the fluid balance by large volumes of fluid by mouth or parenterally. The normal output of fluid is about 2,500 c.c.m. a day—1,500 c.c.m. of urine and 1,000 c.c.m. of water of evaporation from the skin and the lungs. In disease the output may be greatly increased, and a daily fluid balance chart should be kept of all patients who are threatened with dehydration. By the time a patient shows dehydration he has a debit of some 5 litres of water, so he will require at least 8 litres of fluid in the first 24 hours to restore him to normal. The kidney is not very efficient in dehydration, and care must therefore be taken not to wash an excess of salt out of the body or, on the other hand, to put in an excess of salt. About 5 g. a day is the optimum. Wherever possible fluid should be given by mouth, glucose orangeade made with one-fifth normal saline being suitable. If this is not possible the rectum is the next best route, and the fluid should be

one volume of normal saline to four volumes of tap water. Intravenously a mixture of one volume of normal saline with four volumes of 5% dextrose in distilled water may be used, but it is wise to examine the bases of the lungs and the blood chemistry at frequent intervals if large volumes of fluid are given parenterally. The body cannot pick and choose when fluid is given parenterally, and it is fatally easy to give an excess of fluid by this route.

#### Congenital Absence of Abdominal Muscles

**Q.**—At birth a child was found (forceps delivery) to have a large abdominal cyst which apparently was evacuated in utero, for the amniotic fluid contained hair and was therefore presumably a dermoid cyst. The ribs at birth were much everted, and the abdominal wall lay in thick folds, suggesting that the cyst was large and accounted for the delay in birth. The baby unexpectedly responded to stimulants and is now 5 weeks old. The abdominal wall is still much thickened and corrugated, but the baby is fit and developing normally. A cyst could be felt in the lower abdomen three weeks ago, and it was thought the tumour was filling up, but this has disappeared although the stool has apparently been normal and there is no discharge from the vagina or rectum. The urine is normal. Can any suggestions be made of the origin of the tumour, the prognosis, and the treatment?

**A.**—I think the case described is one of congenital absence of the abdominal muscles. An excellent illustration of this curious condition is to be found in the 3rd edition of *Diseases of Children*, by Garrod, Batten, Thursfield, and Paterson, on page 847. The syndrome consists of complete absence of abdominal muscles, thickening and wrinkling of the skin on the abdomen, which makes it look like elephant hide, and gross dilatation of the pelvis of the kidneys, the ureters, and the bladder. The connexion between these three factors is far from obvious. It is hard to imagine that simple stretching of the skin can produce the extraordinary thickening or that the absence of the pressure of the abdominal muscles should cause the urinary drainage system to dilate. It has been suggested that gross distension of the abdomen by the expanded bladder may have prevented the development of the abdominal muscles; but this again seems unlikely. I do not think that there is much doubt that the "cyst" felt in the abdomen was a dilated bladder. I have never before heard of hairs being found in the amniotic fluid in this condition, but if they had come from inside a dermoid cyst there would almost certainly have been a large amount of sebaceous matter as well.

As to treatment I have had a case which appeared to be distinctly benefited by a specially made elastic corset which supplied the pressure which should have been exerted by the abdominal muscles. Prognosis is, of course, poor. The dilated urinary system is liable to infection and the absence of abdominal respiration gives a bad outlook in bronchitis or pneumonia. Most cases die in the first year or two from one or other of these causes.

#### Enlarged Hilar Gland

**Q.**—A person gives a history of contact with a case of pulmonary tuberculosis. On examination the lungs are clear. Sedimentation rate and sputum are both normal. On x-ray investigation the radiologist gives the following report: "Enlarged hilar shadows," or "Hilar shadows more evident than normal." The lung field is otherwise normal. What importance can I attach to such reports?

**A.**—If the patient is a child, the most probable cause of hilar gland enlargement, in the circumstances, is a primary tuberculous infection. If, however, the tuberculin skin test is negative, other causes of hilar gland enlargement such as pertussis or more rarely leukaemia or lymphosarcoma would have to be excluded. In the case of a primary tuberculous infection the absence of clinical signs of activity would indicate that no treatment is necessary. The child should be removed from contact with the infection and kept under close observation with frequent x-ray examinations. If the patient is an adult the same remarks apply except that primary tuberculosis becomes less likely and lymphadenoma would have to be excluded. Very slight enlargement of the hilar shadows is often of no significance.

#### Afferent Nerve Impulses and Shock

**Q.**—Given that "pain" is a large factor in the production of shock, both immediate and delayed, in the case of burns, is it possible that afferent impulses resulting from stimulation of temperature nerve-endings in the skin and passing up "heat tracts" in the cord are an added or associated factor? Not only might this apply in the case of heat—i.e., the immediate shock of the actual burn or scald—but also in the case of cold resulting from the inevitable baring and exposure of the burnt surface—delayed shock.

**A.**—The part played by afferent nervous impulses in the production of shock is far from clear. The most painful injuries—e.g., bands mangled in machinery—may be associated with no fall in blood pressure. Atkins (*Brit. J. Surg.*, 1937, 24, 717) has shown that the blocking of pain sensation by procaine in the brachial plexus is associated with a fall rather than a rise in blood pressure.



It is thus quite likely that painful sensations exert a pressor rather than a depressor influence on the circulation. The general cardiovascular reaction to heating the body (vasodilatation) has been shown by the schools of Carmichael and Lewis to result from the action of warmed blood on the vasomotor centres. Nervous impulses passing up the thermal pathways in the cord have little if any influence in producing this effect. It seems unlikely, therefore, that thermal nerve impulses as such play any part in producing shock or in modifying the clinical picture.

Reverting to the first clause of the question, pain is well recognized as a factor precipitating a fainting reaction. Barcroft and his colleagues have now shown that fainting results from a nervous mechanism which induces vasodilatation in voluntary muscles (*Lancet*, 1944, 1, 489). This so-called vaso-vagal type of shock is easily recognized by its association with bradycardia and other features. It might well be expected to occur in burn shock, but specific data on this point are lacking.

## INCOME TAX

### New Practice: Cash Basis

L. G. took over a practice on a death vacancy as from March 26, 1943. His predecessor (and he himself in a former practice) had previously been assessed on the basis of cash receipts. The inspector of taxes refuses to accept this basis for the first three years of the new practice.

\*\* The inspector's action is legally correct and is in accordance with the usual custom. It is undeniable that the cash receipts of a first year do not give a true reflection of the earnings or profits of that year, and the tax is chargeable on profits, not merely on profits which have come to hand in cash. So L. G. will have to add to the amount of his cash receipts for the year to March 26, 1944, the value of the debts outstanding at that date, say £x less £7 (the estimated amount to be lost by non-payment). At the end of his second year he will deduct that amount from his cash receipts for that year and add the value of the debts outstanding at March 26, 1945, and so on. On that basis there need be no fear that the receipts will pay tax twice.

### Board and Lodging

R. B. S. assisted a doctor as a locumtenent for a fortnight and arranged that the usual expenses of himself and his wife should be paid during their stay in lieu of salary. The income tax authorities are claiming tax on the amount of these expenses, less an allowance for railway fares to and from the place of employment.

\*\* Assuming that the board and lodging were the responsibility of the principal—e.g., that R. B. S. did not incur the liability for payment to the landlady and the principal meet the liability for him—then we do not understand the action of the authorities. It is settled law that the receipt of benefits in kind which are not capable of being turned into money by sale, etc., does not create liability to tax. If, however, A owes his landlady £25 and B by arrangement pays it for him, that is equivalent to a payment of £25 by B to A.

## LETTERS, NOTES, ETC.

### Tetanus Immunization for Farm Workers

Dr. J. A. EDDY (Norwich) writes: I feel that the reply in "Any answers?" (Sept. 16, p. 391) errs seriously on the side of complacency. You state that "among agricultural workers the risk is small," and give instances of two severe types of wound for which antitoxin would be required. I have had two cases of tetanus in this district as a result of apparently quite trivial wounds. One was a cut less than 1/2 in. long in the finger made while sharpening a hedging tool. I am pleased to add that I was not responsible for the original dressing of this wound. The other case was in a man who had been lifting sugar beet with his hands. There were several very superficial scratches, one of which had become infected, but so slightly that the patient did not seek any advice until he was actually suffering from clinical tetanus. Both cases recovered in hospital. The only safe answer to this question is that unless the farm worker is protected by means of tetanus toxoid a dose of antitoxin must be given after every wound, however trivial. The hands of these men are always likely to be contaminated with soil.

### Telegony

Dr. K. B. PINSON (Manchester) writes: In the *Journal* of Aug. 26 (p. 296) the answer which you give to a question regarding telegony is, I think, quite wrong about Darwin. The impression I gathered from reading *The Origin of Species* was certainly not that he had any belief in it. In fact I do not think he mentions it anywhere. I have carefully read again all that he said in *The Origin* concerning Lord Morton's mare. The whole argument, which passes from the markings and blue colour apt to appear when distinct breeds of pigeons are crossed to the zebra-like striping on the legs

and shoulders and even the face, as well as on the hindquarters and spine of some breeds of horses, and particularly in the offspring of crossed species of the horse genus, is to support the contention that there is a tendency to revert for some reason in such cases to an ancestral type, which, in the pigeon, is known and in the horse presumed. The markings are associated with colour—blue in the pigeon and dun in the horse. Lord Morton's mare was crossed with a quagga (a species now rare or perhaps extinct), and the hybrid was much more striped on the legs than a pure quagga. So also, however, was the offspring of a subsequent mating of the mare with a black Arabian stallion. Darwin accounts for this not by telegony but by the above observed tendency to stripes, especially when a dun colour appears. This is not the first time I have come across an important misrepresentation or misapprehension, as I think, of Darwin's thesis. For one thing the book needs attentive reading, and when he sets out to answer a question it is not by a short cut-and-dried answer but by illustrations and inferences not always easy to follow.

### Byssinosis

Dr. H. S. RUSSELL (Shipley) writes: Your reply (May 27, p. 737) concerning byssinosis suggested that it occurred in woollen mills and was connected with "mill fever." May I point out that only cotton mills are affected by the Byssinosis Order, and that mill fever is considered to be due to a mould contaminating the cotton, while byssinosis is due to the cotton fibre itself. Incidentally, the condition of chronic bronchitis and emphysema almost universally found in woolcombers is not legally an industrial disease. Why any discrimination should be made between cotton and wool operatives is very difficult to understand.

### The Metric System

Dr. IAN CAMPBELL (Mexborough, Yorks) writes: The correspondence on the advantages of the metric system in prescribing prompts me to write that in the last six months three wholesale medical firms have been unable to supply a 10-c.cm. conical measure!

### Pyretotherapy for Gonorrhoea

Dr. A. H. BARTLEY (London, S.W.16) writes: A colleague asks for a description of the T.A.B. vaccine shock treatment for gonorrhoea (*Journal*, Oct. 7, p. 457). May I be permitted to describe my method which I wrote about in the *Lancet* in September 1935. On admission the patient is put to bed on a milk diet and given an intravenous injection of 0.25 c.cm. T.A.B. vaccine (Arm brew) in 5 c.cm. sterile normal saline solution. In about an hour he develops a typical malarial attack, the temperature rising to 103°–105° F. The next day the patient as a rule is quite normal but some complaint of a slight headache may be made. The injections are repeated every third day, the dose of T.A.B. vaccine being increased by 0.25 c.cm. each time. By the third injection the patient is "dry." Three injections usually suffice. I gave four in one case only. In conjunction with this treatment local irrigations of weak solution of potassium permanganate, 1 in 10,000, is given night and morning in between the injection days, and an alkaline mixture is given internally thrice daily. I used this method for fresh and chronic infections and got excellent results in both, especially with the crippling type of arthritis that sometimes complicates gonorrhoea. Gonococci disappear from the smears after the second injection, and no after-effects whatever were noted. I emptied ward of 20 cases in a month. Some of these cases had been trailing on for six months or more. I had no relapses.

### Concurrent Herpes Zoster and Varicella

Dr. EMILY SIMON (London, W.5) writes: It may be of interest to record the following case, which is strikingly similar to I. Manning's case (July 22, p. 115). A man aged 63, previously good health, complained in the evening of March 21, 1943, of stiffness of the left side of the neck. The following morning there was a crop of vesicles over the back of the left shoulder and the left side of the neck. The vesicles enlarged and crusted and were typical of herpes zoster. On March 23 a few pink macules and papules appeared on the trunk, and by March 26 the patient had a well-developed varicella rash involving trunk and limbs. The zoster lesions were still present but subsiding. There was no previous history of chicken-pox or of herpes zoster, and no history of contact with either disease. I am indebted to Dr. Warden, the family physician, for asking me to see this case. I have also seen a case of well-marked varicella in a middle-aged woman preceded by herpes zoster of the right frontal region. Both rashes were present at the same time, but the herpetic eruption was a day or so in advance of the chicken-pox.

### Correction

In Lieut.-Col. R. W. Fairbrother's article "The Control of Bacillary Dysentery," there was an error in the last line but one of the first column on p. 490, Oct. 14. Group (a)—as the first paragraph in the next column makes plain—should read "routine with sulphonamides."

LONDON SATURDAY OCTOBER 28 1944

## THE NEED FOR ASEPSIS IN LOCAL PENICILLIN THERAPY

WYLIE McKISOCK, M.S., F.R.C.S. VALENTINE LOGUE, F.R.C.S., M.R.C.P.

AND

IAN BARTHOLOMEW, M.R.C.S., L.R.C.P.

(From a Neurosurgical Unit)

A study of the Preliminary Report to the War Office and Medical Research Council on Penicillin by Prof Florey and Brig Cairns (1943) reveals that Gram-negative organisms have been found in the discharge from penicillin-treated wounds. In some cases such organisms as *Bact coli*, *Proteus vulgaris*, and *Ps. pyocyanea* have been grown from the aspirate from wounds receiving local injections of penicillin solution, and in others they have been cultured from pus issuing from similar wounds before healing was complete. Often enough the presence of such organisms, either in aspirated fluid or in purulent discharge, appeared to cause no serious complication or to delay healing unduly: on page 99, for example, it is stated, "Penetrating Brain Wounds.—The bacteriological results (Table II) usually showed that after two days' treatment of the brain cavity with penicillin Gram-positive cocci were no longer found in the fluid sucked or discharged from the wound, organisms of the coliform group were almost invariably present. In wounds which remained completely closed this state of affairs persisted until healing was complete." A further statement, on page 104, runs as follows. "For wounds more than a week old penicillin solution was usually used for 3 to 5 days. Though the end-result was satisfactory, and there was never any exacerbation of pre-existing infection as a result of closure, yet usually a sinus formed in some part of the wound and discharged pus for some days before it finally healed." Particular emphasis is laid upon *Ps. pyocyanea* as a common infective agent in such pus or wound aspirate in a paragraph on page 39. "In many wounds Gram-negative bacilli made their appearance during treatment. This was particularly so with *B. pyocyaneus*, which usually persisted until healing was complete"; and a more detailed description is given in the form of a brief case record (p 102).

"July 27. Operation.—Free pus beneath the scalp. Brain fungus projecting through a dural opening (2 cm diameter). Five bone chips removed from the brain to a depth of 2.5 cm. The resulting brain cavity held 5 c.cm of penicillin solution. Scalp closed in two layers by a plastic procedure. One tube for penicillin solution, 9,000 units in six days. Bacteriological examination showed *Staphylococcus aureus* in swabs from all levels of the wound. July 29. Fluid aspirated from the wound shows in films pus cells and no organisms, on culture *B. pyocyaneus*. Aug 1. Wound edges moist at one point. On aspiration, 25 c.cm of thin blood-stained pus (culture '*B. coli*', *B. pyocyaneus*). Aug 3. Culture of aspirated fluid—'*B. coli*', *B. pyocyaneus*, enterococci. Aug 11. Wound intact. To base."

On the other hand, more serious results could readily be anticipated, and we find on page 100 a description of a death (one of three in a series of 23) which is attributed to "an error of surgical technique."

"At operation pus (*Staphylococcus aureus*) and necrotic material were found beneath the healing scalp, and the bone chips were removed. He was treated by local and intravenous or intramuscular penicillin for five days (2,000 units locally, 485,000 units parenterally). He became increasingly drowsy, and on the 10th day after operation his frontal wound was aspirated and 5 c.cm of pus were obtained from beneath the skin. Films of this showed no organisms, and culture yielded only '*B. coli*'. He died on the following night."

"At necropsy, beneath the intact frontal wound was a button of firm granulation tissue 2.5 by 0.3 cm. Beneath that in the

right frontal lobe was a large thin-walled abscess 5 cm in diameter and extending backwards above the right frontal horn for a distance of 12 cm. It was filled with pink pus. The ventricular wall was intact.

"Section of the abscess wall showed numerous Gram-negative organisms, and in one place, where there had been a tiny spicule of retained bone, clumps and chains of Gram-positive cocci. The cellular components of the abscess wall showed nothing remarkable."

It is true that the overlooking of one small bony spicule may be regarded as an "error," but it is a mistake very hard to avoid on occasion. No comment, however, is made upon the growth of *Bact coli* from pus aspirated from beneath the scalp, the presence of this penicillin-resistant organism may have played no small part in the development of the abscess and the subsequent death of the patient.

A point of considerable importance arising out of the quotations given above is the time at which such Gram-negative organisms gain entry to the wound. The suggestion has been made that they are present in the wound initially but are overgrown by staphylococci and streptococci in first cultures, and only when the latter organisms have been removed or inhibited in growth by penicillin therapy can the Gram-negative organisms be obtained in culture media. This supposition may well be true and cannot be denied.

One can, however, postulate that the presence of these Gram-negative organisms is but another example of added hospital or cross-infection of wounds. In the quotation given above from page 102 of the Preliminary Report it will be seen that *Staph. aureus* was grown from swabs taken from all layers of the wound at operation; two days later fluid aspirated from the wound grew *Ps. pyocyanea* five days afterwards the aspirate grew in addition *Bact coli*, and on the seventh post-operative day *Bact coli*, *Ps. pyocyanea*, and enterococci were cultured. In this case three different organisms appeared in the course of five days, during which time the wound was aspirated on three occasions, and, in view of the repeated aspirations the possibility of cross-infection obviously existed.

The emphasis laid upon the presence of *Ps. pyocyanea* is rather unusual, for this organism is not commonly grown, in our experience, from swabs taken pre-operatively from traumatic wounds. In a period of over three years, for example, preliminary wound swabs were taken from a series of 247 patients with traumatic lesions, and in only 2 cases was *Ps. pyocyanea* grown—once in pure culture and once associated with haemolytic streptococci and micrococci.

*Bact coli*, *Proteus vulgaris*, and *Ps. pyocyanea* however, are well known as infecting agents in hospital or cross infection of wounds (McKissock, Wright, and Miles, 1941) and it is more reasonable to assume, therefore, unless or until proof to the contrary is forthcoming, that the appearance of these Gram-negative organisms in a post-operative wound is due to added or hospital infection.

The opportunity for cross-infection of a wound undergoing treatment with penicillin solution is particularly good. A rubber tube runs from the outside air to the depths of the wound, and through this channel injections of the penicillin solution are made, usually twice daily, for from 3 to 5 days. Unless

Table of Results: First Series

Name	Wound	Pre-operative Wound Swab	X-ray	Time of Operation after Wounding	Operation	Penicillin Units	Sulphur Drug	Wound Healing	Stab Wound Healing	Hospital or Cross-infection (Potential)	Complications
PE.	3 mm. frontal	S. albus —	1 cm. defect. Bone fragments 3 cm. deep. Metallic F.B. much deeper	96 hours	Total excision except for metallic F.B. Closure in 2 layers	44,000 local 20,000 thecal in 5 days	36 g. in 5 days	2 days	8 days	None	None
ME.	7 cm. L. frontal	None	Metallic F.B.s in scalp. No fracture	98 hours	Total excision	10,000 local in 5 days	34 g. in 5 days	4 "	5 "	"	"
AM.	13 cm. L. fronto-parietal	"	8 cm. defect L. fronto-parietal. Bony F.B.s. Metallic F.B.s in brain	*72 (1) hours 107 (2) hours 136 (3) hours	(1)*Partial exc. and suture in 1 layer (2) Clot removed. P. tube inserted (3) Removal of clot. Reclosure in 2 layers	39,000 local 19,000 thecal in 5 days	36 g. in 5 days	7 "	7 "	B. coli	"
SC.	8 cm. R. supra-orbital; brain extruding	Str. pyog.; S. albus; diphtheroids; spore-bearer	3 cm. defect R. frontal. Entering frontal sinus. Bony and metal F.B.s in frontal lobe	84 hours	Total excision. Closure in 2 layers	51,000 local 24,000 thecal in 5 days	37 g. in 5 days	5 "	3 "	"	"
KE.	1 cm. tri-radiate at vertex	None	4 x 3 cm. depressed fracture over longitudinal sinus	71 hours	Total excision. Closure in 2 layers	21,000 local in 5 days	36 g. in 5 days	2 "	7 "	None	"
WA.	10 cm. from R. side nose through eye to R. zygoma	S. albus —; B. coli	Comminuted fracture roof, lateral wall, and floor R. orbit. In-driven bone fragments	*24 (1) hours 82 (2) hours	*Partial excision. Wound left open Total excision. Dura not closed. Closure in 1 layer	43,000 local in 5 days	36 g. in 5 days	2 of wound in 5 days; rest granulating still at 18 days 3 days	7 "	S. aureus +	None
DO.	Puncture L. supra-orbital	None	0.5 cm. defect L. frontal, 4 cm. penetration by bone. 8 cm. penetrating metal F.B.	34 hours	Total excision, except metal F.B. Closure in 2 layers	44,000 local in 5 days	37 g. in 5 days	9 "	9 "	None	Penetrating chest wound
AT.	2 cm. L. temporal	S. albus —	2 cm. bony defect. Metal F.B.s at 4-5 cm.	96 hours	Total excision, except deep metal F.B. Closure in 2 layers	37,000 local in 5 days	38 g. in 5 days	3 "	8 "	"	S. albus meningitis 1 day after op; further penicillin 10 days thecaly None
LY.	Puncture L. frontal	None	Metal F.B. in scalp	77 hours	Total excision. Removal F.B. Closure in 2 layers	22,000 local	27 g. in 5 days	2 "	7 "	"	"
HO.	Puncture R. parietal	"	1 cm. defect R. parietal. Bony F.B.s 3 cm. deep; metal F.B. 6 cm.	120 hours	Total excision except metal F.B. Closure in 2 layers	27,000 local	35 g. in 5 days	2 "	7 "	"	"
WR.	10 cm. across ant. parietal regions	S. aureus +; S. aureus —	3 cm. defect over meatus extending to L. Bony F.B.s in brain to 2 cm.	192 hours	Total excision. Closure incompletely in 2 layers	51,000 local in 5 days	35 g. in 5 days	5 "	10 "	"	"
LU.	1 cm. R. ant parietal	None	1 cm. defect. Bony F.B.s to 2 cm.; metal F.B. 10 cm.	96 hours	Total excision, except metal F.B. Closure in 2 layers	30,000 local in 5 days	31 g. in 5 days	2 "	7 "	"	"
LA.	1 cm. mid. R. parietal	S. aureus +	1.5 cm. defect. Bony F.B.s to 2 cm.	90 hours	Total excision. Closure in 2 layers	21,500 local in 5 days	36 g. in 5 days	2 "	8 "	"	Haematoma in scalp 6 days after op. None
SM.	3 cm. V-shaped L. mid-parietal	P. vulgaris; S. albus; spore-bearers	2 cm. defect. Bony F.B.s to 2 cm.	112 hours	Total excision. Closure in 2 layers	36,000 local 25,000 thecal in 5 days	37 g. in 5 days	5 "	7 "	"	"
	4 x 2 cm mid-frontal	None	4 cm. depression midline frontal	*1 hours 96 (2) hours	*Cleaned. Edges excised. Bone not touched. Total excision. Closure in 2 layers	30,000 local in 5 days	37 g. in 5 days	2 "	7 "	"	"
JE.	8 cm. tear midline frontal	P. vulgaris; S. albus; spore-bearer	Nil except metal F.B.s in scalp	79 hours	Total excision. Closure in 2 layers	49,000 local in 5 days	39 g. in 5 days	11 "	11 "	"	"
AN.	2 cm. L. temporal	S. albus	2 cm. defect L. temp. Extradural bony F.B.s. V. small metal F.B.s in brain	108 hours	Excision down to dura only. Closure in 2 layers	32,000 local in 5 days	40 g. in 5 days	4 "	7 "	"	"
McG.	Puncture R. occipital	S. albus —	0.5 cm. defect R. occipital. Bony F.B.s to 3 cm. Metal F.B. 1.05 cm.	91 hours	Total excision, except metal F.B.	29,000 local in 5 days	35 g. in 5 days	2 "	7 "	"	"
WL.	1 cm. puncture level 9th rib post-axillary line	"	Bullet lying to side of fractured spine of D 12	56 hours	Total excision. Closure in 3 layers	72,000 local in 5 days	34 g. in 5 days	10 "	10 "	"	"
MA.	L. frontal puncture	"	Metal F.B. lying deep to L. zygoma	5 hours	Total excision. Closure in 1 layer	20,000 local in 5 days	35 g. in 5 days	4 "	8 "	"	"

\* Indicates primary operation elsewhere.

unusual precautions are taken to safeguard this channel against bacterial contamination it is easy to imagine the common faecal organisms (which are penicillin-resistant) being carried into the wound at the time of injection.

The occurrence, therefore, of "Gram-negative" purulent discharge from post-operative wounds, side by side with a new portal of entry for hospital infection, is significant, and should lead us towards the conclusion that we are faced with yet

Table of Results: Second Series

Name	Wound	Pre-operative Wound Swab	A-ray	Time of Operation after Wounding	Operation	Penicillin Units	Sulphur Drug	Wound Healing	Stab Wound Healing	Hospital or Cross-infection (Potential)	Complications
HA.	1 cm. R parietal	S. aureus	Circular depressed fracture	48 hours	Total excision	30,000 local in 5 days	30 g in 5 days	3 days	7 days	—	—
AL.	0.5 cm R temporal	S. albus	2 cm. circular depressed fracture	48 hours	" "	30,000 local in 5 days	30 g in 5 days	5 "	7 "	—	—
DA.	2 cm. in eye and canthus	S. aureus	Comminuted root orbit. Metal and bony F.B.s in R. frontal lobe	72 hours	Total excision except metal F.B.	44,000 local in 5 days 135,000 thecal in 5 days	30 g in 5 days	2 "	10 "	Ps. Pyocyanea	—
MA	3 punctures, each ½ cm temporal-occipital	"	Small depressed temporal. Many bony F.B.s in brain. Metal F.B.s deeper 2 x 3 cm depressed fracture R parietal	48 hours	" "	46,000 local in 5 days 50,000 thecal in 5 days	30 g in 5 days	2 "	5 "	—	Died. Basal haemorrhage
GO.	8 cm R parietal	Sterile	2 x 3 cm depressed fracture R parietal	48 hours	Total excision	10,000 local in 5 days	30 g in 5 days	1 "	6 "	—	—
LA.	1.5 cm R frontal	"	1.5 cm. defect R. frontal. Many bony F.B.s down to 6 cm.	144 hours	" "	41,000 local in 5 days 459,000 1 ml in 5 days	30 g in 5 days	3 "	7 "	—	—
HI.	3 cm L frontal	S. albus	1 cm. depressed L frontal	36 hours	" "	26,000 local in 5 days	30 g in 5 days	1 "	7 "	—	—
LA.	5 cm. transverse at hair line, 1 cm. lateral to R orbit	Sterile	2 cm. x 0.5 cm depressed fracture, frontal	96 hours	" "	10,000 local in 5 days	30 g in 5 days	2 "	7 "	—	—
MO.	U-shaped 1 cm. R eyebrow	S. albus	Fracture frontal sinus and ethmoids	48 hours	" "	38,000 local in 5 days	30 g in 5 days	2 "	6 "	Ps. pyocyanea	Haematoma in wound (sterile)
SI	3-4 mm L parietal	"	1 cm. defect L parietal. Bony F.B.s in brain. Metal F.B. in R side	72 hours	Total excision except metal F.B.	30 g in 5 days	30 g in 5 days	2 "	6 "	"	None
ER.	2 cm L parietal	Sterile	1.5 cm defect. Bony F.B.s in brain	48 hours	Total excision	19,000 local in 5 days	30 g in 5 days	2 "	8 "	"	"
BE.	1 cm R parietal	S. aureus	1 cm defect R parietal. Bony F.B.s in brain, metal F.B. in L side of skull	72 hours	Total excision except metal F.B.	50,000 local in 5 days	30 g in 5 days	Not healed at 12 days	5 "	S. albus	"
*HE.	7 cm R parietal and multiple punctures occipito-parietal	Sterile	1.5 cm. defect R fronto-parietal. Bony and metal F.B.s in brain	48 hours	" "	30 g in 5 days	30 g in 5 days	14 days	14 "	Ps. pyocyanea	(Hospital infection)
HO.	8 cm L occipito-parietal	Ps. pyocyanea	3 x 1 cm. depressed fracture L parietal	96 hours	Total excision	10,000 local in 5 days	30 g in 5 days	3 "	7 "	None	None
MA	3 cm R post-parietal	P. vulgaris	3 cm defect R post-parietal. Bony F.B.s in brain; metal F.B. in L side	72 hours	Total excision, except metal F.B.	50,000 local in 5 days 90,000 thecal in 5 days	30 g in 5 days	2 "	7 "	"	"
WO.	5 cm. x 2 cm R parietal	Haemolytic staph	Depressed fracture R parietal	48 hours	Total excision	32,000 local in 5 days	30 g in 5 days	2 "	6 "	—	"
WR	2 cm R frontal	P. vulgaris, non-haem strep.	2 cm. R. frontal defect. Bony F.B.s in brain, metal F.B. much deeper	48 hours	Total excision, except metal F.B.	22,000 local in 5 days 90,000 thecal in 5 days	30 g in 5 days	2 "	6 "	None	Died. Large metal F.B. in area of softening in corpus callosum
JO	7 cm. R post-parietal	S. albus	2 cm defect R post-parietal. Bony and metal F.B.s in brain	48 hours	" "	30,000 local in 5 days	30 g in 5 days	4 "	7 "	"	None
McK	4 cm L post-parietal	Ps. pyocyanea	4 cm defect L parietal. Many bony F.B.s in brain	144 hours	Total excision	31,000 local in 5 days 90,000 thecal in 5 days	30 g in 5 days	7 "	7 "	Ps. pyocyanea	Wound break-down
TA	1 cm mid-line occipital	Sterile	2 cm. defect R. post - parietal. Bony F.B.s in brain; Large metal F.B. deep	72 hours	Total excision, except metal F.B.	30,000 local in 5 days 90,000 thecal in 5 days	30 g in 5 days	2 "	7 "	B. proteus, haemolytic staph	None

\* Case of hospital infection.

another illustration of hospital infection of wounds, to add to the many already in existence.

It may be true that, in the vast majority of cases, added infection of the nature which we have been discussing leads to no more untoward result than a short-lived discharge, delaying healing only by a few days, but, in dealing with large numbers of patients, those few additional days in hospital amount to a very appreciable number over the course of a year. The inevitable result must be an unnecessary use of hospital beds, drugs and dressings, and the time of hospital personnel. Apart from such minor complications and delays, more serious sequelae will certainly occur in the neurosurgical field, even if in small numbers, for *Bact. coli*, *Proteus vulgaris*,

and *Ps. pyocyanea* are all capable of producing meningitis or localized abscess.

#### A Short-term Experiment

It was with such thoughts in mind that a short-term experiment was undertaken to see whether these organisms need necessarily appear in penicillin-treated wounds or whether they could be excluded by methods designed to close the supposed new portal of entry (the penicillin tube) and by the other precautions against hospital infection of wounds already in use in the department (M.R.C. War Memoranda, 1941, 1944). No details of the ward and dressing technique in use need be given, for the basic principles have already been widely disseminated (Miles *et al.*, 1940), although far from extensively adopted.

To protect the penicillin tube from possible contamination the open end was closed with the metal valve and cap of a bicycle inner tube, the valve being cut short at the level of the side opening. This appliance could be sterilized and inserted into the tube before the introduction of the latter into the wound. Injections could subsequently be made through the metal valve using a syringe and needle, removing and replacing the screw cap each time, thus preventing soiling of the open end. Later a more satisfactory instrument was designed, the end of which accurately fitted a Record syringe, thus simplifying the giving of the twice-daily injections (McKissock, 1944).

The first 20 battle casualties from the Normandy campaign to be admitted to the department and treated with penicillin solution as a local injection were bacteriologically investigated. Swabs were taken before operation, at each subsequent dressing, and from the surface of the healed wound and surrounding scalp on the fifth day, when the penicillin tube was withdrawn. This last swab was taken to see what organisms were present on the scalp and healed linear wound surface, and were thus available to cross-infect the small 3-4 mm. stab wound from which the penicillin tube was later withdrawn.

It should be noted that these 20 cases were treated in a well-established neurosurgical unit with a numerically adequate, experienced, and well-trained nursing staff. Special attention had been paid to the education of the nursing personnel in all matters relating to ward and dressing technique and to the potentialities of hospital infection of wounds.

Shortly after the completion of the experiment, with the results which are given above (Table, First Series), the medical personnel of the unit, with a staff of theatre nurses only, were transferred to a hospital in the country to continue the treatment of battle casualties. The nursing staff of this hospital had had no previous experience of neurosurgical work or specialized ward and dressing technique, nor had they been extensively educated in matters relating to hospital infection. In these new surroundings it was felt that the risks of cross-infection would inevitably be greater, more especially as cases were admitted in much larger numbers and at shorter intervals. Under such circumstances many of the finer details in the avoidance of hospital infection (all, nevertheless, of considerable importance) could not be observed. It was decided, therefore, to investigate another similar series of 20 cases (Table, Second Series).

Roughly two-thirds of the 40 cases were operated upon by one surgeon (W. McK.) and one-third by the other (V.L.), the surgical technique in all essential details being the same throughout. Each patient received a five-day course of treatment with one of the sulphonamides, as follows: (1) All wounds were powdered with sulphanilamide before closure.

The first series received intravenous sulphathiazole for the 24 hours, followed by sulphamezathine by mouth for a further four days. (3) The second series were given sulphathiazole by mouth for five days—sulphamezathine not being available—and because of the shortage of trained personnel no patient received intravenous medication.

Penicillin was administered as a sodium salt solution in a strength of 1000 units per c.cm., given twice daily for 5 days. The average dose in the first series of 20 cases was just over 39,000 units and in the second about 31,000 units. The average lapse of time between wounding and operation was 94 hours in the first series and 67 hours in the second; healing of the wound was complete in an average of 5.25 and 3.5 days respectively in the two sets of cases. The stab wound through which the penicillin tube was invariably inserted healed in 7.75 days in the first series and 7.3 days in the second: as this tube remained *in situ* for five days healing was reasonably prompt in all cases.

### Results

An analysis of the accompanying tables reveals that in three cases in the first series organisms which could not be cultured from swabs taken from the wound at the time of the pre-operative dressing were grown from the healed linear wound surface and surrounding scalp when the dressings were removed for the withdrawal of the penicillin tube, although in no case

was there any evidence of infection of the wound or stab opening. In two of these cases the organism was *Bact. coli* and in one *Staph. aureus*. Healing of these three stab wounds was complete on the seventh, eighth, and seventh day respectively from the date of operation—i.e., two, three, and two days after removal of the penicillin tube on the fifth post-operative day. These three cases can be classed as potential hospital infections, although clinically they happened to be of no significance, as the wounds were already healed. These figures give a percentage rate of potential cross-infection of 15, the clinical cross-infection rate being 0.0%.

In the second series, under the changed domiciliary and nursing conditions, with the concomitant changes and lapses in ward and dressing techniques, new organisms were recovered from the healed wound surface and adjacent scalp in 7 cases of the 20 when the penicillin tube was withdrawn, giving a potential cross-infection rate of 35%. In only one of these seven cases did clinical evidence of actual cross-infection appear, giving a clinical cross-infection rate of 5% for this series of 20 cases. In five of the seven cases *Ps. pyocyanea* was grown, one produced the *Staph. albus*, and one grew *Proteus vulgaris* and a haemolytic staphylococcus.

The total average figures for the 40 cases are thus a 25% rate of potential cross-infection and a 2.5% rate of clinical cross-infection.

In the whole series of 40 cases there were thus 10 in which new organisms were grown, of which one case became clinically cross-infected, producing a profuse growth of *Ps. pyocyanea* and indicating very well the importance of the potential rate of hospital infection (25%); for, if the wounds had not healed so early, actual clinical infection might have taken place in every one of the ten cases. In the remaining nine cases, in which new organisms were found, the operation wounds were already healed, and the only portal of entry for the organisms to the deeper tissues would have been through the stab wound from which the penicillin tube had been removed. In the case actually and clinically infected there were upwards of a dozen superficial wounds (none reaching the galea) surrounding the wound overlying the fracture, none of which could be surgically excised. The exudate from these wounds formed a perfect pabulum in which the cross-infecting *Ps. pyocyanea* could flourish. The wounds were fortunately very superficial in character and healed in 14 days from the date of operation.

### Commentary

It would seem, therefore, that in a department where adequate numbers of experienced and specially trained nursing personnel and reasonable structural facilities exist, actual hospital infection of battle wounds of the head may be almost entirely eliminated, although a constant potential threat of such complications will always remain. When there was a shortage of neurosurgically experienced nurses, and cases were admitted in greater numbers and at shorter intervals, the incidence of potential cross-infection rose from 15 to 35%, and one case (2.5%), the wound conditions of which were particularly suitable, became clinically cross-infected.

From these facts alone the desirability of obtaining proper skin-healing in the first two to four days is evident: a scalp wound closed with sparsely placed through-and-through sutures, especially when exposing portions of the subcutaneous tissue, provides ideal conditions for the entry and growth of organisms which may have found their way to the wound surface. Delay in healing, even if no worse calamity befalls, means an unnecessary waste of hospital time, a delayed convalescence for the patient with its risks of post-traumatic complications (either physical or mental), and an augmentation of the already overflowing reservoir of pathogenic bacteria in the hospital. It would appear that penicillin tubes need not give rise to cross-infection if closed with an aseptic screw cap of the design mentioned above, as no such trouble ensued in this series of forty cases.

The single case in which the wound broke down some days after healing was apparently complete and produced a profuse growth of *Ps. pyocyanea* showed a pure culture of the same organism from a swab taken pre-operatively. The first definitive

surgery in this patient was performed six days after wounding, and at operation the wound was foul smelling and semipurulent, and contained a piece of wood two inches long firmly plugging the skull defect and penetrating deeply into the brain. Many bone fragments lay deep in the brain substance, two of them were still visible in post-operative radiographs, indicating that wound excision had been imperfect.

The non occurrence of a cross-infective discharge from these 40 wounds (except in one case of superficial infection) clearly suggests that when such discharge occurs it is more probably due to hospital than to initial infection.

It has been shown by Cowan (1938) that organisms occurring in the air and normally regarded as saprophytes may be the cause of serious intracranial infection, and this was later emphasized by Cairns (1939) in reporting a series of 23 deaths from infection following intracranial operations. In Cairns's cases the various organisms isolated had previously been considered non-pathogenic to man and were thought to have gained access to the cerebrospinal fluid spaces from the air during the prolonged exposure of the brain necessitated by some neurosurgical procedures. The effect of introducing *Ps. pyocyanea* or any other pathogen, into the brain or cerebrospinal fluid spaces can well be imagined, and would be a matter for serious concern. If, therefore, penicillin is to be given by the method of local instillation the precaution of using an aseptic cap for the tube should certainly be taken.

No reflection upon the nursing staff concerned in the treatment of the second series of cases is intended. They have shown a capacity for hard work and co-operation which is admirable, and they could not have been expected to adopt and maintain a specialized system of ward asepsis and antiseptics which has been gradually developed over a period of four years. Nor could so small a number of nurses, even if trained and experienced in neurosurgical work, hope to attain a high standard (i.e., a low potential rate of hospital infection) when confronted with large numbers of patients with serious head injuries, whose sole ambition appeared to be the immediate removal of their headdress.

### Conclusion

We feel that attention to three main points is responsible for the very low rate of hospital or cross infection of wounds in the above series. These points are: (1) The care taken in closing scalp wounds to obtain very early healing. (2) The insistence upon very careful ward and dressing technique as advocated in an earlier paper and the MRC Memoranda on hospital infection. (3) The aseptic cap used to close the penicillin tube.

### Summary

Two series of cases are reported, each of 20 battle casualties, in which local penicillin therapy was employed.

The incidence of potential cross infection was three cases in 20 in the unit's original surroundings, and no clinical cross infection occurred. In the second series, under less perfect conditions, the potential rate rose to seven cases in 20 (35%), and one superficial case of clinical hospital infection resulted (5%).

Cross infection of wounds by way of the penicillin tube is an obvious possibility and, as it has not appeared in the present series (the one case described being only a superficial cutaneous infection), it is suggested that the aseptic screw cap in use is the responsible factor in prevention.

The need for proper closure of the scalp wound and very early skin healing is emphasized in view of the total average potential hospital- (or cross-) infection rate (25%).

Our thanks are due to Dr. Lever and Dr. Cross, who carried out the necessary bacteriological investigation of the large number of wound swabs taken during the period under review, and whose admirable co-operation could not have been bettered.

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## SOME MISTAKEN DIAGNOSES IN THE COMMON INFECTIOUS FEVERS

By

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Recently I had occasion to go through the records of this hospital, and it occurred to me that it might be of general interest to sift carefully all those cases of "everyday" infectious disease in which my own diagnosis differed from that of the certifying practitioner. I have deleted all the doubtful cases, where almost anybody might be right: those to which I allude have been proved, so far as was possible, by bacteriological and pathological aids, for which I am indebted to Dr. Wordley of Plymouth, who is ever helpful in the elucidation of obscure medical problems.

Most senior practitioners will be well acquainted with the contents of this paper, but perhaps those who have had little opportunity for the study of infectious disease may derive some benefit. Many of us after qualification find the diagnosis of the infectious fevers difficult, and I am not sure that it becomes any easier the more cases one sees, with the consequent larger number of possibilities that arise with each fresh problem.

This brief review covers the last five years' admissions to the City Isolation Hospital, Plymouth, and includes 3,516 cases of diphtheria, 2,102 cases of scarlet fever, and a miscellany of 700 other diseases. I have tried to stress the clinical aspect throughout in view of the fact that pathological aid may well be wanting when needed most, but, naturally, in many of these cases the only ultimate proof lay with the laboratory, so it was essential to send these patients to a hospital where pathological facilities existed for full investigation. Nor do I wish to convey the impression that I am in any way critical of the differences mentioned, for I well know the heavy responsibility that rests with a practitioner who, perhaps living at a distance, is called to see some of these cases and is expected to give an infallible diagnosis in impossible surroundings within a few minutes. Quite rightly, he removes the case to where observation and treatment can be carried out under more favourable conditions. Still, there is always some satisfaction in making a correct mental diagnosis, irrespective of the administrative aspects of the disease.

### Diphtheria

Diphtheria is the commonest infectious disease sent to the fever hospital in this district. I propose to divide the cases, 3,516 in all, into two groups—the faucial, nasopharyngeal, and nasal varieties, accounting for some 3,363 cases, and laryngeal, making up the remainder, a total of 153.

As can well be imagined, the commonest, safest, and most justifiable error in the first group is a diagnosis of tonsillitis. This occurs in 347 cases, or 72% of the total 483 mistaken diagnoses. Next comes scarlet fever, accounting for 14% (67 cases), and third on the list are various forms of Vincent's angina and stomatitis. The remainder is made up of the following diseases: Anginous form of glandular fever (4 cases), streptococcal cervical adenitis (4), post-tonsillectomy sloughs (2), chickenpox (1), purpura (1), secondary syphilis (1), alveolar abscess (1), mumps (1), thrush (1), acute lymphatic leukaemia (1), and, quite inexplicably, a toxic erythema, a tuberculous meningitis, a case of meningococcal meningitis, and an attempted suicide, but to this last case I shall allude later.

The clinical differentiation of acute tonsillitis from an early diphtheria may be extremely puzzling at the outset, and I have noticed during the last few years that it is increasingly common for diphtheria to start just like an early follicular tonsillitis, and at this stage it is almost impossible without bacteriological aid to make a sure diagnosis. The following points may be borne in mind when faced with such a case.

1. In diphtheria of this type the onset is insidious. I have had nurses with a vague uneasiness in their throats report to me with considerable follicular exudate on one or both tonsils who only thought that something might be wrong when they looked at their own throats. The constitutional disturbance, pain on swallowing,



tender glands, and pyrexia are all minimal at this stage. Frequently only one tonsil is affected, but within 12 hours the other shows signs of involvement, and within 24 hours the exudate has coalesced, leaving no doubt as to the true nature of the illness.

2. Coalescence is quite rapid in diphtheria—within 24 hours. A discrete exudate lasting two or three days is unlikely to be diphtheria. It follows, then, that a case which at first sight appears to be tonsillitis should always be inspected again on the following day, and the day after that if possible.

In *streptococcal sore throat* the onset is more sudden, the systemic disturbance more severe, and the temperature higher than in diphtheria. The cervical glands are very tender, the surface of the exudate is rough, pulsatious in consistency, and may be associated with intense congestion of the soft palate and adjacent tissues.

*Quinsy* is most likely to be confused with hypertoxic diphtheria, as in both diseases there is exudate on the tonsils and oedema of the fauces. Again, in diphtheria of similar severity there would be much greater glandular enlargement—probably even a bull neck—pallor, and nasal discharge. Quinsy is mostly unilateral and is often associated with great difficulty in opening the jaws, a most uncommon sign even in the severest types of diphtheria. Very occasionally diphtheria does occur with quinsy in the acute stage, but almost always it is a sequel after the throat has cleared of membrane, presumably due to the lessened resistance of the patient, both locally and generally, to secondary invading organisms.

Other kinds of sore throat are encountered occasionally, but the ones mentioned are those which commonly give rise to difficulty.

There seems to be an impression that the temperature in diphtheria is always normal or subnormal. This is by no means true, and in fact most cases show mild pyrexia of 100–101° during the first few days of the illness, particularly in children. The presence of fetor, on which again much reliance is placed, can be misleading, and septic sore throats or mixed infections with Vincent's organisms can sometimes produce an odour which to the inexperienced is a very good imitation of the diphtheritic smell.

*Scarlet fever* is the disease next most commonly confused with diphtheria; many of the cases are overlooked by omitting examination of the patient's skin, and so the rash is missed. Sometimes the rash may have disappeared by the time the doctor is called in, but a retrospective diagnosis is usually possible by consideration of the history of sudden onset with vomiting and sore throat, and the characteristic appearance of the throat, tongue, and skin. Sometimes undoubted scarlet fever occurs without a rash, but again the history will usually provide a

Occasionally both diseases coexist.

*Vincent's angina* has been especially prevalent during the last three years, but even before the war it accounted for some of the errors of diagnosis. It occurs not at all uncommonly in children, but adults are the chief sufferers. The disease mostly affects one tonsil and is readily recognized clinically by the ulceration, the broken and crumbly appearance of the exudate, the typical smell, and the tender glands, which are often enlarged out of all proportion to the extent of the angina. It should be noted that diphtheria is often associated with Vincent's angina, and swabs as well as smears should be taken to confirm the diagnosis. Vincent's disease will also attack the gums and buccal mucosa, causing much swelling of the gingival margins, ulceration of the buccal mucous membrane, and the secretion of tenacious mucus, a condition I have never observed in diphtheria.

The differential diagnosis of the remainder of the diseases mentioned above—namely, secondary syphilis, acute leukaemia, purpura, post-tonsillectomy sloughs, and non-diphtheritic rhinitis—are all fairly obvious, but there are three to which I would like to allude briefly: glandular fever, chicken-pox, and the attempted suicide.

The anginous form of glandular fever may simulate diphtheria very closely in children. There is considerable exudate on the tonsils, with faucial oedema and enlarged glands in the neck. A striking difference is to be found in the consistency of the cervical glands on gentle palpation. Instead of being enlarged and firm, they have a peculiar elastic and resilient feeling, quite

unlike those of diphtheria. Once one's suspicions have been aroused by this sign, further examination will in all probability reveal an enlarged spleen, adenopathy of other groups of lymph glands, and possibly some abdominal tenderness. A differential count will confirm the diagnosis, but, if a Paul-Bunnell test is done, blood should be taken before giving serum in doubtful cases, otherwise the result will be positive when in fact the true result might have been negative.

I have notes of several cases of chicken-pox misjudged as diphtheria. This has been due to a profuse crop of vesicles on the palate or uvula breaking down into coalescent ulcers. Again an examination of the skin would have settled the diagnosis.

Lastly, the attempted suicide, which is related merely as a matter of medical interest.

A man aged 45 was sent into this hospital certified as suffering from diphtheria. He had a curious-looking throat covered with dirty grey exudate, extending over the tonsils, faucial pillars, uvula, and soft palate. The mucous membrane of the cheek was involved, and it was quite easy to strip off this material, when a raw, sore area was left behind. I had never seen anything quite like it before. His general condition seemed good. He was not ill, but was rather confused in his manner. On further inspection I found a severe wrist wound on the left side which had evidently been self-inflicted by a sharp instrument—probably a safety-razor blade. The flexor longus pollicis had been divided but no large blood vessel injured. I taxed the man with attempted suicide, as by this time it was evident that he had swallowed some corrosive fluid and, perhaps finding this rather unpleasant, attempted a short cut, which was equally unsuccessful. He would admit nothing, but later I learned that he was heavily in debt and had been found wandering on several occasions.

Perhaps, however, laryngeal diphtheria is confused more than all the other kinds put together, with the possible exception of skin diphtheria. Out of 153 cases notified 38% proved not to be laryngeal diphtheria after investigation and observation. These difficulties are quite understandable, as the number of cases in the large fever hospitals has fallen very considerably in recent years and not many of the younger practitioners have had the opportunity of seeing these cases before qualification. In addition, a doctor called to see suspected cases of "croup" quite rightly errs on the safe side, so that a number of patients arrive at the hospital with this label who have no signs of the disease.

A bad faucial diphtheria with palatal oedema and noisy breathing due to mechanical causes in the throat will often be diagnosed as laryngeal obstruction, but the chief mistakes from the academic point of view arise in the confusion between the various forms of catarrhal laryngitis, the laryngitis present at the onset of an attack of measles, bronchopneumonia, and retropharyngeal abscess. Other occasional difficulties arise, and I have notes of odd cases of papilloma of the larynx, congenital laryngeal stridor, and whooping-cough.

*Catarrhal laryngitis*, or spasmodic croup, accounts for 55% of the total number of errors, and this is quite feasible when one thinks of the alarming picture presented by a child with this complaint. The chief clinical contrasts between this and laryngeal diphtheria are:

1. Its sudden onset, very often at night, in an otherwise healthy child, whose only previous history may have been that of a slight upper respiratory catarrh.
2. The attack reaches the acme of severity almost at once and the child is fairly well between each spasm. Often this type of patient is quite well by the morning.
3. The laryngeal involvement is never progressive, although occasionally it may last some days.

Compare this picture with that of a true diphtheritic laryngitis, which is insidious in its onset. Perhaps there may be a history of sore throat, in which case the presence of exudate on the tonsils will make the diagnosis easy. Often, however, the parents may have been unaware of the true state of affairs, and only when the child loses its voice, breathes noisily, or has fits of dyspnoea are their fears aroused. A large number of these cases have clean throats when examined, as the membrane has separated from this situation by the time the larynx is involved. As the attack has probably been severe and of the nasopharyngeal variety, much useful information may be gained by looking carefully at the throat for evidence of slight super-

ficial ulceration, suggesting recently separated membrane, and also the nose for evidence of nasal discharge or actual membrane, which often persists after the throat is clean. In addition, late cases also have a greyish pallor and may still show signs of subsiding cervical adenitis. The characteristic feature of all diphtheritic laryngitis is progression in the absence of treatment. Sometimes it is slow, sometimes rapid, but most cases will terminate fatally unless the true nature is recognized. Unlike other forms of laryngitis, where a child may be almost normal between attacks, in diphtheria the stridor and recession get steadily worse, restlessness increases, and the attacks of dyspnoea are more frequent. Primary laryngeal diphtheria is less common, but accounts for some 20% of those requiring tracheotomy.

**Measles**—The next most frequent disease (17%) sent into hospital as laryngeal diphtheria is measles. Not uncommonly before the appearance of the rash the child may show all the signs of impending laryngeal obstruction, and unless Koplik's spots are identified the diagnosis will be in doubt. As a rough guide laryngeal symptoms occurring before the rash are due to measles. Laryngeal symptoms appearing after the rash are probably diphtheritic. Laryngeal involvement with the rash may be either, for diphtheria is more often associated with measles than with any other infectious disease, with the exception perhaps of scarlet fever. The presence of laryngeal obstruction associated with measles whether due to diphtheria or not formerly had some prognostic significance, for if tracheotomy was found necessary the outcome was nearly always fatal, but I have recently recorded four successful cases whose recovery was probably due to sulphapyridine.

**Retropharyngeal abscess** should never be confused with true laryngeal diphtheria. The peculiar quacking cry, the noisy breathing, and the presence of a fluctuating swelling on the posterior pharyngeal wall, which can be seen and felt and of enlarged glands, usually on one side of the neck, all point to the correct diagnosis. Pneumonia, bronchitis, and whooping-cough are all misdiagnoses which can be avoided by careful assessment of the patient's history, signs, and symptoms.

In all these conditions diagnosis on clinical grounds is important, and the laboratory should be used for confirmatory evidence only after the necessary and immediate specific treatment has been given.

Considerable assistance in the elucidation of a doubtful case may be obtained from a knowledge of the patient's immunity in response to a Schick test and the typing of the organism. If the case is obviously doubtful, and there is no immediate danger in withholding serum for a few hours, the patient should be Schick tested and swabs taken from the nose and throat. Serum may then be given in 7 to 8 hours without upsetting the result of the Schick test. The following results may occur, bearing in mind that all intermedius and gravis strains of diphtheria bacilli are virulent and that minus strains may be either virulent or non-virulent.

Schick positive, swab positive	Diphtheria
Schick positive, swab negative	Susceptible but probably not diphtheria
Schick negative, swab positive	Immune ? carrier
Schick negative, swab negative	Not diphtheria

All swabs should be repeated as a confirmatory measure. In any suspicious case particularly in private practice, serum should be given first and confirmatory swabs taken subsequently. The technique just described is more suited to a hospital, where a close watch can be kept for possible extension of the disease and suitable treatment undertaken immediately.

### Scarlet Fever

There is some doubt whether scarlet fever should be regarded as a distinct disease or merely as one variety of the response of the individual to the toxin of a particular strain of haemolytic streptococcus, but, nevertheless it is a notifiable disease which is usually segregated, and it is therefore necessary to arrive at a clinical diagnosis without considering too critically its exact mechanism.

Out of over 2,000 cases the diagnostic error is some 8%, composed of the following: toxic erythema (26% of errors), tonsillitis (20%), rubella (18%), measles (12%), diphtheria

(6%). The remaining diseases involved are scabies, urticaria, chicken pox, impetigo, industrial dermatitis, and glandular fever. Perhaps the commonest sources of error are: (1) Taking one manifestation only of the disease, such as the rash, and diagnosing on this alone scarlet fever is the sum total of a number of signs and symptoms. (2) Paying too little regard to the history. (3) Omitting to look at the patient's skin, or arriving at an erroneous conclusion after inspection.

**Toxic Erythema**—Thus the presence of a scarlatiniform rash does not of itself mean that the patient is suffering from scarlet fever. I have grouped all these cases under the rather loose heading of 'toxic erythema,' and this comprises rashes attributable to drugs, chiefly atropine, enemata, rubbing oils, food poisoning, wearing of rough clothing or blankets next the skin, fits of crying in children (a fruitful source of 'rash' after throat examination), and a host of others for which no adequate cause could be found. In almost all the rash dominated the picture, and the other symptoms, such as vomiting and sore throat, were absent. Many of these patients subsequently desquamated, but the desquamation was unlike the pin-hole variety found in scarlet fever.

**Tonsillitis** accounted for the next 20% of the mistakes, and some of these were missed because no careful examination of the patient's skin had been made, the diagnosis being based on the appearance of the throat and tongue, and some because a transient rash, not an uncommon event even in tonsillitis had appeared and a wrong conclusion had been deduced. The rashes seen in tonsillitis are erythematous—not punctate—patchy in distribution, and of short duration.

**Rubella**—Problems of real difficulty may, however, arise in distinguishing a second-day rubella from a mild scarlet fever, and I have come to the conclusion that it is well nigh impossible in certain cases. Some 18% of the errors occurred in the differential diagnosis of these two diseases, and there were some doubtful cases which have not been included. I noticed particularly in the last epidemic of rubella, that a number of undoubted cases had considerable faucial congestion and when on the second day the rash had disappeared from the face, leaving a scarlatiniform erythema on the rest of the body, it was very difficult sometimes to make the necessary distinction. In addition to the usual distinguishing features of German measles—namely, mild generalized adenopathy, various muscular pains, catarrhal symptoms and pyrexia—there is one physical sign which is very constant in patients with clean mouths and this is a marginal gingivitis. On inspection of the mouth the gums are found to be red, swollen, 'heaped up' and overlapping the teeth, particularly between the upper centrals and laterals. This sign in conjunction with the other well known manifestations of the disease will often be found most helpful.

**Measles and Varicella**—The two diseases which so often simulate scarlet fever and which account for another 14% of the pitfalls are measles and chicken pox. Measles is nearly always confused with scarlet fever in the prodromal stages of the disease, one or two days before the true rash appears, when the body may be covered with an eruption indistinguishable from scarlet fever and the throat and tongue may well be passable imitations of the latter disease. A close inspection of the buccal mucosa will reveal Koplik's spots and quarantine of the scarlet fever ward be avoided! The same remarks apply to chicken pox, in which a scarlatiniform rash may appear before the true rash. An inspection of the palate will usually reveal one or two early vesicles, giving the key to the situation. To add to the difficulties here, it is not infrequent for scarlet fever and chicken pox to occur at the same time, but true scarlet fever usually appears after the chicken pox is fully developed and shows the signs appropriate to that disease.

I have no space to deal with the less important diseases sent into hospital as scarlet fever, such as urticaria, scabies, and impetigo, and their differentiation is obvious enough. Clinical diagnosis is still the best means of recognizing scarlet fever. The Dick and Schultz-Charlton tests and results of throat swabs are often misleading and inconclusive, and I rarely employ them now. A helpful sign in scarlet fever which aided in making a retrospective diagnosis in a doubtful case was the

appearance in due course of pin-hole desquamation, but it is well to remember that if scarlet fever antitoxin has been given early in the disease, subsequent desquamation often fails to appear

### Typhoid Fever

Typhoid fever is a disease of such protean manifestations that it is hardly surprising to find a total error of 37% in the 63 cases notified. I have not included as an error those cases which were sent in as typhoid and subsequently turned out to be other diseases of the enteric group, as clinical diagnosis is well-nigh impossible except perhaps in large-scale epidemics. The chief difficulties seem to arise with (1) various chest diseases, (2) other intestinal diseases, and each of these groups accounts for some 30% of the total faulty diagnosis. The remainder are found in such other cases as tuberculous peritonitis, acute miliary tuberculosis, pectoral abscess, pityriasis rosea, malignant endocarditis, and infective hepatitis. One other interesting alternative occurred recently, and this merits further description owing to its general medical interest.

Four cases of lobar pneumonia, one of bronchopneumonia, and one of empyema were noted, none of these were very obscure in their signs and symptoms, and would most certainly have been excluded had a careful examination of the chest been made. As a rule, pneumonia as a complication occurs late in the disease, and the signs in the chest, coupled with the cough, dyspnoea, and pain in the side, are all against the diagnosis of typhoid fever except in the rare form of pneumo-typhoid in which the disease has all the symptoms and signs of lobar pneumonia at the outset. In this connexion it is perhaps worth while noting that herpes of the lips is very unusual in enteric fever. In fact, a critical examination of the patient's chest and a blood smear showing leucopenia and absence of eosinophils would automatically rule out pneumonia and many other conditions superficially like typhoid fever.

Generalized miliary tuberculosis may cause real difficulty, but the early loss of weight, rapid pulse, and possible leucocytosis may help to distinguish it. Jaundice is so rare in typhoid fever that its mere presence is sufficient to exclude the disease, and the only case in this series showing jaundice proved to be infective in origin. With regard to intestinal diseases the simple enteritis lacks the quiet and insidious onset of enteric. The sudden vomiting, griping abdominal pain, diarrhoea, and tenesmus are all unlike the vague feeling of real illness which ushers in the onset of typhoid fever. Malignant endocarditis may simulate typhoid very closely: the high temperature, enlarged spleen, perhaps abdominal distension, all combine to make an exact assessment difficult. A search for a possible diac lesion, haematuria and petechiae in the skin will help excluding the former disease.

A case of special interest occurred quite recently at the hospital. A 32 years of age, a baker by trade, was admitted with a remission of typhoid fever. He had been ill at home for two weeks with severe headaches, insomnia, pains in his limbs, a high temperature, and gastro-intestinal upset, vomiting, and loose stools. On admission his temperature was 104°, pulse 132, respirations 36; and the only physical signs I could find were a slight icteric tinge in the conjunctiva, diminished air entry at the left base with a few post-tussive rales, an enlarged thyroid, and muscular pains and tenderness in the upper arms and calves of his legs. A white count revealed a leucocytosis of 20,000—polymorphs 62%, lymphocytes 18%, eosinophils 17%, and monocytes 3%. In view of his high eosinophil count I made careful inquiries as to his occupation and habits of life. It turned out that he was a pork pie baker and that every day he ate a few ounces of raw pork to see if it was sufficiently seasoned before putting it in the pies. Suspicion was at once aroused as to the possibility of trichiniasis, and his subsequent signs and symptoms were very typical of the disease. The calf muscles became swollen and tender, his tongue was enlarged to such an extent that he could hardly protrude it, and the swelling of his thyroid remained. The muscles of both upper extremities were soon involved, and he was very ill. At no time was there any facial oedema. Gradually the high fever settled, the muscular tenderness and swelling abated, and his thyroid returned to normal size. At this stage I removed a piece of his left deltoid muscle, and on examination this was found to contain *Trichina spiralis*. He was eventually discharged quite fit and well. I mention this case in greater detail as a very uncommon possibility when confronted with a case of "P.U.O.," and also to draw attention to the fact that a man's occupation often involves processes not imagined by the interrogator.

Perhaps the most helpful points in considering a doubtful case of typhoid fever and before sending specimens to the laboratory are as follows:

- 1 Gradual onset with headache and malaise
- 2 A relatively slow, perhaps dicrotic, pulse with a rising temperature
- 3 Constipation or diarrhoea
- 4 Low blood pressure
- 5 Abdominal distension, with palpable spleen
- 6 Bronchitis and epistaxis
- 7 The state of the tongue and throat, the latter may be congested
- 8 The rash when present, bearing in mind that it may be sparse and require a careful search
- 9 Absence of abdominal reflexes

Dr J. D. Rolleston drew attention to this last sign many years ago, and, provided that other nervous diseases are excluded, I have found it to exist in a large number of proved cases.

Naturally, most cases will have to be confirmed either by blood culture or by agglutination tests, and newer technique in these laboratory methods enables differentiation to be made between an active infection occurring in an inoculated person and even the carrier state.

### Acute Anterior Poliomyelitis

Acute anterior poliomyelitis appears to be an even more baffling disease from the diagnostic point of view, for out of a total of 30 notified cases there is an error of just over 40%, and these include a list of nervous diseases which would do credit to Queen Square Hospital, mechanical faults which could be seen in the out-patient department of any general hospital and the usual makeweights which had apparently no connexion whatever with the disease. These nervous diseases were: cerebellar tumour, cerebral tumour, disseminated sclerosis, traumatic neuritis (drunkard's palsy), a transverse lesion of the spinal cord, a hemichorea, and a post-diphtheritic palsy, easily demonstrated by immobility of the palate, nasal voice, and regurgitation of fluids through the nose.

I feel quite incompetent to discuss differential diagnosis in nervous diseases, so will pass straight to the mechanical factors influencing locomotion which were sent in under this heading.

One boy, unable to walk, was found to be suffering from a septic sore on the heel, another from inguinal adenitis secondary to a sore on the foot, and yet another from a tuberculous hip; finally, we had a man with lumbago. A few cases of scarlet fever and influenza, and a pneumococcal meningitis complete the list.

Perhaps a very brief summary of the features of the spinal type of the disease may help to distinguish it from some of the above-named conditions.

The pre-paralytic stage is associated with sudden onset, catarrhal symptoms such as coryza and sore throat, vomiting, pyrexia, and malaise—in fact, much like the onset of any acute infection. During this stage two signs are useful: the spinal sign, in which there is resistance to passive anterior flexion of the neck, and Amoss's sign, which is useful for older children. If the patient is sat up in bed and asked to fold the arms, he may attempt so to do, but quickly places his arms behind, so that the body weight is borne on a tripod, consisting of his arms, with the spine as the "third leg."

If these signs and symptoms are present it is quite justifiable to send the case into hospital with a provisional diagnosis of infantile paralysis. Often, however, it is impossible to recognize the disease in the pre-paralytic stage with any degree of certainty, although its presence in the district will often arouse suspicion at these rather suggestive symptoms. This stage may be succeeded by an evanescent meningeal stage in which headache, drowsiness, and irritability are prominent symptoms, or may proceed to the paralytic stage straight away. It is often possible to overlook this if too much attention is paid to the constitutional signs and symptoms. I have seen this happen in hospital, and only a few weeks ago I missed a case which I was looking after personally.

Before the actual paralysis occurs there is much muscle tenderness, hyperaesthesia, and stiffness of the neck and spine, so that the patient greatly resents interference by the examiner. Rarely, all these prodromal signs and symptoms may be wanting, and the sudden onset of paralysis may be the first signs of illness. I have observed such a case in this hospital.

When the paralysis occurs it is usually maximal at the beginning, but I have notes of one case in which there was a four-day interval

between paralysis of the right shoulder-girdle and of the left leg, the latter occurring after the temperature had returned to normal—rather an unusual occurrence. The tendon reflexes are usually absent or greatly diminished in this phase and the paralysis is flaccid.

Many varieties of history, signs, and symptoms are seen in different individuals, and the encephalic form may justifiably be regarded as a tuberculous or other type of meningitis, unless facilities exist for examination of the cerebrospinal fluid.

### Cerebrospinal Fever

During the war most practitioners have had a fairly large experience of cerebrospinal fever, but nevertheless it is interesting to consider the diseases which at first sight were thought to be meningococcal meningitis. Some of these were indistinguishable from cerebrospinal fever on clinical grounds alone, and out of 140 cases notified there was an 18% error, much reduced if other types of meningitis are excluded. Sixteen such cases occurred—9 tuberculous meningitis, 4 benign lymphocytic meningitis, 1 pneumococcal, 1 streptococcal, and 1 syphilitic meningitis. Again some confusion has arisen in various chest conditions, mostly in children, presenting signs of meningism: two cases of lobar pneumonia, one of bronchopneumonia, and one of spontaneous pneumothorax were wrongly thought to be cerebrospinal fever, although the last-mentioned case presented very few signs or symptoms referable to meningitis. Among the miscellaneous conditions seen were transverse myelitis, aneurysm of the middle cerebral artery, and one case each of measles, rubella, and scarlet fever.

It is impossible to differentiate with certainty the various forms of meningitis clinically before submitting a specimen of the cerebrospinal fluid to the laboratory, but in all the cases which subsequently turned out to be of tuberculous origin there was a history of gradual onset, a vague prodromal period of ill-health, or a history of some chest trouble which gave a pointer to the possible origin of the trouble.

Pneumonia in children may simulate meningitis very closely. The sudden onset, the signs of meningeal irritation, the high temperature, and perhaps paucity of physical signs in the chest are all misleading.

The measles and scarlet fever cases were probably sent in through the mistaken view that the rash was that of meningococcal meningitis, but there were no other signs to suggest a meningeal lesion. The patient with rubella was sent in because she complained of a stiff neck. This particular symptom sometimes occurs several days before the rash appears, and may well give rise to some doubts when cases of the more serious disease are prevalent.

### Miscellaneous

I have mentioned the commoner infectious diseases; there are others, and combinations of the various infections, which I could include, such as bronchitis, frequently sent in as whooping-cough, erysipelas, which has been confused with eczema, carbuncle, dacryocystitis, herpes zoster, and cavernous sinus thrombosis; but of all the mixture of odd infections the most frequent mistake is the case labelled "measles and bronchopneumonia." Perhaps, however, this mistake may be a matter of expediency rather than a lack of clinical acumen. Ordinarily, cases of uncomplicated measles are not admitted, but attach the magic word "bronchopneumonia" and a bed is found somewhere!

In spite of this there are a great number of honest errors of judgment, and I think the reason is probably that the doctor is called in either just as the rash is appearing or when it is just fully developed, so that the child is restless and looks ill. At this stage the fever is considerable—the temperature commonly elevated to 103°–104°, there is considerable catarrh in the chest, the respirations are frequent and short, and there is nearly always a dry cough. The physical signs in the chest at this stage are those of a mild bronchitis, but the whole picture looks at first sight rather like a bronchopneumonia. Very soon, within 24 to 36 hours, the rash begins to fade, the symptoms abate, and the temperature drops, and it is during the next few days that true bronchopneumonia is likely to develop. It is only exceptionally that pneumonia occurs in the prodromal stage or coincidently at the time of eruption.

I have tried,\* so far as is possible, to avoid figures in this paper, nor do I wish to imply any criticism of other doctors' work. I am sure there would be ample material for another paper based on my own personal mistakes. Anyhow, it will show that life in a fever hospital is not so dull, that it does not consist entirely in looking after cases of scarlet fever, and that good clinical work can still be found in this branch of medicine—despite the war and the forms!

I have to thank Dr T. Pearson, medical officer of health, City of Plymouth, for permission to publish this paper. I should also like to acknowledge the help I have obtained from the standard works on infectious disease for reference on doubtful points, particularly *Harnes and Maman* and my old chief's book, *Rollston and Ronaldson*. Few who have worked under Dr J. D. Rolleston could fail to be stimulated by his magnificent teaching on the infectious fevers.

## GASTRO-INTESTINAL BLEEDING DUE TO VITAMIN K DEFICIENCY COMPLICATING LABOUR

BY

EILEEN MALONE, L.R.C.S., L.R.C.P.I., L.M.

In 1929–33 a haemorrhagic chick disease was observed in a number of laboratories (Brinkhous, 1940), in most cases incidental to experiments in which chicks were fed purified diets low in fats. During observations on the effect of various proteins on the growth of chicks spontaneous haemorrhages were noticed. Administration of lemon juice, ascorbic acid, cod-liver oil, and wheat-germ oil failed to prevent these haemorrhages in chicks fed on the purified diets. It was suggested by Dam, in 1934, that this condition constituted a new dietary deficiency disease, and his suggestion that the deficient factor be called vitamin K has been adopted. These diets were low in fats, and McFarlane, Lane, and Richardson gave evidence of the fat-soluble nature of the vitamin: they noted that fish meal prevented haemorrhage unless it had been extracted by ether.

Haemorrhagic chick disease was recognized as being due to deficiency, and the relationship of this dietary factor to blood clotting was established. A low plasma prothrombin was suspected. A haemorrhagic tendency appeared when the low prothrombin levels were reached when feeding chicks on K-deficient diets for several days. Both the low prothrombin and the haemorrhagic tendency were cured by feeding vitamin K.

That mammals may develop such a deficiency was shown in conditions in which the absorption of this fat-soluble vitamin is hindered by absence of bile in the intestine. Hypo-thrombinaemia and haemorrhage ensued, and were cured by the administration of vitamin K. Vitamin K occurs richly in alfalfa, spinach, cabbage, cauliflower, carrot-tops, and soya beans, it is less potent in tomatoes and orange peel. There is a little in liver and egg yolk.

The causes of vitamin K deficiency are deficient diet, obstructive jaundice, and biliary fistula leading to absence of bile in the intestine. Haemorrhagic disease of the newborn shows a low prothrombin level and is controlled by vitamin K. Jaundice appears to have no relation to the deficiency. Haemorrhage due to low plasma prothrombin may occur in ulcerative colitis, intestinal obstruction, and fistulae.

Attention is directed to a most complete and excellent review of the literature on plasma prothrombin and its relationship to vitamin K by Brinkhous (1940).

In view of the above facts it may be interesting to record a recent case of mine treated with vitamin K.

### Case Report

A farmer's wife was taken ill in Sept., 1943, with acute pain in the back and vomiting. Her temperature varied from 100° to 103° for four days. She was diffusely tender over the abdomen, but no definite localizing signs were obtainable. Her condition becoming worse on the evening of the fourth day, I sent her into hospital, twelve miles distant. The urine showed no abnormalities up to that time. In hospital her case was diagnosed as a simple catarrhal jaundice, and bile appeared in the urine. A blood count revealed

2,500 white cells, but otherwise was normal. Her last menstrual period was Aug. 18, and she thought she was pregnant; her only child was then 6 years old. She returned home in eleven days; she looked ill and vomited more or less severely for about ten weeks. The Aschheim-Zondek test was positive. During this time she had a slight discharge of blood from the vagina, and was given wheat-germ oil. A polypus was found on examination; this was removed in December. All through her pregnancy she continued to have a tendency to vomit occasionally. At the start of her illness she took nothing but glucose and water, and after one week honey, tea with sugar and skimmed milk, and a little bread. On her return home her diet consisted of carbohydrates in the form of glucose, bread, jelly, and marmalade, and proteins in the form of meat and chicken. She also ate baked apples and vegetables, but no butter or eggs. Gradually butter and full-cream milk were introduced, and lastly eggs in four weeks' time. By the sixth week she was on normal diet. She spent the last three weeks of her pregnancy in bed because of lassitude and severe cramping pains in both groins and in the rectum. The spleen was never palpable. The patient's husband developed jaundice one month after her return from the hospital, and her sister and niece two and three months later, respectively.

At term on May 18, 1944, at 10 a.m., after a slow labour, she was delivered spontaneously of a normal live male infant (10 lb. 14 oz.). Placenta and membranes, intact, were expressed half an hour later. An old perineal scar reopened, and was repaired under local analgesia (two internal and three external sutures). At 10.45 a.m. she bled freely per rectum. Pituitrin 1 c.cm., morphine gr. 1/4, and routine treatment for shock followed hot vaginal and rectal lavage. There was no rectal tear. Pituitrin was repeated during the afternoon. Plain and glucose water were given freely by mouth. At 3.50 p.m. she vomited first clear then blood-stained fluid (approximately 60 c.cm.). Her general condition was improving. Morphine was repeated at 5 p.m. and vitamin K 10 mg. (prokayvit B.D.H.) was administered intramuscularly into the buttock. The patient bled no more, and made a good recovery. The next day prokayvit 5 mg. was injected intramuscularly. Rectal saline was given; this returned blood-stained and was not repeated. She was put on liquid paraffin t.i.d. On the sixth day after delivery she passed a melaena, after that normal stools. On June 2 a pathologist reported as follows:

**Pathological Report 1.**—Blood count: Hb, 59%; R.B.C., 3,310,000 per c.mm.; platelets, 236,000 per c.mm.; colour index, 0.89; leucocytes, 3,800 per c.mm.—polymorphs 74%, lymphocytes 26%. Fair numbers of reticulocytes present. The red cells show slight anisocytosis. Blood urea, 25 mg. per 100 c.cm. Blood-fragility: Haemolysis starts in 0.36% and is complete in 0.30% saline. There is no increase in the fragility of the red cells. Urine: S.G., 1010; pH, 6.8; no albumin, no sugar; urea, 0.82%; fair numbers of red cells, a few pus cells, no casts seen. Fair numbers of coliform bacilli seen in fresh smears. Culture: A very large growth of coliform bacilli obtained. Van den Brogh reaction: Completely negative, both direct and indirect. Blood bicarbonate: 64.3 c.cm. CO<sub>2</sub> bound by 100 c.cm. plasma at N.T.P. Prothrombin clotting time: 39 secs. (control, 25 secs.); definitely prolonged.

On June 5 the patient was given 25 mg. of prokayvit intramuscularly, which was repeated on June 6, when she left our infirmary. He visited the laboratory on June 7, and the following report was sued:

**Pathological Report 2.**—Blood count: Hb, 70%, R.B.C., 3,836,000 per c.mm.; colour index, 0.92; leucocytes, 6,250 per c.mm.—polymorphs, 69%, lymphocytes 7%, monocytes 1%, eosinophils 3%. An occasional reticulocyte present. No abnormal white cells seen. Platelets abundant. Prothrombin index: June 5, 67%; June 8, 111%.

It should be noted that the patient received the first vitamin K injection on May 18, the second injection on May 19. On June 2 the first prothrombin index was determined, and was found to be 67% of normal (100% = 25 secs.). On June 5 the third vitamin K injection was given, and this was repeated on June 6; on June 8 the second prothrombin index was determined, and was found to be 111%. The first and second administrations of vitamin K were therapeutic, the third and fourth experimental, to detect a rise in the prothrombin index.

A hippuric acid excretion test has since been made, with the following results. No other liver function tests were available.

Time	Urine Collected	Specific Gravity	Hippuric Acid Excreted
9.30 a.m. ..	200 c.cm.	1006	0.25 g.
10.30 a.m. ..	173 c.cm.	1012	0.05 g.
11.30 a.m. ..	153 c.cm.	1011	0.07 g.
12.30 p.m. ..	102 c.cm.	1010	0.03 g.

In a follow-up pathological examination, dated Sept. 7, the prothrombin index was found to be 85% of normal; the total hippuric acid 6.26 g. (normal about 5 g.).

The amount of hippuric acid excreted by normal individuals approximately ten times the amount recovered from this patient. The hippuric acid test suggested that some degree of liver damage was present, although, clinically, there were no objective signs indicate liver dysfunction. As Andrus and Lord (1942) have shown patients with parenchymal liver damage of severe degree do not respond to vitamin K, and hypoprothrombinaemia persists in such subjects. Sweet, Lucia, and Aggeler (1942) showed that the hippuric acid test is a more delicate index of liver function than prothrombin concentration, although the latter detects destruction of the parenchyma as well.

### Commentary

It is probable that the bleeding manifested by this patient was due to vitamin K dietetic deficiency in the first two months of gestation, inasmuch as she subsisted on a fat-free diet during most of that time and only gradually resumed ingestion of fats during a rather prolonged convalescent period.

That the haemorrhagic tendency resulted from vitamin deficiency is supported by the marked rise in prothrombin index from 67% to 111% after the second two injections of the vitamin; in addition, the clinical recovery of the patient after the initial administration of the vitamin corroborates most substantially this point of view.

A lapse of 15 days took place between the therapeutic and the experimental administration of vitamin K, and the prothrombin index at the onset of labour might have been very much lower than when first estimated. The results of the hippuric acid excretion test indicate impairment of liver function, although to establish this beyond doubt would require further laboratory studies, which, unfortunately, could not be carried out because of the lack of such facilities, and because of the difficulty of transporting a non-ambulant patient for such studies. That the prothrombin level rose so much after the experimental administration of vitamin K indicated very strongly a pre-existing deficiency in that factor. Another factor to be considered is the hydraemia of pregnancy, which by its occurrence as a physiological concomitant feature, may reduce a borderline prothrombin content to a lowered one particularly if the diet, as in this case, be deficient in vitamin K. In such a patient post-partum haemorrhage from the placental site would prove an even more serious complication of labour, particularly if the possibility of a vitamin K deficiency either was unknown because of an inadequate neonatal history or was overlooked.

### Summary and Conclusions

The case history of a patient developing gastro-intestinal bleeding during the last stage of labour and early puerperium is recorded, with evidence supporting the view that the haemorrhagic tendency resulted from a lowered blood prothrombin level; clinical recovery followed the administration of vitamin K.

Pregnant women who have suffered from an obstructive jaundice and consequent dietary deficiency in fats would benefit by having a prothrombin index taken before the onset of labour, so that vitamin K administration may be instituted, if necessary, to prevent a haemorrhagic tendency from developing as a result of hypoprothrombinaemia.

My grateful thanks are due to Dr. Mackarell, pathologist of Leicester Royal Infirmary, for his reports and advice, and to Sister Robinson for her unremitting watchfulness and care of the patient.

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Wartime restrictions prevent even so deserving a cause as the Grenfell Association from notifying the public of the Christmas cards and purse calendar which are being sold again in aid of the association's work in hospitals, nursing stations, schools, etc., along the 1,000-mile coast-line of Labrador. Readers are therefore asked to make a special note that in the cards four designs are available, price 6d. each with envelope, postage extra, from the offices of the association at 66, Victoria Street, London, S.W.1. The price of the purse calendar is 3d., postage extra. These represent as good value as is to be obtained, quite apart from the help which their sale means to the Grenfell Mission.



## SPONTANEOUS RUPTURE OF AN APPARENTLY NORMAL SPLEEN

BY

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Spontaneous rupture of an apparently normal spleen is rare enough to warrant publication. Susman (1927) had a case in a man aged 53 and reviewed the literature of 8 previously reported cases. His patient had had indigestion and flatulence for three months, and indigestion had been a feature of four out of the six cases he reviewed. He suggested that in the spleen there was a localized lesion which was itself destroyed by the bleeding and which was the cause of the dyspeptic symptoms. He stressed a relationship between splenic and gastric activity.

Later Hamilton Bailey (1930) reported a further case of spontaneous rupture in a man aged 20; the spleen was normal on macroscopic and microscopic examination. He reviewed 16 cases reported by Susman and found a further two in the literature, bringing the total to 12. Hamilton Bailey felt that forgotten trauma should be accepted as the cause. If that theory is discarded we are plunged into a morass of speculation in which it is unprofitable to linger.

Black (1933) reported a case in a woman aged 52. The sudden onset of severe abdominal pain was preceded by some weeks' uneasy feeling under the heart. She was found to have an intraperitoneal haemorrhage from a ruptured spleen. The spleen was normal in size, and microscopy showed hyalinization of the wall of the central artery. Black said that the spleen aged early, that at 36 years 50% of spleens show hyaline asclerous change. He believed this change rendered it liable to haemorrhage and that torsion of the pedicle was the immediate cause in his case.

Zuckerman and Jacobi (1937) added a further case, in a woman aged 39. They reviewed the preceding cases and found further records in the literature, bringing the total reported to 22. In their patient the spleen was abnormally mobile owing to the absence of the lienophrenic ligament. Similar findings were present in the case reported by Halliwell (1933). Zuckerman and Jacobi pointed out that the condition is apparently uninfluenced by sex or age. Two of their cases occurred under the age of 20, and those remaining were more or less evenly distributed in each decade from 20 to 60. This age distribution, they felt, was strong evidence against vascular degeneration being the causative factor. They suggested that the common factor was venous congestion due to kinking of an unusually mobile splenic pedicle. This was due to a development defect in the peritoneal relations of the spleen resulting in the absence of the lienophrenic ligament.

Coleman (1939) had a further case. His patient was a man aged 58 with a long history of previous indigestion. The spleen was normal in size. The histological report stated that there was well-marked arteriolar sclerosis, and the haemorrhage may have been due to rupture of one of the damaged vessels. Coleman suggested that disturbance of gastric function caused congestion of the portal vein and its radicles and led to rupture of a damaged vessel.

Dubash and Langley (1944) reported spontaneous rupture of the spleen occurring in a patient in bed suffering from an acute axillary lymphadenitis. Although this spleen showed no acute inflammatory reaction and cannot be considered normal, it is of interest to note that it was abnormally mobile.

### Case Report

A soldier aged 36 was admitted to an Emergency Hospital at a.m. on Sept. 18, 1943. His leave had started on the 17th, and he spent his day travelling. He left his unit at 7 a.m. and reached his home at 1 p.m. He had no food on the journey, but had a hasty meal on arrival home. He then had a light tea, followed later by supper. At the last meal he had celery. He went to bed at 10 p.m. feeling perfectly well, but within a few minutes he had abdominal pain, which became very severe, reaching its maximum intensity within two minutes. The pain was on the left side of the abdomen between the lower ribs and thigh, being described as a burning sensation running from above downwards and continuing

without remission. He felt sick, and vomited once immediately after the pain started. His bowels were regular. He had never had indigestion. Micturition was normal.

On examination the patient was half sitting and half lying, curled up on his left side. Any movement from this position was resented. His general condition and colour were good. The temperature was 98.4° and the pulse 70. The abdomen was tender and rigid, especially in the left upper quadrant. The percussion note was normal. No peristalsis was audible.

A diagnosis of perforated gastric ulcer was made and a laparotomy undertaken. As the pain was most severe on the left side a midline incision was used to open the abdomen. On entering the peritoneal cavity large quantities of blood escaped. The bleeding was found to be coming from the spleen, and after extending the incision laterally to the left costal margin a splenectomy was carried out. Clots and the bulk of the fluid blood were removed; the other abdominal viscera were normal, and the incision was closed. The patient's post-operative condition was good and no transfusion was necessary. His progress was uneventful until the third week. He then had some pain and tenderness in the left hypochondrium accompanied by slight fever, the temperature rising to 99°. This was possibly due to injury to the tail of the pancreas; the condition subsided in about ten days.

On Sept. 27 the blood count was: R.B.C., 3,330,000; Hb, 60%; colour index, 1.03; W.B.C., 10,400—polymorphs 70%, lymphocytes 26%, large mononuclears 1%, transitional 0%, eosinophils 2%, basophils 1%. The anaemia was believed to be due to blood loss, so the patient was given iron by mouth. On Oct. 11 his red cell count had risen: R.B.C., 4,320,000; Hb, 74%; colour index, 0.89; W.B.C., 7,600. No malaria parasites were seen in thick films. Blood pressure, 138/74.

After operation the patient was closely questioned to find out whether the rupture could be accounted for by injury. Three months previously he had fallen against a tap and struck his right side. His lower ribs had been painful for a month, but the pain was never bad enough to make him report sick.

The spleen was normal in size and consistency. At the junction of the upper and middle thirds of the cut surface the pulp showed six or seven small haemorrhages about the size of a pea. One of these areas on the convex surface communicated with an extensive subcapsular haematoma. The capsule had a large rent through which the blood reached the peritoneal cavity.

Dr. J. L. Edwards, who examined the spleen, reported on its histology:—"The Malpighian bodies are well defined. The central arteries are hyaline. There has been recent haemorrhage into the pulp. There is a reticular increase in the pulp. No malaria parasites are seen in Giemsa preparation. Eosinophil leucocytes are fairly numerous in the pulp."

### Discussion

In the light of previous reported cases the main points of interest of this case are: (1) the naked-eye appearance of the haemorrhage in the spleen; (2) the history of previous trauma; (3) the absence of previous dyspepsia; (4) the presence of degenerative changes in the blood vessels of the spleen; (5) the spleen was not abnormally mobile.

It is suggested that the appearance of multiple haemorrhages was misleading and that there was one haemorrhage burrowing in the splenic substance, stripping the capsule and bursting into the peritoneum. The appearance of multiplicity was due to cutting the tortuous haematoma in several places. The only previous trauma to the lower chest and abdomen occurred three months earlier. The pain was confined to the right side of the lower chest and did not stop the patient from working. On subsequent examination the spleen failed to show either adhesions or evidence of old haemorrhage.

Although this patient had had no previous indigestion he had been travelling most of the day and had eaten mainly vegetables. He himself attributed his misfortune to eating celery. At laparotomy stomach, duodenum, and gall-bladder were found to be normal.

The blood vessels of this spleen showed well-marked hyaline change. It is probable that the underlying cause in all cases of spontaneous rupture of the apparently normal spleen is an intrasplenic haemorrhage. This may be a ruptured vein or splenic sinus following congestion. In many cases congestion has been noted. The cause of the congestion probably varies. Different causes have been cited—viz., partial torsion or kinking of an unusually mobile pedicle (Zuckerman and Jacobi, 1937; Halliwell, 1933; Black, 1933; Dubash and Langley, 1944), pregnancy (Burnett and McMenemey, 1935),



hepatoma (Dardinski, 1932), or recent thrombosis of a splenic vein (Rhame, 1928).

It is probable that in some cases there is an arteriolar rupture. The splenic artery degenerates early. Black states that at 36 years 50% of spleens show degenerative changes. The splenic artery may show gross degenerative changes with aneurysm formation when the rest of the arteries in the body are normal (Parsons, 1937).

In the case reported above the spleen was not abnormally mobile—there was no evidence of venous obstruction, and in view of the arteriolar degeneration present it is possible that the haemorrhage was arteriolar in origin.

### Summary

A further case of spontaneous rupture of an apparently normal spleen is reported and a brief review of the literature is given. It is suggested that rupture is secondary to an intrasplenic haemorrhage. It is unlikely that any one common cause of the haemorrhage will be found to explain all cases.

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## PNEUMOPERITONEUM

BY

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The term "pneumoperitoneum" is used to describe the presence of free gas in the peritoneal cavity without evident peritonitis. The condition is regarded as rather a curiosity, but d'Allaines (1932) was able to analyse 34 published cases, and to add one from his own experience. The fact that three cases can be reported here, all of which were observed within the space of a few months, suggests that spontaneous pneumoperitoneum is not really very uncommon, and that to be aware of the existence of the syndrome is to make it likely that one will observe it.

### Case I

An unmarried woman aged 30 was admitted to the Royal Northern Infirmary under Dr. T. N. MacGregor for removal of fibroids of the uterus. Her previous health had been good except for dyspepsia for several years. She developed a post-operative collapse of the right lung with secondary infection. This was treated with sulphanilamide, but resulted in a small right-sided pleural transudate (sterile). After this had subsided she complained of a sharp pain in the right side, had a rise of temperature to 101° F., and x-ray screening (Dr. G. Gottlieb) showed gas beneath the right diaphragm (which had not been present in previous radiographs). She had some tenderness and some muscle spasm in the upper abdomen, and there was complete disappearance of liver dullness. Her general condition, however, was not that of generalized peritonitis. Further treatment with sulphadiazine was given, and after four days her temperature was normal and symptoms absent, but there was still some abdominal tenderness. This gradually disappeared, and she was discharged from hospital. She was x-rayed again three weeks later (Dr. Gottlieb), and gas was still to be seen below both domes of the diaphragm. There was an ill-defined pyloric antrum with some deformity and stiffness, apparently due to adhesions. The duodenal cap was deformed, probably from adhesions to the gall-bladder. No ulcer crater was seen. The emptying time was delayed, with a moderate two-hour residue. The appendix was partially filled, fixed to the midline, and tender on palpation.

This patient reports, 18 months later, that she has since remained in good health.

### Case II

A married woman aged 60, with six children, was admitted to the Royal Northern Infirmary for attacks of abdominal pain with nausea and occasional vomiting, constipation, anorexia, loss of weight, and attacks of diarrhoea preceded by severe abdominal pain, the stools being fluid and dark, without excessive mucus. Her

general condition was good except for recent loss of weight. Her complexion was sallow. Red cells numbered 4.8 millions, with haemoglobin 89%. The heart action was normal except for extrasystoles. Stomach splash was present three hours after food. The benzidine test was consistently positive in stools. Fractional test meal: Maximum free acid, 0.15%; traces of blood throughout; starch present to the third hour. Radiograph (Dr. Gottlieb): ptosis of the stomach with no clear definition of pylorus or duodenum; a large residue of barium present at four hours; gas seen below both domes of the diaphragm.

At this time there was no tenderness, distension, or rigidity, and little discomfort. She was kept in bed, given a diet largely of milk and regular gastric lavage, and was x-rayed again three weeks later, when the appearances were much the same, though an ulcer crater could be seen at the base of the deformed duodenum. A large barium residue was seen at five hours (Dr. Gottlieb). After further gastric lavage the residue steadily diminished and the patient was symptomless. She left hospital to continue under observation as an out-patient.

Over a period of about four months she was seen at intervals of a few weeks, her only symptom being a feeling of abdominal distension "towards the evening, when there was a sensation as of something crackling." She was readmitted, however, four months after her discharge in a coma from alkalosis following several days of repeated vomiting. Tetany was present. Blood urea was 220 mg and blood calcium 6.8 mg. per 100 c.cm. Intravenous glucose-saline rapidly improved her condition, and she later submitted to gastro-enterostomy (Mr. A. J. Hamilton), from which she made an untroubled recovery. Operation showed a narrow scarred pylorus, but no signs of perforation.

### Case III

An unmarried woman aged 35 was referred to me in 1941 for abdominal pain of irregular occurrence, but sometimes of the hunger type and relieved by food; the pain had prevented her from working as a cook for 10 months. She had been previously studied, without a positive diagnosis being made, at the Glasgow Western Infirmary. Her general condition was good. No physical signs were found. A fractional test meal showed a maximum free acid of 0.11%, with starch present to the third hour. Radiographs (Dr. Campbell Tainsh) showed a normal oesophagus, stomach, and duodenum, with no gastric residue at six hours; the appendix was not outlined. No blood was found in test meal or stools.

A year later she was admitted as an emergency to the Lawson Memorial Hospital, Golspie, under Mr. B. S. Simpson, with abdominal pain and distension of three days' duration. She was in a state of surgical shock. General restorative measures and the passage of a suture tube improved her condition, but the next day there was increased distension and pain. At operation, as soon as the peritoneum was opened, there was an outrush of non-odorous gas and the abdomen became deflated. No evidence of peritonitis was found, nor could any other lesion be discovered. A caecostomy was carried out. After operation she was in good condition for a few hours, but there was then a recurrence of pain and distension, with deterioration of her general condition, and the abdomen was reopened 48 hours after the first operation. Once again there was an outrush of odourless gas and no evidence of obstruction or peritonitis. The abdomen was closed, and on the following day there was once more an acute recurrence of pain and distension. A needle was inserted in the posterior axillary line beneath the ninth and tenth ribs, and there was a prompt outrush of gas, with complete relief of symptoms.

There was no further recurrence of symptoms. The patient made an uneventful recovery and the caecostomy wound was closed. I saw her at the Lawson Memorial Hospital at this time and could detect no physical signs. She was admitted to the Royal Northern Infirmary two weeks later for further study, and immediately after admission developed a pain beneath the ribs on the left side which was worse on taking a deep breath and prevented her from sleeping. The abdomen was slightly distended and tender on the left side of the epigastrium. These symptoms disappeared after a bowel movement, and subsequently there was no further pain or distension. The patient was afebrile. Radiographs (six weeks after the first symptoms) showed no abnormality in oesophagus, stomach, and duodenum, and no evidence of gas beneath the diaphragm (Dr. Campbell Tainsh).

### Comment

It will be noted that these three patients were women, and I have only been able to discover a report of one male case—that of d'Allaines (1932)—and no case in childhood. All the patients described here and a great majority of those reported elsewhere have had previous symptoms referable to the gastro-intestinal tract, usually suggestive of ulceration. The gas in two analyses quoted by d'Allaines (made by Morimollia and Urban) was atmospheric except for a rather higher content

of nitrogen. The symptoms in published cases have been sometimes trivial and sometimes, as in the third case reported here, very severe. None of my patients complained of the pain beneath the left shoulder which is reported by Neumann (1943) as characteristic of artificial pneumoperitoneum (an observation confirmed by personal experience). The normal intra-abdominal pressure as measured by a manometer connected with the peritoneal cavity was -9 cm. of water in the knee-elbow position, but slightly positive in the erect position (Eisenmenger, 1935; quoted by Moberg, 1937). Moberg himself found the intra-abdominal pressure in a rabbit normally negative. My own observations in two cases of artificial pneumoperitoneum gave a normal slightly negative pressure with a very quick rise to positive pressures after introduction of quite small quantities of air at the site of the manometer needle; one could, however, continue to introduce air, without much further rise in pressure and with very little discomfort to the patient, to a total of anything up to one or more litres. No pain except slight discomfort at the shoulder was complained of by these two patients. Coombs (1922) found no immediate alteration of pressure when air or fluid was introduced into the peritoneal cavity.

Almost all the reported cases of spontaneous pneumoperitoneum have been thought to be due to escape of gas from the stomach or the first part of the intestine by a perforation so situated as to allow the escape of gas only, and healing so rapidly as not to be followed by the escape of other duodenal or gastric contents. There are at least two other possible sources of free gas in the peritoneum: (a) vaginal, via the Fallopian tubes; and (b) thoracic, via the diaphragmatic hiatus. The forcing of air through the Fallopian tubes, presumed due to vaginal douching with careless use of a syringe, has been reported by Moberg (1937), and, by the same author in another case, from supposed alteration in intra-abdominal tension secondary to gastric dilatation. This latter patient, an elderly woman with carcinoma of the pylorus, was in the habit of adopting a stooping position to provoke vomiting, and Moberg considered that she produced an unusually low pressure in the peritoneum with subsequent suction of air through the Fallopian tubes. Dr. T. N. MacGregor informs me that it is unusual to require a pressure exceeding 4 cm. Hg for artificial inflation of the Fallopian tubes, and that he considers spontaneous suction of air through the vagina very unlikely. Only one of my patients (Case III) had been using vaginal douching for leucorrhoea before the occurrence of her symptoms, and the recurrence of distension in her case makes it quite obvious that this could not have been the source of her pneumoperitoneum. It is nevertheless odd that almost all the reported cases should have been in women. An exceedingly rare cause of intraperitoneal gas is so-called "pneumatosis cystoides peritonei," which is due to infection by parasites.

Lastly, at least one case has been recorded (Hinkel, 1940) in which pneumoperitoneum was thought to be the result of an extension of gas from the thorax to the peritoneum by way of the diaphragmatic hiatus. His patient, a woman aged 70, had sudden symptoms of abdominal distension and tenderness, without severe constitutional symptoms and without fever. She was discovered to have an old left basal pleurisy with a high left dome of the diaphragm, and a bronchogram showed, just above the diaphragm and close to the heart shadow, a large emphysematous bulla which was considered to be the probable source of the gas.

The case reported by d'Allaines is the only one I can find in the literature which bears a close resemblance to Case III, reported here as having had severe symptoms without any definite evidence of perforation at operation. d'Allaines suggested that the explanation in his case lay in a perforation of the stomach so minute and so close to the oesophageal opening as to be inaccessible to observation. He recalled one patient of his, with a perforation on the anterior wall of the stomach just beneath the diaphragm, who gave a history suggesting an escape of gas preceding the appearance of the actual peritonitis by several days. He recalls, in support of his explanation, the fact that many surgeons have observed perforations to heal satisfactorily after laparotomy in which no procedure was undertaken except that of drainage of the peritoneal cavity.

### Summary

Three cases of free gas in the peritoneum without evident peritonitis (pneumoperitoneum) are reported, all presumed due to minute perforations of stomach or duodenum.

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## Medical Memoranda

### An Unusual Case of Meningococcal Meningitis

The occurrence of two attacks of meningococcal meningitis in the same patient within a short period seems worthy of record. The case is one of a series of 30 severe cases of this disease in which there were four deaths (two moribund on admission).

#### FIRST ATTACK

The patient, a pagan private aged 25, was of good muscular physique. On admission he was unconscious, with marked signs of cerebral irritation. The general condition showed toxæmia, with temperature 104°. C.N.S.: neck very rigid, incontinence, Kernig's sign positive, knee- and ankle-jerks increased, with bilateral plantar extensor reflex, abdominal reflexes absent. Lumbar puncture yielded turbid fluid under pressure; globulin was increased; centrifuged deposit contained pus cells and scanty meningococci. Two grammes of soluble sulphapyridine were given intravenously, and the same amount four hours later; then 1 g. of sulphapyridine intramuscularly four-hourly. (Total course of 35 g.)

Two days after admission the breathing became distressed, with moist rales in both lungs and patchy consolidation. Recovery took place from this hypostatic pneumonia. Five days after admission the patient suddenly became unconscious and had repeated convulsions. Spasmodic twitching began in right facial muscles, with conjugate deviation of eyes to left. The spasm spread to the muscles of the upper and lower limbs on the right side, finishing with conjugate deviation of eyes to right and spasms of the left side of the body. Convulsions ceased after one hour, and further recovery was uneventful. Lumbar puncture gave clear fluid; no increase in globulin, cells 7 c.mm in centrifuged deposit. No micro-organisms seen. The patient was discharged fit on March 1 (21 days after admission). He had no complaints and was ambulant during the last 12 days. He returned to full duty.

#### SECOND ATTACK

The patient was readmitted on March 27 complaining of headache and pain in the back of the neck for 24 hours. Condition on admission: temperature 103°; neck rigidity marked; Kernig's sign positive; knee, ankle, and abdominal reflexes absent; plantar reflexes not obtained. Lumbar puncture yielded cloudy fluid under pressure; marked increase of globulin; pus cells and meningococci present in centrifuged deposit. Soluble sulphapyridine, 2g., was given intravenously, and sulphapyridine, 1 g. intramuscularly, every four hours (total course of 53 g.).

Sixteen days after admission patient was afebrile and ambulant. On the 17th day he complained of weakness on the right side of body. The temperature was 100.8°. There was right facial palsy with general loss of tone and power of the muscles of right upper and lower limb. Pupils reacted equally to light and accommodation and were equal in size. Movements of the tongue were unaffected. Hearing and vision were normal. Reflexes were generally sluggish except for increased abdominal reflexes on the left side.

His general condition deteriorated, with increasing right-sided weakness and increasing neck rigidity and a positive Kernig's sign. White cell count showed a leucocytosis of 17,000 with 70% polymorphonuclears. Lumbar puncture: turbid fluid with increase of globulin, pus cells, and scanty meningococci in deposit. He was transferred to another hospital so that further investigations could be carried out. Death took place shortly after transfer. Post-mortem examination disclosed a superficial cerebral abscess over the left temporal lobe. Direct smear showed scanty meningococci.

I am indebted to Major P. E. Rees-Davies, officer commanding, for permission to publish this case.

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## Reviews

### OCCUPATIONAL THERAPY

*The Rehabilitation of the Injured. Occupational Therapy.* By John H. C. Colson. Foreword by E. A. Nicoll, M.D., F.R.C.S.Ed. (Pp. 226; illustrated. 15s.). London: Cassell and Co. 1944.

The ideals and aims of rehabilitation have been reiterated *ad nauseam* in all sorts of places and on all sorts of platforms. It is, as Lord Horder has said, a subject so much in the air that it is in danger of remaining in the air, and any contribution that brings it down to earth is to be welcomed. The present volume certainly does that. It is, we are told, the first of a series of books which the author is writing under the general heading of *The Rehabilitation of the Injured*; and occupational therapy is dealt with first, not because it is more important than its stable companions—remedial exercises, recreational therapy, and physiotherapy—but because it is the one about which there is the greatest dearth of practical guidance.

The author treats his subject, not from the diversional standpoint but as a disguised form of remedial exercise used for the re-education and redevelopment of specific muscle groups and the mobilization of specific joints. The disguise takes the form of purposive movements with a creative interest, and in his interpretation of the latter the author is not fettered by over-artistic tendencies. A well-scrubbed lavatory floor is as much an object of beauty to the man who has scrubbed it as an exquisitely woven scarf of many colours—or so it would be in any department over which Mr. Colson held sway.

The basic principles of remedial exercises are expounded in an early chapter, and it is shown how these can be preserved in occupational therapy. The next section deals with a variety of handicrafts, each of which is discussed under three headings: (1) "Remedial Use," which deals with indications, aims, craft analysis, and remedial application; (2) "Craft Technique," which gives clear working instructions for those who wish to learn the occupation; (3) "Constructional Work," which amplifies the previous section. This arrangement of material makes the book extremely useful to the busy surgeon who wishes to acquaint himself with the principles of occupational therapy but has neither time nor desire to wade through a mass of technical detail. The crafts chosen are simple enough to be learned by short-term patients, and most of them are within the compass of the dull and the "ham-handed" as well as the intelligent and dexterous, a point not always sufficiently appreciated. In the section on weaving several ingenious looms are illustrated. These are adapted respectively for knee, ankle, shoulder, forearm, and finger cases. Finally, there is a description of the author's "universal" loom, which, despite its almost frightening resemblance to a prehistoric Wurlitzer organ, manages to incorporate the remedial possibilities of all the lot.

There is a special chapter on woodwork, with a section devoted to various outdoor and indoor occupations ranging from simple domestic chores to really heavy timber work suitable for the final stages of hardening. This attitude towards occupational therapy is refreshing, and should go far towards removing the doubts of those surgeons to whom it is still "something rather arty-crafty, more suitable for old ladies with Colles's fractures than for miners with broken backs." The quotation is from the foreword by Mr. E. A. Nicoll, who goes on to confess that for his agnosticism he was compelled to sample each occupation in turn, and thereby found himself successively qualified as a farm labourer, a handicraft worker, and a domestic servant.

This book is clearly written and well illustrated. It has a practical and original outlook, and deserves to be read not only by occupational therapists but by every surgeon who is responsible for the treatment of injuries.

### BIOMICROSCOPY OF THE EYE

*Biomicroscopy of the Eye. Slit-lamp Microscopy of the Living Eye.* By M. L. Berliner, M.D. Vol. 1. (Pp. 709; illustrated. 84s.) London: Hamish Hamilton Medical Books.

Slit-lamp microscopy of the living eye is essentially the work of Alvar Gullstrand, who by 1911 had evolved the necessary apparatus, and of Alfred Vogt, who in ten years between 1920

and 1930 had mapped out the field so thoroughly that contributions by other observers have added little of fundamental significance—an achievement almost unique in the history of ophthalmology. It is fortunate that before his passing Dr. Vogt had succeeded in completing the third and final volume of his monumental treatise on the subject. The three-volume treatise is nominally the second edition of a single volume published in the early 'twenties, an English translation of which appeared at the time but is not readily available. Apart from that translation English literature has so far had to be content with a translation of a book by Kobayashi and the *Illustrated Guide to the Slit-lamp* brought out by Harrison Butler in 1927. Perhaps owing to the lack of an adequate text slit-lamp microscopy in this country and the United States has not occupied the place to which it is entitled in clinical ophthalmology. The one outstanding contributor to the subject in this country has been Mr. Basil Graves, and it is gratifying that in this new and sumptuous treatise full recognition is given to his pioneer efforts and substantial contributions.

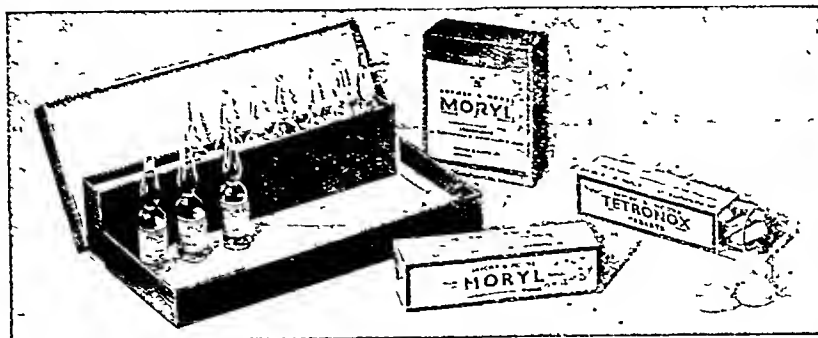
Dr. Berliner has produced one of those rare books that profoundly influence clinical practice. Here, for the first time in English, is an adequate presentation not only of the technique of slit-lamp microscopy but also of slit-lamp appearances and the effect that this knowledge has had in clarifying clinical pictures. The present volume deals essentially with the conjunctiva and cornea, discussion on the lens being reserved for the second volume, which is still to come. How significant biomicroscopy has become in clinical practice is well shown by the successive chapters on the cornea. Here the English reader can at last find something like order in the chaos that passes for an account of corneal lesions in the standard text books. Dr. Berliner has wisely avoided loading his text with illustrative individual cases, and has presented his material in a systematic fashion in clear and crisp English. The lavish use of photographs, sketches, and colour plates make for easy reading in what is to many clinicians a relatively unfamiliar field. Perhaps the most pleasant feature of the book is that nowhere are the findings presented as esoteric knowledge divorced from the day-to-day work—a pitfall only too apparent in many individual contributions in periodical literature. The present volume concludes with a chapter on gonioscopy by H. S. Sugar. This derivative of slit-lamp microscopy has received hardly any attention in this country, and Dr. Sugar's factual account, drawing on a mass of personal observation should help to popularize a method which is giving excellent results in the hands of our American colleagues.

From the point of view of the English reader there is one criticism which might perhaps be met by Dr. Berliner in preparing subsequent editions. There are so many models of the slit-lamp on the market that for geographical reasons different types have established themselves in different countries. Dr. Berliner does well to describe fully the original Gullstrand technique, for, as he points out, this was the basis of all further work. The early Zeiss model is still widely used in this country and has many advantages over some of the later and more rigid types. Some account of this model would be helpful to many ophthalmologists.

### INFANT PSYCHOLOGY

*The Rights of Infants.* By Margaret A. Ribble, M.D. (Pp. 118. 51s. or 11s. 6d.) New York: Columbia University Press; London: Oxford University Press.

From a long study of psychological problems in adults and children, concluding with observations on 600 normal newborn babies in three different maternity hospitals in New York City, Dr. Margaret A. Ribble has written a fascinating monograph *The Rights of Infants*. Her subtitle, "Early Psychological Needs and their Satisfaction," is a good description of the subject-matter of the book. Although Freudian views are frequently expressed, and the author explains that during part of her studies she worked with Anna Freud, there is a clear-sighted common-sense about Dr. Ribble's writing which puts Freud's contributions to psychology in proper proportion, and she more insight into the modern mother's everyday problem than many a theoretical expert has usually shown that he she possesses. Chapters on "learning to feel" and "getting



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ready to think" are particularly good, and there is a section on "fathers" which might well have been longer. An early chapter on "oxygen hunger" is less convincing, for it does not seem to be entirely based on modern physiological facts. There is a good bibliography and a better index than short monographs of this type usually contain. Psychologists and paediatricians will find much valuable information and many stimulating ideas in these pages.

## Notes on Books

There are certain matters, or particular aspects of a subject, which are most suitably dealt with through the medium of articles in appropriate journals rather than by the more substantial and permanent publication of a book, and this we feel applies especially to *The Surgery of Abdominal Trauma*, by Mr. GEOFFREY E. PARKER (J. and A. Churchill; 10s. 6d.). This short book constitutes a record of the author's experiences in abdominal military surgery obtained in North Africa and Italy, together with case summaries of 94 such cases. So far as general principles go the author agrees with the many writers of surgical articles which have already appeared in this *Journal*. In the case records he has critically examined the conduct of the cases and pointed out with commendable frankness where the treatment adopted might have been further improved. The over-all recovery rate of 66% is, as Col. J. M. Weddell points out in a foreword, a very creditable record, and shows that the methods advocated in the handling of these serious cases can be safely followed by newcomers to this branch of surgery.

The 1943 issue of the *Year Book of Industrial and Orthopaedic Surgery* (Year Book Publishers of Chicago; \$3.00) lives up to the high standard set by Dr. CHARLES F. PAINTER in previous editions. A wide range of subjects in the fields of traumatic surgery and orthopaedics is covered, and the concluding section deals with industrial medicine and surgery. Many new developments in orthopaedic surgery are covered. The editor presents a brief précis of each article with the minimum of editorial comment. This may sometimes tend to give a wrong impression: for instance, two favourable accounts of the Sister Kenny treatment of poliomyelitis are included, and the impression might be gained that informed opinion in the U.S.A. is in favour of the method. As is essential in orthopaedic subjects, the text is illustrated by a large number of good x-ray pictures and diagrams. The general lay-out is pleasing and the book is of a convenient size. It can be recommended to orthopaedic surgeons and others as a convenient summary of current orthopaedic articles which have appeared in the medical press recently; but once again we have to add with regret that this volume, like too many of the other Chicago *Year Books*, is not obtainable through Messrs. H. K. Lewis in London, and is said to be already out of print in America.

Mr. C. E. VULLIAMY is well known to many as the ingenious and learned author of two historical cocoos that satirized the Victorian age. He continues the pursuit in a new book *Doctor Philligo* (Michael Joseph Ltd.; 12s. 6d.). Once more he has "had access" to a private journal and reproduces passages from it, with an introduction and explanatory notes, and a portrait (dug up, we suppose, from some old photograph album) which professes to be that of John Arthur Sedley Tobias Philligo (1838-1915), who practised in and around the Cotswold village of Dropwater for 37 years. The parts of the journal "chosen for publication" cover the period 1887-1902 and they purport—very artfully—to record the day-to-day experiences and opinions of an odd but orthodox country doctor in the later years of Queen Victoria's reign, who had been educated at Harrow, Trinity Hall, and St. Bartholomew's. Those who relished *The Polderoy Papers* will enjoy this equally elaborate sequel. Mr. Vulliamy's fun is sedate. He draws his imagined characters and happenings against a careful background of social and political history in the larger world beyond Dropwater and the circle of Dr. Philligo's friends and family.

*Facio-Maxillary Injuries*, by KENNETH W. STARR, F.R.C.S., and A. J. ARNOTT, D.D.Sc., is reprinted from the *Dental Journal of Australia*. The authors of this small volume of some 70 pages have made a clear and concise condensation of their personal experience in facio-maxillary injuries while attached to the 113th Australian General Hospital. The book will be of interest to all surgeons and dental surgeons who have this highly specialized work to do, for the authors have been able to draw on the experience and teaching of all the large centres in this country. Though much of the detailed dental technique is missing the general principles are well stated and illustrated. The section on tissue replacement and the use of chip grafts deserves special mention.

Dr. A. H. DOUTHWAITE has once more taken charge of *Hale-White's Materia Medica, Pharmacy, Pharmacology and Therapeutics* for its 26th edition (J. and A. Churchill; 14s.). This very popular manual, first published 52 years ago, now reaches its 130th thousand. Dr. Douthwaite notes in his brief preface that the rapid extension of pharmacological research, especially in relation to the sulphonamides, anticoagulants, hormones, and penicillin, has necessitated some increase in the size of the book, which has been thoroughly revised; but in fact only 30 pages are added, and the price is unchanged. The new edition contains all the therapeutically important drugs described in the Fifth and Sixth Addenda to the *British Pharmacopoeia* and many references to monographs in the *Supplement to the British Pharmacopoeial Codex*. Near the index, which has been progressively enlarged, is a list of drugs not essential in wartime or in which strict economy should be exercised because they are scarce.

*The Advancement of Science*, Vol. III, No. 9 (British Association, Burlington House, London, W.; price 5s.), is largely made up of the report of the Committee on Post-war University Education, which has already been published in separate form. The other contents include "Notes on Museums," by Dr. Alma S. Wittilo and Sir John Myres, and an article on "Science in the U.S.S.R.," by the Soviet Academician Alexander Fersman. Dr. O. J. R. Howarth, secretary of the association, supplies some notes on its organization and future.

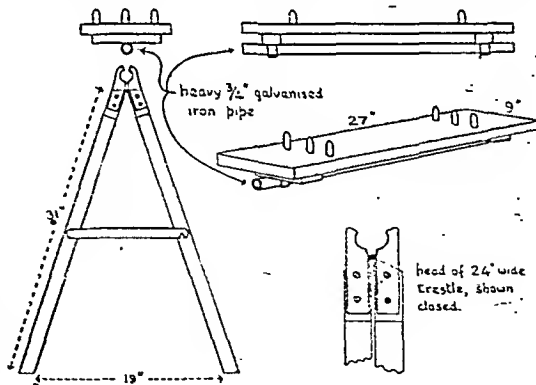
## Preparations and Appliances

### ROCKER FOR ARTIFICIAL RESPIRATION

Dr. C. W. HOPE-GILL (Billingshurst, Sussex) writes:

I have been so much struck by the efficiency and simplicity of design of a device for the carrying out of the rocking method of artificial respiration that I feel it deserves further publicity. The device has been constructed by Mr. A. G. Hampshire of the Billingshurst C.D. Rescue Party (leader, Mr. A. Smith), and consists of a rocker and portable trestle for use with standard C.D. stretchers.

Details of the rocker are shown in the accompanying diagrams, which were executed by Mr. A. R. Bielby, a member



of the party. The rocker is provided with six pegs spaced so as to engage with the mesh of a C.D. stretcher. The pegs are of 3/4-in. dowelling and project 1 1/2 in. above the rocker. The centres of the outside pegs are at corners of a rectangle 17 1/2 in. x 6 1/2 in. At each end of the head of the trestle 1 1/4-in. iron plates are attached to form cups which hold the rocker securely when the trestle is erected.

In use the patient is firmly fastened to a stretcher while artificial respiration by Schäfer's method is applied. Meanwhile the trestle and rocker are erected, the rocker being placed in a horizontal position. The stretcher is then lifted and placed on the rocker. The pegs engage easily in the mesh of the stretcher and no further securing is necessary. Artificial respiration is continued without a break by the rocking method. The pegs are smaller than the square meshes of the stretcher. This ensures ease of mounting the stretcher on the rocker, and can be used to give the jerk usually considered desirable at the end of each stroke.



## BRITISH MEDICAL JOURNAL

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## RELIEF AND RECONSTRUCTION IN EUROPE

When the last war ended in November, 1918, an organization which supplied relief to Belgium and occupied France had been working for four years. Some two months were wasted in a struggle for control before the Relief Administration was set up, and further disputes delayed the relief to Germany promised by the terms of the Armistice; but observers were studying conditions in Europe, and ships had sailed with supplies in December, 1919. Hoover, who became Director-General of the Relief Administration, had four years' experience as Director of the Commission for Relief in Belgium and authority as Food Administrator in the U.S.A. This time preparations were begun early. In September, 1941, a meeting of representatives of the Allies at St. James's Palace agreed to set up a committee, under the chairmanship of Sir Frederic Leith Ross, to frame estimates of the amounts of materials that would be needed by the Allies. Over a year ago this committee submitted its estimates of the supplies required for a thorough reconstruction of Europe. After seven months of negotiation the agreement to form the United Nations Relief and Rehabilitation Administration (UNRRA) was signed on November 9, 1943, by the representatives of 44 United and Associated Nations. The objects specified were: to supply food, clothing, and shelter; to aid in the prevention of pestilence and in the recovery of health of the people; to arrange for the return of prisoners and exiles; and to assist in the resumption of urgently needed agricultural and industrial production and the restoration of essential services. The last two objects included the supply of seeds, tractors and livestock, raw materials, machinery, spare parts, and processing materials. This Administration makes use of the existing Boards both to obtain supplies and to control shipping; it has had no power to arrange production to meet estimated needs. Nor will UNRRA deal directly with relief in its early stages, as did the Relief Administration in 1919. After the first stages of military operations relief will be administered by Civil Affairs under military authority for a period estimated, provisionally, as six months; UNRRA appears to act as a middleman.

It has been extremely difficult to get an estimate of the degree of scarcity in Europe. We have known that even in Western Europe the rations supplied too few calories and that these rations could not always be obtained, though they have been supplemented by food from markets of varying shades of blackness. Since the Allied Armies entered France there has been a tendency to underestimate the scarcity of food and its effects. Soldiers have seen abundance of foods which are scarce in England, such as butter, in producing areas in which they accumulated owing to breakdown of transport; they have been entertained by hosts who brought out their reserve stocks of

food to celebrate their liberation. Many country districts are well nourished, and in Paris encounters with prominent patrons of the black market have given reporters a false impression of the nutrition of the population. Actually most people in the larger towns have lost 10 to 20 lb. in weight, children are thin and pale, and there is no reason to doubt the increase of tuberculosis. The great difficulty is transport: much of the rolling stock is unfit for use, and hundreds of railway bridges have been destroyed; repairs are delayed, as materials and engineers are needed for military operations. The 2½ million inhabitants of Paris need some 2,000 tons of food a day, even in concentrated forms before the war 6,000 tons were brought into the city daily but at the end of September the total daily supply was only 1,500 tons. The milk supply had fallen to one-fifth of the pre-war level, and no dried or condensed milk has so far been provided. Those who can, cycle out into the environs of the city on Saturday and come back laden with vegetables. Prices are high: a simple meal in a modest restaurant costs 300 francs, while an ordinary worker gets about 3,000 francs a month. In southern France milk has been scarce; in Marseilles the bread ration at the end of September was raised to 200 grammes per day, which is only some three-quarters of the amount eaten per head in England, where bread makes up much less of the diet. It is said that there is enough food in France if it could be transported; but the adequacy of the supplies must be a matter of conjecture until communication is re-established.

In Italy conditions are far worse. The Germans tore up the railway lines and removed the rails. The transverse lines needed for bringing food from the interior have not been repaired. Many villages have been razed and all power stations have been destroyed. With no goods offered to them in exchange and a Government without power or popular support, peasants will not surrender the food they produce. The aid promised by UNRRA—medical care, care for children and pregnant women and displaced persons—does not go to the root of the trouble. In the discussion about sending relief to Italy it was stated that the infant mortality rate in Rome had risen to 500 per 1,000; the Yugoslav representative replied that the rate in Dalmatia was 800. Actual production of food in Yugoslavia is hopelessly insufficient; few peasants are left to till the fields. Livestock have been taken and crops destroyed; the Germans have compelled the peasants to grow industrial crops in place of food. The people are eating bread made from acorns and using the cobs of the ears of maize. Sentries are dying of starvation at their posts. The Greeks have been in an exceptional position, as in peacetime they imported nearly one-third of their grain—about half a million tons of wheat. Their home production has fallen, and such supplies from outside as have been allowed have not been up to their pre-war imports. Of Poland we know little except that the Germans have taken large levies of food and are scorching the earth as they are driven back.

A large amount of food will undoubtedly be needed for relief; there should be enough grain to supply calories; but even in France animal products will be scarce because livestock have been killed off. Any stocks that have

accumulated will not be enough to make good this scarcity; the greater part of the animal products supplied as relief must come out of current production. Without some reduction in consumption in Great Britain and the USA the quality of the food supplied may be no better than after the last war, when the dinners provided for children contained no animal products besides lard and under a pint of milk during a whole week.

Even when the fighting stops the greatest difficulty everywhere will be transport. It is estimated that some 20 million people will want to return to their homes. They will throw an extra strain on a crippled and overworked transport system, if their migrations are not organized and controlled they will upset the rationing system of any areas through which they pass and carry with them the danger of epidemics. These dangers have not been forgotten, but no schemes for meeting them have been published. It is reported that the only connexion that UNRRA will have with Germany will be in repatriation of nationals of the United Nations who have been forced to work in that country, and bringing relief to those who favoured the allied cause or are in concentration camps. Whatever policy towards the people of Germany may be adopted in the end, the people of surrounding countries cannot be indifferent to the danger of epidemics among a population lacking housing, fuel, soap, and food. It is probable that in the end some hasty expedient to supply relief to the Germans will be adopted for sanitary reasons.

The great fault at the end of the last war was that large-scale official relief ended prematurely in the summer of 1919 food, clothing, and medical stores were supplied, but little was done to revive production in Europe. UNRRA, by its terms of reference, is limited to meeting urgent needs, and it is questionable how far its funds will do even this. The proposed industrial rehabilitation may be excluded and the agricultural programme cut down. At the second meeting of the Council of UNRRA in September members stressed that temporary relief and *ad hoc* rehabilitation will not restore Europe. The Council has drawn the attention of Member Governments to the need for providing further means for continuing rehabilitation. Seeing that one and a half years elapsed between the meeting at St. James's Palace in 1941 and the appearance of the first draft of the UNRRA agreement, and that a further seven months passed before the final version of the agreement was accepted, there is a danger that this recommendation has come too late.

### THE HARVEIAN METHOD IN LITERATURE

In Harvey's time the Royal College of Physicians restricted its influence to a circuit with a radius of seven miles from London. Such parochialism is impossible to-day, and it is significant of the increasing part which the Provinces are expected to play in the work of the College that for the first time the Harveian Oration should have been delivered this year not in London but in Manchester, where Sir Edmund Spriggs chose for his title "The Harveian Method in Literature". The reason for the change of place was the Government's request that meetings should not be held in London under the conditions then prevailing. As the roll

of orators mounts up through the centuries the difficulty of a fresh approach to the subject of Harvey's work increases, and we congratulate Sir Edmund on having found one. Much has been said and written on literary doctors, but to trace the influence of scientific thought on general literature is a novel and, as it proves, a fruitful idea. Harvey as a man of his time was not entirely freed from the bonds of scholasticism, as passages in his *de Generatione* show. It was one of Osler's profoundest remarks that we all drag about with us the chains of errors in which we were originally trained. Nor is it surprising that Harvey's discoveries were unpalatable to his contemporaries, for, as Wilfred Trotter said, there can be no approach to truth without a threat to one's personality, the individual world we build up dislikes interference. It is therefore to Harvey's credit that he followed as far as he could a method which the orator defined as "the use of observation and experiment guided by knowledge and by thought." Bacon was rather the preacher and Harvey the doer of the word. Sir Edmund went on to claim that a gradual approach to more truth in literature can be traced after Harvey's time. Imaginary romances began to be replaced by studies of real incident and of human nature, and on many later writers an influence came from those who had some scientific knowledge, not a few of whom had been medical students or practitioners. The study of natural law affects all mental processes, including observation, order of thought, self-criticism, and judgment. It will lead a writer to be true to physical facts and conditions. It will make him consider whether, in unfolding any human problem, he has looked around for adequate control observations before displaying the trend of his judgment or opinion. And of this thesis copious illustrative examples were given, supporting the speaker's view that even the novel and the poem acquired a more solid foundation with no detracton from beauty of expression or play of thought.

A particularly interesting part of Sir Edmund's oration was his study of pessimism in literature, several distinguished writers seem to have been led by the objective methods of science to a state of more or less misery, though they did not always live up to their doctrines, often "facing one way and rowing the other." Such unhappiness of outlook may be temperamental, or due to an unfortunate childhood or to ill-health. The attempt to know or deny what scientific method can neither assert nor exclude brings to some intellectual and sensitive persons a frustration, which is hardly reasonable though it may excite our sympathy. Because they cannot know all, they are tempted to say all is vain. It was, by the way, the medically trained Keats who recognized that one of Shakespeare's greatest characteristics was his capacity for "being in uncertainties, mysteries, doubts, without any irritable reaching after fact and reason." It is foolish to ply the universe with questions to which no answer could be given within our comprehension. As Sir Edmund phrased it, "the cure is not to fix one's goal too rigidly beforehand, but to subject oneself to experience. One's world can indeed be shattered to bits by trying to mould it nearer to the heart's desire." And he went on to point out to the pessimists that "it is unscientific to draw conclusions

from the morbid without taking into account control observations upon a large number of average people. Reality is opulent, various, and vital; deformity, mental or physical, is not the rule, and the aim of Nature is not death, but life." It is to the credit of medical authors that, though dealing with disease in their daily work, they have generally realized this fact. As our readers were reminded last week, Robert Bridges deliberately underwent a medical training because he believed he would be a better poet by practising a profession which brought him into contact with human life. "In general," said Walter Bagehot, "an author is out of the way of employing his own eyes and ears." This remark leads to the very crux of the Harveian method. Indeed it is abundantly clear that the scientific attitude has had profound influence upon literature and all human thought. After Harvey, we may add, Isaac Newton's discoveries coloured the whole thought of the eighteenth century, just as Darwin did in the latter half of the nineteenth, and as Freud is doing to-day. Conceptions of evolution and of the working of the unconscious mind are to be met with in every form of literature.

By this oration Sir Edmund Spriggs takes his place in the distinguished roll of scholar-physicians, a roll which must ever increase if, undazzled by technical advances, medicine is to retain its position as a humane and learned profession.

### SHAW VERSUS MEDICINE

"He who can, does; he who cannot, teaches," wrote Mr. Bernard Shaw in his revolutionary days, and for the past sixty years he has been teaching and preaching at a good-humoured English public who have richly rewarded him for the amusement he has provided them. For the past 38 years hundreds, perhaps thousands, of doctors have cheerfully handed in their money at the box office in order to get a good laugh out of *The Doctor's Dilemma*, quite unperturbed by the attack made by Shaw upon the medical profession, because it was very plain that he did not understand the nature of a doctor's work. Whatever else he has learnt in order to try to teach others, he seems to have learnt one lesson—that of humility; and it is the absence of this quality in his recent book which has annoyed some of his reviewers. Since the publication of *The Doctor's Dilemma* in 1906 Mr. Shaw seems to have confirmed himself in his own ignorance of medical matters, and now abuses the great position he holds in the public life of this country by misrepresenting facts. "Men," he writes, "have submitted to castration . . . but compulsion of everybody willfully to dangerous blood poisoning repeated for every virus discoverable by the new electron microscope, to sterilization, to extirpation of the ovula and tonsils, to birth delivery by the Caesarean operation, to excision of several folds of the bowel and of the entire appendix, to treatment of syphilis and malaria by doses of mercury and arsenic, iodine, and quinine, all of which have been advocated by eminent physicians and surgeons, and some of them legally enforced to-day. . . ." This suggestion of compulsion is not true of medicine in this country. He says of the modern treatment of venereal disease, presumably meaning the treatment of gonorrhoea by sulphonamides and penicillin, "There is the gravest doubt as to whether the prescribed treatment of venereal disease is not mischievously mistaken." Of salvarsan he observes, "The truth was that it combined mercury with arsenic": the truth is that mercury does not enter into

the composition of salvarsan. Mr. Shaw goes on, "When as in the case of syphilis, the suppressive agent is a malignant poison, it is strongly held in certain quarters that the terrible secondary and tertiary recurrences of the worst symptoms are not the disease at all but the specific effect of the poisons with which it has been treated." Our surgeons he observes that "scepticism as to the utility of drugs is shared by surgeons. They use drugs only to produce temporary insensibility to pain." This remark shows the extent of Mr. Shaw's ignorance of modern surgery. Mr. Shaw brings up again his old bugbears of vaccination and vivisection, and, as he apparently wishes to be seriously considered as a statistician, we have invited the foremost medical statistician of the day, Prof. Major Greenwood, to examine the statistical exercises of an amateur (see page 570 this week). Some insight into the emotional basis of Mr. Shaw's ratiocination is provided by his statement, "Of all legalized tyrannies none is more unbearable than those which lay violent hands on us and our children and inject poisons into our veins or thrust them down our throats." Mr. Shaw thinks that Isaac Newton wrote nonsense when he passed from mathematics to theology; it is possible that Mr. Shaw is not intellectually so much greater than Newton that, when he puts play writing aside and turns to pathology, he can write good sense.

### "CHILD SPACING"

In 1925 Robert Woodbury, then director of statistical research in the Children's Bureau, U.S. Department of Labour, published a monograph entitled "Causal Factors in Infant Mortality, a Statistical Study based on Investigations in Eight Cities." The conclusion he reached was that "infants born after short intervals had a marked high rate of mortality from all causes. Evidently some factor that is intimately connected with the short interval—perhaps through the influence of frequent births upon the mother's health—affected adversely the chances of life of the infants who followed closely after preceding births. In round figures, infants born after an interval of but one year after the preceding birth suffered a mortality rate 1 times that of infants born after an interval of two years or more. Dr. Nicholson J. Eastman<sup>1</sup> believes that this monograph has had more influence on the pattern of planned births in the U.S.A. than any half-dozen other publications. He describes Woodbury's monograph as a reserved and scholarly study, largely objective in character. Though Woodbury made no suggestion as to what might be done to reduce infant mortality in the short-interval group, those interested in the furtherance of birth control were quick to acclaim this publication and draw their own conclusions; indeed, this monograph has become the corner-stone of contraceptive practice and of the "child spacing" now so readily advocated by the medical profession. The facts and conclusion of the Woodbury study have even been spread abroad by the *Readers Digest*.

Because of the wide influence of this monograph Eastman felt that it would be wise to review that portion which dealt with the short-interval problem. This he has done, and has in turn presented a careful analysis of a further 38,000 obstetrical cases. Though he does not question the accuracy of the figures in the Woodbury study, he shows that the usual interpretation has been false in one important aspect. Eastman divided his cases into four groups according to the interval since the last delivery: these were—very brief (less than 12 months); brief (13–24 months); moderate (25–48 months); and long

<sup>1</sup> *Amer. J. Obstet. Gynec.*, April, 1944.

(more than 48 months). The stillbirth and neonatal death rate was much higher in the "very brief" group than in the three other groups, largely confirming Woodbury's data. At first sight this might be interpreted as wholly due to the short interval between births; on further examination, however, the fallacy of this argument was apparent. If a full-time child is to be born within a year of the preceding birth there are only three months available for conception; in contrast, there are five months and eleven months respectively in which conception may take place if a premature birth or abortion is to occur. In other words, one would expect the incidence of premature labour and especially abortion to be disproportionately high in this group; this is borne out by the data.

Eastman's analysis is careful and exhaustive, and his conclusions are of the greatest importance to those who have the welfare of the community and of its mothers at heart. He believes that the following conclusions are clear-cut and inescapable:

"(1) Infants born from twelve to twenty-four months after a previous viable delivery (that is, during the second year) have at least as low a stillbirth and neonatal mortality as do infants born after longer intervals. (2) The longer the interval between births the more likely the mother is to suffer from some form of hypertensive toxæmia of pregnancy. The incidence of this complication is lowest when the interval is twelve to twenty-four months, significantly higher when it is twenty-four to forty-eight months, and much higher when it exceeds four years. In the present study this was equally true of white and coloured ward patients and of private patients. (3) In patients who have had a previous hypertensive toxæmia of pregnancy, the likelihood of repetition becomes progressively greater as the interval becomes longer. (4) The incidence of the following conditions is no greater when the interval is twelve to twenty-four months than when it is longer: premature labor, anaemia, post-partum haemorrhage, and puerperal infection; nor are mothers in this brief interval group less able to nurse their babies. The weight of the mature babies was approximately the same regardless of the interval."

He believes, and has shown without reasonable doubt, that the high stillbirth and neonatal rate in the "very brief" group is largely due to a much higher proportion of abortions and premature births than occurs in the other groups. Though the time factor is chiefly responsible for the high incidence of abortion and premature labour in this group, he does not exclude the possibility that other influences may play a part. The data suggest that pregnancies conceived within five months of childbirth do show a slight increase in the incidence of premature labour. Perhaps more important, he believes that in recommending birth spacing for the health of the mother and infant the medical profession may be overlooking the greatest talisman that pregnant women can possess—namely, youth. Child spacing means maternal ageing, which, after an optimum age (probably in the early twenties), inevitably means a slightly higher risk to the mother and child.

### THE NURSING OF TUBERCULOSIS

The nursing of tuberculosis is a more complicated art than it used to be. No longer are sanatoria merely rest homes in the mountains. The modern hospital for treating pulmonary tuberculosis carries on much acute surgery, and a corresponding advance is needed in the skill of ward sisters and nurses. A report by the Tuberculosis Association and Joint Tuberculosis Council presents the situation—a difficult one—as it confronts both professions to-day. Some 8,000 nurses are needed for the 25,000 beds used in the treatment of pulmonary tuberculosis, and there is a serious deficit of likely candidates. Yet, according to

this report, the risk of tuberculous disease in sanatorium nurses is no higher than among general hospital nurses. Although there is a widespread belief that a girl should not enter a tuberculosis hospital under 21, the committee feels that 21 is no safer an age than 18. Supervision and early detection of the symptoms of disease (particularly of Mantoux-negative nurses) is more likely to take place in a sanatorium than in a general hospital, and is, of course, infinitely more feasible for nurses than for girls in industrial life. The joint committee proposes changes in the education of nurses for this branch of work. The Tuberculosis Association certificate is generally recognized as the hall-mark of postgraduate study, and the committee thinks holders of this certificate should obtain State recognition in the form of a supplementary register. In this they would have a status corresponding to that of fever trained nurses, who are entered in a special section of the *Nurses Register*. Failing a State register, the committee recommends that holders of the Tuberculosis Association certificate should be allowed to use the title "tuberculosis nurse." There is everything to be said for a system of training and education which encourages members of the nursing profession to go in for this neglected branch of work. The opportunities for an intelligent nurse in the treatment of tuberculosis to-day are wide. She need not fear that any of her gifts will remain unused. The phobia of infection remains, and we hope this report will make it more widely realized that the nursing of tuberculous patients, conducted under conditions proper to a sanatorium, and with adequate medical supervision of the nurses in the form of x-ray examination and tuberculin tests, is no more dangerous for a girl than the hygienically unsupervised life in a factory or office.

### FITTING THE MAN TO THE JOB

The July-August issue of *Industrial Welfare and Personnel Management*, the journal of the Industrial Welfare Society, includes an article on personnel selection in post-war industry by Brig. J. R. Rees, consulting psychiatrist to the Army. There are many in industry who are anxious to carry into their peacetime industrial groups the techniques of "man-management" and personnel welfare so usefully and satisfactorily employed in the Services. Brig. Rees speaks for the Army and considers there is no more interesting phase of its experience of personnel management, nor one that has greater implications for post-war industrial efficiency, than the methods used to secure the right man for the right job—personnel selection, grading by intelligence, and scientific placing. The Army has shown that if men and women can be fitted into jobs for which they have aptitude, and in which they can be interested and gain pride and competence, they do better and remain fitter than they otherwise would. The Service treatment of the "dullard" group is but one instance. From this group in normal times comes the country's highest sickness and delinquency rate. The Army has found that if dull men, even very dull men, can be properly employed, as a group, on jobs within their competence and under kindly and tolerant supervision, they do first-class work—doing their own particular job much better than intelligent men do, and having a very low sickness and crime rate. Perhaps even more important is the method of choosing key men and women for jobs that require authority and leadership. The Army has put much scientific work and thought into methods for selecting officers. The underlying principle is capable of adaptation for the selection of officers for purposes other than war—including directors in industry.

## MR. SHAW ON DOCTORS

BY

MAJOR GREENWOOD, F.R.C.P., F.R.S.

[As Mr. Bernard Shaw has attacked medicine and the medical profession in his new book "Everybody's Political What's What," we asked Prof. Greenwood to pick out some points for criticism in a review that should help non-medical as well as medical readers to get the matter in perspective.] -

If it is possible for a humane man living in the year of our Lord, 1944, to be happy, Mr. Bernard Shaw should be a happy man. He began life with few material advantages, his earlier writings were consistently and grossly misrepresented; now, in the evening of his days, he is among the half-dozen writers of English universally known and read. Those who disagree most vehemently with many of his opinions will, if they have what Disraeli described as the rare virtue of gratitude, thank him for some happy hours and valuable instruction. Mr. Shaw has never hesitated to denounce other men in the strongest language, not only when he was young and unknown, but now, when he is old and famous. If, in commending upon some of Mr. Shaw's assertions, I forget what is due to a man old enough to be my father, I hope that the Editor will use his blue pencil ruthlessly. Every man is in debt to his profession, but our profession has no need of wounding invective; *non tali auxilio nec defensoribus istis tempus eget*.

We all know that words change in meaning with time; the word *prove* is a good example; once—as illustrated by the saying "The exception proves the rule"—it meant to test or to try; now it means to most of us "to demonstrate the truth of by evidence or argument." In this latter sense we can hardly prove anything intellectually save by a deductive process. I cannot prove there are milestones on the Dover Road to a man who has never left Boston. I can say I have seen them; neighbours of his who have travelled along the Dover Road can say they saw them. If he is a normal being he will accept that evidence, and also believe there are milestones on the Dover Road; but if the existence of those milestones conflicts with some doctrines he believes intensely the testimony of his neighbours would not shake his conviction, nor would the testimony of his own eyes. Few people hold beliefs inconsistent with the presence of milestones on the Dover Road. Many believe that the injection of "filth" or "poisons" into the bodies of healthy children is horrible; Mr. Shaw is one of these people, and no evidence we could produce would shake his belief. All one can do is to try to state a case fairly for the consideration of those whose beliefs are not so vivid; and, of course, one is under two disadvantages. The first is that Mr. Shaw is one of the most accomplished writers of our time; the second, that he is not hampered by regard for dull exactitude of statement. He says himself: "It is always necessary to state a case startlingly to make people sit up and listen to it, and to frighten them into acting on it. I do this myself habitually and deliberately" (p. 49).

The method of Miss Pross applied by a first-rate writer is formidable, because one is easily betrayed into anger. Thus, when we are told that Lister was a half-wit, or read an innuendo that diphtheria prophylaxis has had something to do with the increased prevalence of epidemic poliomyelitis, or—worst of all—a, to me, horrible insinuation that the treatment of venereal disease may be responsible for its signs and symptoms, there is a temptation to play Mr. Shaw's own game—viz., to repay abuse with abuse and by playing it badly to lose the game.

Mr. Shaw writes: "Eminent mathematicians of my acquaintance have gone to Monte Carlo, where, having proved that certain results of spinning the ball on a roulette table could occur only once every thousand years, they saw them occur three times in seven weeks." No mathematician, however eminent, could prove—in either sense of the word—that any result could occur only once in any number of trials; what he could prove (in the modern sense of the word) is that on a particular hypothesis such or such result will on the average occur only once in so-and-so-many trials. If on trial the result happens much oftener—or much less often—than his calculation requires, he will ask himself whether the hypothesis upon which

the calculation was based may not be inapplicable, and will reject the hypothesis if there is an acceptable alternative. Suppose we have a statistically ideal, and very rarely realized, experiment. We have patients all of the same age, sex, occupation, nationality, all at the same stage of a disease, half treated expectantly, half receiving treatment A. Suppose that a statistician fulfilling one of Mr. Shaw's statistical requirements—viz., he must not be a "doctor"—makes the appropriate calculations and finds that if remedy A had no influence the advantage in fatality rate the treated had over the untreated would occur only by "chance" on the average once in a billion trials. Then, if A has a rationally acceptable basis, most people will prefer the hypothesis that treated and untreated groups were not *in pari materia* to the hypothesis that a very unlikely event has happened. At the risk of being pedantically dull, I must stress this point. If treatment A had consisted in sticking a postage stamp (without the knowledge of patients or staff) on half the bedsteads, odds of billions to one would not generate any belief in the therapeutic virtues of postage stamps. Of course astronomically improbable events happen every day. The chance that a pack of cards shall be dealt in any assigned order is the same and less than one in a billion; we suspect a joke or a fraud only if the particular order in which the cards fall suggests design.

Here we have the case for the scepticism of a Charles Creighton. If vaccinia was a different disease from variola, or, as I think we should now say, the viruses had no biological kinship, Edward Jenner was doing something wholly without rational precedent or analogy. Like many book-learned men, Creighton despised the views of the unlettered, and, judged by a Creightonian standard, Jenner was unlettered. Creighton contemptuously dismissed Jenner's observations on the habits of the cuckoo not recorded by learned authors as a tissue of absurdities (they have been verified in our own time), and to him vaccination was also a scientific absurdity. If, therefore, statistics did—in the sense of my comparison—show long odds against the differentiation of the groups vaccinated and unvaccinated being a chance happening, he could not accept a hypothesis that vaccination itself differentiated the groups. He did not adopt so readily the view that the statistics were faked, as Mr. Shaw does—no doubt Mr. Shaw would remind us that Creighton was after all a doctor—but he did not accept their *prima facie* suggestion. All through, the gravamen of his charge was the biological absurdity of the process.

Almost a generation after Creighton's critique of Jenner, Monckton Copeman successfully inoculated a monkey with variola and by inoculation from the monkey produced vaccinia in a calf; later still Mervyn Gordon by cross-immunization found an affinity between variola and vaccinia virus, but none between variola and varicella. So it seemed to most of us, not of course to Mr. Shaw, that Jenner's preposterously false analogy was after all a true analogy—a lucky guess or an intuition of genius. That is why to moderately sceptical people—I have been told that my own department is known as the cold-water department, so perhaps I am not wildly credulous—it is easier to accept the hypothesis that the advantage on paper of the vaccinated is not due to chance.

Mr. Shaw, of course, would agree: he would offer at least two alternatives to "chance." The first—the one I think he prefers—is that the statistics have been deliberately falsified by the doctors; the second, that vaccinated persons have generally been better fed and better housed than the unvaccinated. I will not play Mr. Shaw's game by flying into a temper, but try to consider how such data as those of the Metropolitan Asylums Board hospitals, which monotonously showed in each large age group a much lower fatality rate on the vaccinated than on the unvaccinated, could have been faked. We must believe that the doctors were such masters of prognosis that on the admission of a patient they could tell whether he would die or live, that, however obvious the vaccinal scars on an arm, obvious to the nurses and the patient's friends, they could go on weighing down the scales of the unvaccinated group with well-vaccinated patients doomed to perish. If I favoured Mr. Shaw's vocabulary I should say that only a half-wit could believe anything so silly. The alternative that only well-fed and well-housed people were vaccinated—which dialectically makes hay of the complaint that compulsory vaccination was an odious tyranny

practised on the poor—is not supported by any cogent data and has against it Macdonnell's analysis of Glasgow experience (it is true that a doctor, Brownlee, provided the data, but then Macdonnell was not a medical man, which guarantees his statistical impartiality by Shavian standards).

But Mr. Shaw will still boast that after the introduction of compulsory vaccination there were epidemics of smallpox. It is true that Jenner himself believed, fanatically believed, that no properly cow-poxed person could take smallpox, so that if after compulsion all the inhabitants of England, France, and Germany alive in 1870 had been vaccinated the event proved that Jenner was mistaken. Of course even in Government-fearing Germany many were not vaccinated, and the question is not whether Jenner put his claim too high but whether on the whole, on the average, vaccination has saved lives. Many people have lost their lives in Anderson or in Morrison shelters, but I think when the time for rendering a statistical account comes it will be found that these shelters saved lives. Our gratitude to the inventors will not be diminished even if we find—as we may—that the value of the protection was less than they had hoped it would be. Mr. Shaw is not one of Disraeli's rarities; he is not a grateful person. He agrees that the revolution in surgical practice due to Lister saved many lives, but because Lister overstated a case and did not anticipate discoveries made fifty years later Lister is a half-wit at whom a gentleman who is not known to have saved any lives may point the finger of scorn.

I have lingered over the smallpox tale, tedious as it must be, having been told much oftener than twice; but the case for diphtheria prophylaxis involves no new statistical principle; the pros and cons are as before. One relatively new argument has been used—namely, that before active immunization was introduced diphtheria mortality and morbidity rates were declining and we have confused *post* and *propter*. It is only a relatively new argument, because Creighton had argued that by the end of the 18th century smallpox was an obsolescent disease. The best discussion I know is in Dr. W. T. Russell's recent report to the Medical Research Council (that Mr. Shaw may not dismiss Dr. Russell unread, I note that he is a Doctor of Science, not Medicine). In New York and in Toronto the annual case rates of diphtheria were declining from the beginning of this century; in the former city diphtheria prophylaxis was not introduced on a large scale before 1928, in the latter not before 1931. Dr. Russell graduated the trends of the pre-immunization periods by exponential curves. He then extended, extrapolated, the curves over the period of active immunization. The result was that the "predicted" rates were much higher than the observed rates. This, impressive enough to a layman, is even more so to a statistician who plays the fascinating game of prophecy, because one almost always finds that the prophecy is better than the truth: part of the reason is that as one approaches zero rates improvement is likely to be much slower than the comparatively simple curves which give a good graduation allow. Most people will, I think, accept the result as cogent evidence that active immunization did greatly quicken up the decline. The alternative, which Mr. Shaw will adopt (unless, of course, he prefers to believe that from the start of immunization the statistics were faked), is that aesthetic sanitation which had reduced the incidence so successfully over 28 years was suddenly intensified in these two cities just when active immunization began.

Mr. Shaw devotes a chapter to the praise of statisticians, and although I am excluded from this class by the possession of a medical diploma, I still wish to be grateful, because I can remember the time when there was no passion for statistics in the medical profession. But a passage on page 246 supposed to be descriptive of writers in *Biometrika* forces one to conclude that it is not only a medical qualification which obstructs admission to or involves expulsion from the statistical paradise. Should a non-medical statistician reach conclusions of which Mr. Shaw does not approve, his mathematics will not save him—he too will be a half-wit if not a knave, in fact "as credulous, as prejudiced, as thoughtless as to the facts they were measuring and the assumptions from which they started as Isaac Newton himself."

I have confined myself to an examination of the case for and against modern methods of prophylaxis, because, whether my

conclusions are right or wrong, at least I have studied the evidence closely and had a good deal of experience of statistical methods. Other topics of Mr. Shaw's book tempt me to be polemical. Mr. Shaw seems to me wholly to misunderstand the fundamental principles of the experimental method, and it seems a pity he did not listen more attentively to the expositions of his friend Sir Almroth Wright—one of the very eminent investigators not classed as a half-wit. But many colleagues understand that subject better than I do, a remark which applies to Mr. Shaw's view of medical tyranny.

## SOCIAL MALAISE AND DISORDER

### VIEWS OF THE MEDICAL WOMEN'S FEDERATION

*For some time the Medical Women's Federation has been anxious to express its views on certain aspects of social medicine. At a recent meeting of its Council the work of a small subcommittee was approved in the form of the memorandum printed below:*

Medical women are frequently invited to express their views on the reported increase in venereal diseases, and the Medical Women's Federation considers that it may be timely, in view of anticipated medical and security legislation, to set out in general terms conclusions collectively arrived at as a result of the experience of its members during the last war, the uneasy interval, and this war. While there is naturally divergence of professional opinion as to the best methods of handling so controversial a problem, there is complete agreement that the eventual solution must depend in large measure on a clear recognition of the relation of venereal disease to social and personal maladjustments, which has been much accentuated by war conditions. V.D. cannot be regarded merely as an acute contagious illness which affects only those directly infected; it can never be eradicated solely by medical precautions and treatment however sound and effective in themselves; and it is to the wider implications of the presence of venereal diseases, with their deplorable results on the health of the nation, that the Federation desires to direct attention.

The Federation holds the view that doctors, while having an obligation to society for the treatment of individual patients, have also a duty to interest and educate public opinion in medico-social questions so that these may be approached with understanding and sympathy.

It is realized that the war has brought out splendid qualities in many people, and that young people in particular are displaying magnificent courage, endurance, and selflessness; yet at the same time, partly as a result of the very conditions calling forth such qualities, it is clearly seen that there also exists an accompanying state of serious social malaise. Social disorders are associated with a failure to develop and practise an ideal of conduct, as well as with a lack of discipline and sense of personal responsibility. Such conditions are likely to lead to an increased state of unrest and a diminishing degree of happy satisfaction in life.

Among the signs of social malaise and disorder are found:

1. A lowering of the standards of honesty and of consideration for others.
2. An increase in delinquency, including juvenile delinquency.
3. A more widespread and growing habit of indulgence in alcohol among young people.
4. The loosening of family ties.
5. Sexual incontinence, promiscuity, an increase in soliciting, and a consequent rise in the incidence of venereal disease.
6. The toleration of a low standard of certain types of reading matter and of public entertainment.

We believe that an acceptance of materialistic ideals as the main standard for living has led to spiritual poverty and unthinking egoism. The sense of insecurity of life, the loss of home background and other dislocations of war have added to the confusion. The immediate satisfaction of an impulse is often accepted as justifying any action. This is seen in the increase of petty misdemeanours, and still more in irresponsible sex relationships.

We believe that continence (apart from marital relationship) is the ideal for both sexes if the vitality of the race and the happiness of individuals is to be ensured. We condemn the



view that incontinence is not detrimental so long as precautions are taken against disease and pregnancy. It is now recognized that continence is not harmful to either sex.

All primitive urges supply the energy for man's activities; in order that they may find effective and satisfying outlets, certain basic wants must be met. These include stability of family life, education in its widest sense, scope and training for suitable work, encouragement in the right use of leisure, opportunity for independence of thought and creative activities, and development of that spiritual outlook which alone can secure an active, happy, and ordered society.

For the achievement of this ideal, the Medical Women's Federation presents the following as minimal essentials:

1. The recognition of the vital importance of home and family life with opportunities for early marriage, and the provision of good living conditions within reach of all.
2. Training from an early age in the development of personal moral responsibility and social obligation.
3. Religious training both at home and at school.
4. Physical training together with instruction in the functions, hygiene, and control of the body.
5. Training in the understanding and expression of the emotions.
6. Extension of education into adult life. This should include the teaching of parentcraft to both sexes, and opportunities for manual and creative work.
7. The encouragement of a high standard of literature and public entertainment, and of appreciation of beauty in Nature and art.
8. The provision of suitable opportunities for social contacts and recreation.
9. Adequate provision for the disabled and for those who are inherently irresponsible.

The Federation is fully aware that there is nothing new or revolutionary about such recommendations, but considers that they should be given due weight in the formulation of proposals for the prevention and control of venereal disease and other social disorders.

## UNIFORM STANDARD FOR PENICILLIN

### SIR HENRY DALE'S STATEMENT

Sir Henry Dale, P.R.S., announced to a Press conference on Oct. 20 that international agreement had been reached by the Health Committee of the League of Nations on a uniform standard and unit of penicillin, and that there could be no doubt that workers in this country and America, and eventually throughout the world, would be using the same standard dosage. The agreement was arrived at at a meeting in London attended by representatives of Great Britain, the United States, Canada, Australia, and Free France.

In a historical retrospect Sir Henry Dale said that it was in 1921 that the Health Committee first took in hand the question of measurement of a number of biological remedies in terms of their activity. This was done in order to obtain international uniformity, so that one unit of activity would mean the same wherever it was prescribed. The first agreements of his kind were obtained in the case of antitoxins, notably the antitoxin of diphtheria. Another good example was the standardization of insulin in 1925. The same standard was adopted outside the League—in Russia, which was not then a member, and in the United States, which never became a member; the same standard was continued in Germany and Italy after they had left the League. Standardization was also applied to hormones and vitamins.

### International Agreement

The newest remedy, penicillin, naturally called for similar action at the earliest possible moment. It had been a simple matter during the war to arrive at an international agreement, because here was one of the few discoveries which, it could be claimed, had been made entirely in this country, though, on the other hand, the developmental research and the enterprise responsible for a large part of the production of penicillin was due to effective action in the United States. Thus, while it was a British discovery, the United States had undertaken a large part of the manufacture and supply. The manufacture actually started earlier here than there, but at the time penicillin came in, practically all manufacturing resources were absorbed by war production, while the United States was not similarly embarrassed.

The new international standard penicillin would be finally purified and crystallized in the United States, but the material for this

purpose would be freely supplied by manufacturers here as well as across the Atlantic. There was no substance in the talk about tirings in the manufacture of penicillin. The manufacturers in both countries had pooled their information from the very first and had given their results to the Medical Research Council, thus making the manufacture of penicillin during the war a real national effort.

At the recent conference in London which had determined the standard there were present three representatives of the U.S.A., three of this country, together with Dr. Cameron of the Health Department in Ottawa, and Major Bazeley of the Commonwealth Serum Laboratory, Canberra. After these arrangements had been made the possibility of contact with liberated France was opened up, and an invitation was sent to Dr. J. Trefouel, director of the Institut Pasteur in Paris, who joined the conference in time to review the provisional agreement and give his confirmation. A number of other persons had joined in the deliberations, notably Sir Alexander Fleming, who could be described as the father of penicillin, and until he went to Australia, Sir Howard Florey, who brought penicillin to the practical stage. Other specialists were present from South Africa and India. The results which the conference had achieved, said Sir Henry Dale, when viewed as a contribution to scientific knowledge might seem small, but the setting up of a world-wide standard was of obvious importance.

## WAR AND COMMUNICABLE DISEASES

Brig.-Gen. James S. Simmons, speaking in New York at the 73rd Annual Convention of the American Health Association, discussed various phases of the war and communicable diseases.

Speaking of the health problems that had arisen during the past 15 months in Sicily, Italy, and a good portion of North-West Europe, General Simmons said it should be constantly borne in mind that the entire civil public health programme was being implemented by a very small number of American and British medical officers. Reliance must of necessity be placed largely upon local resources in medical personnel.

Typhoid and dysentery, typhus fever, smallpox, malaria, venereal disease, and scabies had so far offered the greatest problems. In both Italy and North-West Europe the incidence of typhoid and paratyphoid fever rose in the wake of combat operations, but sharp outbreaks had been limited to a relatively few communities. In January, 1944, the peak month, over 1,000,000 new cases were reported, but the epidemic was quickly controlled with only 39 cases being reported during the last week of February. Typhus had not yet been a problem in North-West Europe, though the test would doubtless come during the winter months.

The civil public health programme called for early re-inauguration of the smallpox vaccination programme. Despite this, two outbreaks had occurred in Italy. One was small and easily controlled. In the other over 800 cases occurred in a large city during a four-months period. No outbreaks have been reported from North-West Europe. In February, 1944, the civil public health group re-established an active malaria control programme in Southern and Central Italy which was expanded during the pre-malaria season.

The U.S. War Department announced in Washington on Oct. 4 that tetanus had been virtually eliminated in the American Armed Forces as a result of compulsory immunization of all officers and men. Major-Gen. Norman T. Kirk, Surgeon-General of the Army, stated that no case of tetanus had been reported among completely vaccinated troops. There had been a handful of cases throughout the entire Army, but these occurred only when the immunization process had not been completed. Some men had developed tetanus before vaccination. The U.S. Navy, which also requires tetanus immunization, has had no cases of the disease among sailors or marines wounded in battle up to Sept. 15, 1944, according to the Navy Bureau of Medicine and Surgery.

Brig.-Gen. R. W. Bliss, Assistant Surgeon-General of the U.S. Army, who recently returned to Washington from a tour of inspection through the Pacific war theatre, said that during the entire trip he did not see one mosquito or fly. "When we first took over the Pacific Islands there were clouds of insects everywhere, actually making it difficult to see. To-day, if we locate one mosquito we consider it comparable to finding a four-leaf clover. To me, that's the outstanding achievement of medical science in this war. There were no malaria mosquitoes on Saipan, but there was a type that carried dengue, which is as disabling as malaria itself. At first we had a great many cases of dengue. But after a few weeks of insect control, dengue practically disappeared. Medical sanitary companies divided the islands into a square like a checker-board, and drained and filled swamp areas constantly. The amazing D.D.T. insecticide which did such a wonderful job in controlling typhus in Naples was sprayed by hand and by planes. These planes were rigged up with special apparatus. They flew back and forth across a given area much like a man mowing a lawn."

## Correspondence

### R.M.B.F. Christmas Gifts

SIR.—Once again it is my privilege to appeal to your readers throughout the country to remember the beneficiaries of the Royal Medical Benevolent Fund during this coming Christmas. These beneficiaries are aged or infirm medical practitioners, their widows and dependants, and as an old man myself—now in my 100th year—I have their welfare much at heart. It has been my custom for many years to appeal for Christmas gifts on their behalf, and a large sum must be raised if we are to give £3 to each, as we would like to do, and as we succeeded in doing last year.

If my colleagues could read the warm expressions of gratitude which are received each year they would feel that their contributions have been well spent, and I am confident that they will respond again as in other years. Donations, large or small, should be sent to the Honorary Treasurer, Royal Medical Benevolent Fund, 1, Balliol House, Manor Fields, Putney, London, S.W.15, marked "Christmas Gifts."—I am, etc.,

THOS. BARLOW,  
President.

### War Surgery: Thoughts and Facts

SIR.—Gen. Mitchiner's thoughts on four years of war surgery (*Journal*, July 8) are stimulating and provocative. Generalizations and impressions are valuable when backed with the authority and experience that Gen. Mitchiner possesses. It is because we held his opinion in such regard that there is a danger that the opinion may be accepted in place of a review of the facts. A knowledge of the results of treatment of flesh wounds to the Italian Theatre of War does not support Gen. Mitchiner's view that little progress has been made in the prevention and control of sepsis. The surgical set-up in this theatre provides early primary surgery by surgeons experienced in wound debridement and decompression, swift evacuation to general hospitals, and delayed primary suture about the fifth day. Records kept at three hospitals in the early stages of this method of treatment were:

Surgeon A—252 wounds, primary union in 240.  
Surgeon B—228 wounds, primary union in 186.  
Surgeon C—195 wounds, primary union in 181.

These were consecutive cases whose only selection in three different surgical divisions was that there should be a sufficiency of skin for suture. The wounds were of all kinds, from large penetrating ones with deep muscle destruction to superficial tangential wounds. In the result, primary union was obtained in 607 wounds out of 675 (90%), and the average time from wounding to return to duty of cases without other lesions was 35 days. Treated by closed-plaster, etc., large numbers of these men would have become long-term cases for U.K., or Category E.

These figures are merely the results of a few weeks' work in three hospitals, but the same procedure is taking place generally in this Theatre of War. I am permitted by Gen. Hartgill, D.M.S., A.F.H.Q., and Brig. Edwards, Consulting Surgeon, A.F.H.Q., to mention that in the Cassino battle, May 11 to 31, 1,032 wounds were sutured by this technique. The closed-plaster method, far from being accepted (as Gen. Mitchiner claims) as "the best treatment for all types of wounds in the field subsequent on excision," is not employed except for the rare case where, for exceptional reasons, repair by suture or early graft is impossible. This method of wound treatment has truly resulted in prevention and control of sepsis, and represents an advance in surgical thought and technique of considerable value to the wounded man and to the Army.

How much of this advance is due to surgery and how much to the use of penicillin as well is not yet estimated. There is no doubt that penicillin has made possible repair of infected wounds that formerly would have been thought dangerous to touch. But closure of an infected wound is the only surgical principle that penicillin has revised. Gen. Mitchiner's suggestion that "penicillin works best in a puddle of pus" and that drainage of pus will therefore be avoided is a dangerous one. A puddle of pus, whether Gram-negative or Gram-

positive, remains what such a puddle has always been when shut up within the tissues—a source of trouble. From a personal series of over 500 wound sutures in which penicillin was used locally, I could quote several instances where a collection of Gram-negative pus in the depths of a wound led to partial breakdown of the suture line. In wound repair with local use of penicillin pus must be drained, and I am careful to point out to surgeons the importance of siting the penicillin tubes in a sutured wound so that any pus can be aspirated twice daily as a preliminary to further instillation of penicillin solution. Alternatively, if the wound is grossly infected at the time of repair, a rubber-dam drain is provided. It is important that this principle should be followed if local penicillin therapy is not to be discredited.

I hope that Gen. Mitchiner will not think that these statements deserve his description of "self-congratulatory coma." They are not only thoughts on war surgery; they are also facts.—I am, etc.,

F. H. BENTLEY, Lieut.-Col., R.A.M.C.,  
O.C. Penicillin Control Team, C.M.F.

### Lung Complications after Operation

SIR.—It surprises me that some writers on pulmonary complications following abdominal operations make no reference to the valuable papers of Messrs. Band and Hall published in the *British Journal of Surgery* (1931-2, 19, 387). There it is pointed out that after operations on the upper abdomen the diaphragm is kept relatively immobile (physiologically) to keep the damaged part at rest, and that movement of the bases of the lungs then depends on free movement of the lower part of the thorax. If these are restrained by a firm bandage stasis must be produced. This is but a trifling reference to a paper which should be carefully read and taken to heart by all abdominal surgeons. The diaphragm alone can do the necessary rhythmic pressure on the bases or the lower ribs. Paralyse both, and stasis is inevitable.

It will be well recognized by surgeons that after a radical mastectomy the firmest bandage can be applied to the lower thorax without any chest complication. Here the diaphragm does the work. Since having the privilege of hearing in Edinburgh a first-hand description of Messrs. Band and Hall's experiments and conclusions, about the time the work was published, I have attached the greatest importance to this freedom of the lower chest after any abdominal operation. One of the ward sisters at Addenbrooke's Hospital devised a bandage which has proved most serviceable. The important point is that the top of the bandage should not ride above the level of the lowest ribs, and the under-straps should be broad and efficient. To ensure that the upper part of the incision is not exposed a piece of strapping is passed from the upper part of the bandage to the sternum to keep the dressing in place. The many-tail bandage may be a serious menace to the free movement of the ribs, especially if it rides up owing to faulty under-straps.

An interesting demonstration of the risks attending the slipping up of a many-tail was seen a short time ago. After an upper abdomen operation in the morning, when visiting the ward in the evening and inquiring about the patient, I was told that all was well. Looking at the chart I found that respirations were registered as 30. This necessitated an examination of the patient. A many-tail bandage without under-straps was found riding up and so firmly holding the lower ribs. One of the special bandages was applied, so freeing the ribs, and the patient asked to take deep breaths. Next morning the breathing was about 20. Left alone, it is almost certain that some atelectasis would have followed.

In conclusion, I appeal to all interested in this matter to study the admirable piece of work mentioned above, which was carried out in the surgical research department of the University of Edinburgh.—I am, etc.,

Cambridge.

W. H. BOWEN.

### Débridement

SIR.—Sir Harold Scott's letter in your issue of Oct. 14 again raises the question of what exactly is meant by the term "débridement." Is not the position that the French term "épilage" corresponds to our term "excision," and means a thorough excision of all dead or damaged tissue in the

wound area. The term "débridement" corresponds with our term "revision" (= to examine with a view to correction), and means examination, the removal of all frankly dead tissue and foreign bodies, and the establishment of adequate drainage. The former is perhaps more often talked about than practised, but it is well to realize that the two procedures are quite distinct, and that unless the terms used to describe them are kept within their meaning considerable misunderstanding is inevitable.—I am, etc.,

London, W 1

E. G. SLESINGER.

According to Harrap's French Dictionary *débridement* means: "surg. incision, slitting up (adhesion, etc.)"; and *épluchage*, "cleaning," "picking," "weeding," "thinning out," or, in familiar language, "hypercritical examination."—ED., B. M. J.

### Calcinosis Universalis

SIR,—I am much interested in your excellent medical "brains-trust" note under the above heading (Oct. 14, p. 519), but as I have had chance opportunities of studying the subject perhaps you will permit me to make a few remarks which I think are not merely of academic interest.

The case of the child aged 6 is almost exactly similar to that of a little girl aged 7 years which I demonstrated at the 17th International Congress of Medicine (London, Aug. 8, 1913, Part 2, 179); I would prefer the term "subcutaneous calcinosis" or "multiple calcification in the subcutaneous tissue," as there is no proof that any other parts are involved. Radiographs in my case proved that the areas of calcification were already diminishing in July, 1913, but unfortunately the child left England soon afterwards. Improvement has been shown in other children (Kennedy, Craig and Lyall, Sheldon). Such improvement has been observed under various treatments, or without any special treatment, and I am inclined to think that calcinosis of this type in children (mostly girls) is spontaneously likely to come to a standstill, or regress, under normal diet. The former danger from septic complications is, I suppose, greatly diminished by the use of chemotherapeutic drugs if required.

Surely myositis ossificans idiopathica is a progressive disease which nothing can stop, and, though it may be aggravated by trauma, is sharply to be distinguished from traumatic localized myositis ossificans and from subcutaneous or universal calcinosis in children. I have never seen or heard of the latter disease being associated with myositis ossificans. It has been suggested, with some degree of plausibility, that calcinosis of the multiple subcutaneous or universal type is a "storage disease" comparable to the now fairly well recognized "glycogen storage disease," which may apparently come to a standstill, or regress, as the affected children grow up.—I am, etc.,

London, W 1

F. PARKES WEBER.

### "Skiagram"

SIR,—Has not the time come when an effort should be made—and internationally—for a standard term to be used for the photogram produced by x rays? To some this would appear to be long overdue, and it would redound to the credit of the English-speaking peoples if they were the nations to bring this about.

At the present time—1944—there are no fewer than nineteen words which have been used in connexion with "a negative produced upon a film sensitive to the action of x rays." Chronologically they may be tabled thus:

- |                       |                  |                 |
|-----------------------|------------------|-----------------|
| 1. X ray              | 8. Roentgenogram | 14. Sciagram    |
| 2. X rays             | 9. Actinograph   | 15. Shadowgraph |
| 3. X-ray picture      | 10. Actinogram   | 16. Shadowgram  |
| 4. X-ray photograph   | 11. Radiograph   | 17. Skiogram    |
| 5. X-ray plate        | 12. Radiogram    | 18. Skiagraph   |
| 6. X-ray film         | 13. Sciagraph    | 19. Skiagram    |
| 7. Rontgen photograph |                  |                 |

Much confusion and uncertainty are caused by such a variety of terms. Some very absurd expressions are still in common use, such as, "Take an x ray of this fractured bone"; "Has a radiogram been made?" and so on. In reviewing what should be considered as the best—and international—word, it may be said that two terms stand out—namely, skiagram

and x-ray film. Of these two almost certainly the first skiagram—would appear to be the better. This word etymologically sound, for its origin is from two Greek words "skia" a shadow, and "gramma" writing. The following are the cogent reasons for its use from now onwards as the word to designate the results upon a film sensitive to the action of x rays:

(a) It applies a "shadow writing," which is a negative produced by x rays.

(b) It has never been used for any other purpose, nor is it likely to be used, if it were to become "standardized" and that internationally.

(c) It has a distinctly "scientific sound" about it, and has years now been used "scientifically."

(d) Once standardized, it would become used in all scientific books, in reports upon patients, in courts of law, etc.

The following are possible reasons for not using the term "x-ray film": (a) It is somewhat cumbersome. (b) The term x ray thus applied is unscientific. (c) The term "film" is used in several senses: (1) a sensitized material upon which a negative is produced; (2) a common term for a "movie" or "silent film" strip, upon which prints have been produced; (3) a "moisture on glass," a "haze," and a "membrane."—I am, etc.,

London, W 1.

W. McADAM ECCLES

### Mass Radiography

SIR,—The memorandum from the Ministry of Health on mass radiography published in the *Journal* (Sept. 9, p. 3) admits the present failure of the scheme, which I have forecast from time to time in your columns and elsewhere. The communication states that difficulties "have made it impossible rapidly to develop schemes for the general use of mass radiography throughout the country," and it is claimed that wartime production and lack of skilled professional staff are the chief obstacles. As to the difficulties of equipment manufacture much of this could be overcome if all x-ray manufacturers in the country were invited to co-operate instead of confining the production mainly to one firm. Concerning technical operators they can be trained very quickly for this type of work, and as all facilities for training radiographers for general x-ray work are booked fully until 1946 in London, surely some of these who have been disappointed, along with others willing to train, might be invited to take up mass radiography.

Nevertheless these two official reasons put forward to account for the present failure are minor issues, and, to my mind, the real cause for the present setback is inadequate organization. The existing units are not worked to capacity, being grossly understaffed. Instead of creating a large number of units to carry out a small number of examinations, because of the limited number of personnel attached to each unit (which is the present working of the scheme), the present technical staff should be doubled or even trebled, and then operate the personnel in shifts or relays so that the standard of work is maintained; the number of cases examined per unit would then more approach or even pass the figures claimed by Continental workers of 3,000 or more cases a day. The British units appear to be only capable of examining fewer than this figure per week. To safeguard the life of the x-ray tubes batteries of tubes should be employed, bringing a new tube into operation after, say, 500 exposures. The work could be done even with the plants now available, but it is essentially a question of organization, and medical men are reputed to be bad organizers.

Dr. Leggett (Sept. 30, p. 450) observes that the Ministry shows a desire to retain mass radiography in their own hands to the exclusion of all others, and pertinently inquires if the method they selected is the best, and, unless it is, he thinks that workers using alternative methods should not be excluded. One should take a broad view of this ruling (though it has no support in law), and I think most of us have been prepared to accede to the wishes of the Ministry in order to give the official plan every chance to succeed and maintain a uniform standard of work. For my part I have with much misgiving fallen in with the decision of the committee of the British Red Cross concerned to discontinue the services of their mobile portable motor mass radiographic unit in order to meet the

wishes of the Ministry. Other units, also outside the scheme have voluntarily ceased functioning, but if the Ministry and local authorities continue to display lack of organization and drive the matter my reappear for review elsewhere than in your columns, and I have in mind the uneasiness already noted by some of the business heads of firms that have had experience of the existing facilities.

A responsible head of a large modern manufacturing firm whose employees have been examined by one of these local authority units draws attention to a number of fresh aspects which Whitehall may or may not already appreciate but do not seem to have fully incorporated in their scheme to date and I cannot do better than quote freely from a letter I have received from this firm.

"My difficulty is to see the value of one single x-ray survey of all workers in one factory unless there is some definite policy of following this up at intervals of, say, a year or two years. A very small proportion of cases of early tuberculosis are discovered, and the cost of this discovery is very high. A staff to operate the x-ray machine is required, and there is a certain amount of time taken up by the medical officer who interprets the films. The time lost in the factory and the administrative cost of the arrangements possibly amount to £500 or £600. No one in industry would erudge this in the very slightest degree, but I think it is fair enough that the management should inquire as to whether the means justify the end, and whether or not, if it was going to cost £500 or £600 each time, a better and more efficacious arrangement could not be reached. I am not reactionary about the value of mass radiography, but I feel that the factory unit is by no means the best way of applying it, although it happens to be a convenient one. It would be of much more value if you could x-ray all individuals in a given area of, say, 2 or 3 square miles, and even then surely it has only got value provided there is some continuity and it will be repeated at given intervals. Short of mass radiography that is applied to whole groups of individuals, I think it would be of considerable value if apparatus existed in certain areas where general practitioners or factory medical officers could send every case for a x-ray examination that gave the slightest suggestion of the possibility of early tuberculosis. I think the ideal of the application of mass chest radiography is something for the perhaps distant future, and that in the meantime it would be very much better if those concerned with it were to give attention to a realistic and practical application of the very valuable facilities. From the point of view of industry I want to make clear a point that some speakers and writers on the subject have not perhaps fully appreciated. Industrial medical services are not primarily looked upon by the managements as something that should pay dividends or save the company money, and I am certain that if the case for mass radiography as a valuable social service were fully made out industry would co-operate. There is an indirect value in offering medical service to a staff in general morale. Although I have mentioned the cost of one survey by mass radiography, most industries would, I think, be willing to spend considerably more than this if the case were well made out for the advantage of the staff generally. I feel that at the present time, in the absence of any follow up policy, the case is not a good one."

The manager of another firm informs me that he sent his employees in small batches to the local hospital, and thereby saved his firm many working hours and financial outlay.

It is clear that the present official scheme for mass radiography in this country requires speeding up, reorganized on the lines I have advocated from time to time, and above all it requires bolder direction and not necessarily from doctors, but perhaps with an efficient business head in control to organize it—I am, etc.,

NORMAN P. HENDERSON

London W 1

### Protein Hydrolysates in Infantile Diarrhoea and Vomiting

SIR—I was most interested in the valuable and instructive contribution on infantile diarrhoea and vomiting (Sept 30, p. 425) by Drs. Alexander and Eiser and your leading article on infantile gastro-enteritis appearing in the same issue. In the latter the suggestion was put forward that protein hydrolysates administered orally or intravenously seemed worthy of a trial in the treatment of gastro-enteritis.

Although the series of cases is not large and wartime conditions and the pressure of hospital work have prevented accurately controlled observation, a step has already been taken in this direction at the Southend General Hospital. Ever since casein hydrolysate was made available to us some fifteen months ago in a form suitable for intravenous or oral adminis-

tration, we have made a practice of treating cases of diarrhoea and vomiting, whether due to gastro-enteritis or parenteral infection, by the oral administration of casein hydrolysate. This line of therapy was prompted by the desirability of maintaining an adequate calorie and particularly a sufficient protein nitrogen intake, when diarrhoea and vomiting could be controlled only by withholding the more usual forms of nourishment and by restricting everything given by mouth—glucose saline, Hartmann's solution, or boiled water. On theoretical grounds the possibility of using a solution of casein hydrolysate and glucose appealed to us in that such a mixture, requiring no digestion, would be absorbed rapidly and completely from the upper reaches of the small intestine. It also seemed reasonable to suppose that a combination of glucose and pure amino acids would be unlikely, of itself, to perpetuate diarrhoea and vomiting due to parenteral infection or to cause an exacerbation of symptoms in gastro-enteritis.

The results of treatment were at first disappointing. It was soon discovered however, that solutions of casein hydrolysate in a concentration of more than 2% were unsuitable, in that they caused gastric irritation and aggravated vomiting. The most satisfactory results have been obtained by employing a 1.25% solution of casein hydrolysate in 4.3% glucose (The casein hydrolysate was supplied by the courtesy of Heris Pharmaceuticals Ltd., Welwyn Garden City). This combination has been well tolerated by the majority of infants suffering from diarrhoea and vomiting, whether due to gastro-enteritis or parenteral infection. The most significant observations that I have been able to make in connexion with this treatment of such cases are as follows.

(1) In the majority of cases of gastro-enteritis in which dehydration has been absent, diarrhoea and vomiting have been controlled as effectively by casein hydrolysate-glucose solution given in the first 24 to 48 hours of treatment as they can be by the more usual practice of withholding all forms of nourishment during the same period. Thus an initial (and possibly indirectly harmful) period of starvation has been avoided, and the body provided with protein nitrogen to the extent of 2.2 g per kilo daily. (This figure is achieved by giving 2½ oz per lb body weight of the solution daily.)

(2) Although the total calorie intake is only a little greater than one third of the body's requirements (18.7 as against 45 per lb), infants have been maintained satisfactorily for periods up to 5 days, and diarrhoea and vomiting controlled without having to resort to parenteral fluid administration.

(3) In cases of diarrhoea and vomiting due to parenteral infection the method has been found invaluable in supplying the protein nitrogen requirements during the period in which the site of infection was being sought and adequately treated.

(4) The premature resumption of milk feeds after an initial period of treatment with the casein hydrolysate mixture has frequently resulted in a recurrence of diarrhoea and vomiting. These symptoms have been controlled if casein hydrolysate is again substituted or if suitably diluted milk feeds alternate with those of casein hydrolysate.

(5) By supplying adequate fluid and protein requirements early in cases of gastro-enteritis and by controlling diarrhoea and vomiting without a preliminary period of starvation, dehydration has been frequently prevented, and the need for the administration of parenteral fluids rendered unnecessary thereby.

There is no doubt in my mind that the method of insuring an adequate protein nitrogen intake described above is theoretically sound and efficient in practice provided it is used with discretion, and here a note of warning must be sounded on no account should the method be used as a substitute for intravenous infusion when this is indicated. In other words, the treatment of severe dehydration, once established, is outside the scope of the treatment which I have described.

Although we began treating cases of gastro-enteritis and diarrhoea and vomiting with casein hydrolysate with a view to providing an adequate protein nitrogen intake during the initial stages of illness, it would appear from the observations of Alexander and Eiser that prevention of liver damage in gastro-enteritis is likely to prove the most important indication for this form of treatment. The best results will probably be achieved by intravenous infusion of casein hydrolysate or other suitable preparations of amino acids in all severe cases of gastro-enteritis.

It will be interesting to see the outcome of large-scale controlled experiment on gastro-enteritis treated by protein

hydrolysates. In the meantime I hope that these preliminary observations will act as a stimulus to further efforts in this field.—I am, etc.,

DAVID LEWES,  
Medical Registrar, Southend General Hospital.

### "Dissident Doctors"

SIR,—The Dr. Samuel Smith referred to in your annotation of Oct. 14 last is a member of the Socialist Medical Association but not of its council or executive. He is also, I understand, a member of the B.M.A. From the S.M.A. point of view he was exercising his democratic rights as an individual member in sending to his friends and acquaintances the duplicated memorandum referred to.

Statements of S.M.A. policy are made openly from the official address.

Prophets are indeed without honour in their own country, for you, Sir, have seen Dr. Smith's memorandum, whereas I had not even heard of its existence till I read my *B.M.J.*—I am, etc.,

SOMERVILLE HASTINGS,  
President, Socialist Medical Association.

SIR,—It would, no doubt, be difficult to say how far your warning in the *Journal* of Oct. 14 against the introduction of doctrinaire politics into medicine should be directed against the profession as a whole. One fact, however, does require to be emphasized: that there never was a time when the need for a rational and scientific attitude to political problems was greater than it is at the present day. There should be no question that a body of intelligent men and women engaged in applying the scientific method in the professional half of their lives are not justified in relapsing, in the other half, into an infrascientific state of mind when social and political issues are under discussion.

It is over 50 years since Karl Pearson pointed out in *The Grammar of Science* that the scientific method was applicable in the social as well as the physical sphere, that one of the aims of this method is to enable judgments to be formed independent of the idiosyncrasies of the individual, and that the scientific habit of mind is an essential for good citizenship. Your esteemed contemporary (*Lancet*, 1944, 1, 571) aptly summed up the situation a short time ago in stating that the scientific method was the only possible basis for an ordered life, individual or national. No demonstration is required to indicate the strong position the profession would be in if it could claim, and show, that its judgments on the present important medical-political problems were based on an objective and scientific consideration of the data.—I am, etc.,

London, W.1.

FREDERICK DILLON.

SIR,—I have been reading your annotation in the *B.M.J.* on the subject of dissident doctors. As I see it, the meaning of the article is, apart from personalities, "Socialist doctors are entitled to join the B.M.A., but should maintain a decent silence about their political opinions." Believing, as we do, that the White Paper is, in the main, in the interests of the health workers and the people, we naturally support it. But it is only a beginning. We believe with our splendid Archbishops in equality of opportunity for all, we believe in the abolition of poverty. We believe that Socialism is the most potent factor in the prevention of war. Is it likely, Sir, that when we have this gospel to proclaim we should be silent? Rather with almost religious fervour, in season and out of season, by any legitimate means, we shall seek to further our views, believing in the rightness of our cause, and following the glorious example of the U.S.S.R.—I am, etc.,

London, N.16.

D. S. BRYAN-BROWN.

SIR,—As a regular reader of the *B.M.J.*, if not an active member of the Association, may I be allowed to express an opinion about both the article "Dissident Doctors" and the Doctor who appears to have incurred your vast displeasure. You state Dr. Smith is one of those members who whilst parading the fact they are members of the B.M.A. are not

content to work within it in a democratic way. Surely your article is the very negation of democracy. Government Parliament, local bodies, etc., consists of free expression of opinion, argument, and counter-argument, thus arriving at the best laws or solution in the matter *sub judice*. This certainly applies to the Government's White Paper, and I hold Dr. Smith has every right to voice his views not only to the vociferous minority but to all medical men. We all have our own views and need not be proselytized.

I, too, am an East End doctor, and my views are diametrically opposed to his, being all in favour of "private enterprise" with the minimum of interference by the State, despite the many efforts of Dr. Smith to convert me. The medical profession are not sheep to be led.

As regards the remark "shortage of doctors, etc.," I would like to say Dr. Smith conducts a very large practice in the most efficient manner. It is only his boundless energy and philanthropy that make me ashamed.—I am, etc.,

London, E.3.

E. O. MORPHY, M.B., D.P.H.

SIR,—It is high time that the ostrich-like attitude concerning the political functions of the medical profession displayed by your annotation in the *Journal* of Oct. 14 is challenged. Many doctors, even the B.M.A. Council themselves, have recently and repeatedly stressed the greater importance in the promotion and maintenance of health of such primary fundamentals as food and housing over secondary factors such as the provision of personal medical services. In doing so they indirectly admit the political functions of our profession, whose aim I assume is the betterment of human health. If it is believed that better town and country planning, housing, feeding, and education, at least two of which are dependent on the value of income relative to prices (rent and cost of food)—to say nothing of improved personal health and social security services: by means of which the occurrence of sickness or accident will not cause financial loss to the sufferer and embarrassment of the above-mentioned income-price ratio—are necessary for the raising of the level of the nation's health, surely it is the business of members of the medical profession not only to proclaim these beliefs but also to take all possible steps to further their implementation. The scientific method of taking such steps is by utilizing the political machinery of the country, and the fact that a proportion (is it such a minor one?) of the profession is now waking up to this fact should be the occasion for rejoicing rather than moaning.

Some of us doctors consider ourselves citizens first and doctors second, and therefore owe our allegiance to the greater democracy, or to democracy before a possible technocracy. Therefore we feel that it is morally our duty to support whatever democratic political or medico-political organization we believe is most likely to press for the improvements we desire, and to put them into practice if elected to power. And, therefore, whether we join on the one hand Common Wealth or the Conservative Party or on the other hand the S.M.A., the M.P.A., the Sword of the Spirit, or the Child Health Planning Group in addition to continuing our membership of the B.M.A., I maintain that the B.M.A.'s *Journal* in attacking the activities of two of the four organizations in the second group above is not only unjust but also blind.

The Churches have for centuries been more acutely aware than the medical profession of their political duties in their endeavours to influence public policy. The fact that such so-called "interference" has not always seemed either righteous or satisfactory in the light of history does not invalidate the underlying general moral principle. Members of the medical profession might well emulate their clerical colleagues, Nonconformist, and, more recently, also Church of England, in standing more frequently for membership of their local authorities, bodies which doctors often criticize and blame without being prepared to take the obvious step of standing for election themselves, and, if successful, endeavouring to reform or guide the authority from within, a process in which hitherto the medical officer of health has usually been engaged in a lone struggle. This leads to the final observation that in a properly organized national health service the doctor, with his valuable working time economized by the provision of clerical and auxiliary medical personnel, should at last have



enough leisure to enable him to play his rightful part—one aspect of which I have just indicated above—in a democratic fellowship.—I am, etc.,

DEVON.  
F. JOHN GARRATT LISHMAN.

"We agree that medical men as citizens should utilize "the political machinery of the country" in order to play their part in "a democratic fellowship." But are the Socialist Medical Association and the Medical Policy Association parts of this machinery? The former, at least, wants the B.M.A. to attack the latter.—Ed., B.M.J.

### Reserve of Medical Students

SIR,—I have been approached on several occasions by medical students whose reservations have been cancelled by the Ministry of Labour because they have failed in one examination in the medical course. The most onerous effect of this procedure is seen in cases where a student has failed in the second M.B. examination at a university but has passed the equivalent examination of the English Conjoint Board, and upon the latter achievement has been accepted for his clinical training at a London teaching hospital, and some months later—in one instance after the student had completed nine months' clinical training to the satisfaction of the hospital authorities—has been called up and forced to relinquish all prospects of qualification. The Minister in reply to myself (*Hansard*, July 29, 1943) described his procedure as follows:

"One of the conditions for the continued reservation of a medical student is that he shall be periodically certified by the responsible authority of the university or other training establishment as making satisfactory progress in his studies. This restriction is necessary not only for some general reasons but because the number of places for medical students is limited, and an unsatisfactory student is not only failing to qualify himself but is preventing someone else from doing so."

I submit, Sir, that this is putting too high a premium upon the result of one examination. There must be few of us who have not failed at some part of the very arduous preparation for the medical profession. I have repeatedly pointed out in such cases to Mr. Bevin that the consequence of his regulations is to withhold from qualification a number of candidates for the medical profession and thus invalidate the success of schemes for post-war reconstruction which depends so largely upon securing an adequate number of doctors to work them. The demand is likely to be at least three times as great as the present supply, and inasmuch as the minimal period for training a doctor is some six years, preparation for that demand should be put into operation now.—I am, etc.,

House of Commons.

E. GRAHAM-LITTLE.

### The Hospital Case and the G.P.

SIR,—After reading Sir Adolphe Abramams's stimulating letter on postgraduate study (Oct. 7, p. 480), may I offer a humble suggestion whereby some of the issues raised may be approached. A little closer co-operation between hospital consultant staff and G.P.s may result in more instructive banding of the clinical material which presents itself in the realms of one's own practice.

The G.P. sends his case to hospital either because he is unable to diagnose it or he needs special therapeutic facilities, or both. Having referred his case to hospital he usually loses trace of it for some weeks, after which time he may or may not receive a letter stating either the diagnosis arrived at by his superiors in the field or the treatment to be followed. Would it not be a great deal more instructive if the rationale followed in arriving at the diagnosis were also explained to the G.P.? May I give you just one illustration.

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tentative diagnosis I made was "renal tumour and calculus." I am left wondering what possible connexion there may be between a renal tumour and a negative stool. No one has confirmed the palpable tumour or told me its possible identity.

Could not the gods of the profession occasionally step down from their pedestals to confer with, nay advise and teach, their subjects. I feel that were this possible the interesting cases which do present themselves to the G.P. would be made a great deal more instructive.—I am, etc.,

KATE FORREST.

### Artificial Insemination

SIR,—The letter from Dr. Harper in your issue of Oct. 14 needs an answer. It would have been well had he verified and weighed his facts rather more carefully before blossoming into print about this very complex subject of artificial insemination. The following points must be made clear:

Artificial insemination is certainly never done without the full and willing consent of the barren husband at any clinic or in any case with which I have dealings, nor, I imagine, would it ever be by any bona-fide doctor in his senses. Artificial insemination from a donor is called for only in a very small group of barren marriages (perhaps 2% or less of all cases seen)—i.e., those in which the husband is completely and irremediably sterile and the wife fertile, where adoption is unacceptable because the wife desperately wants a baby of her own, and where, in consequence, the marriage may be in danger of breaking down. In such cases, with the full and written consent of the sterile husband, artificial insemination, carried out as a private arrangement between the couple and the doctor, may be the best possible solution, leaving the world at large to regard the child as the husband's. It is worth placing on record that most of the requests for artificial insemination come from the sterile husbands themselves, anxious to make such reparation as they can to their wives for the children they cannot beget. Moreover, in my experience the wives are of the type who do not seek the easy way out of finding a "fancy man." It seems possible that there will be a better and more rational selection of genes if the wife receives an artificial insemination from a semen donor on a carefully chosen panel than if in her chagrin and desperation she commits an impetuous act of adultery. In any case, if we are to concern ourselves with the quality of genes there are plenty to engage our attention in the community at large before we concentrate upon that rare bird the artificial donor. Adoption undoubtedly is the solution for some, but an adopted child carries no genes from its adopted parents, whereas a child conceived as the result of artificial insemination does at least carry them from one.

In building up a panel of semen donors it is best to choose married men with offspring and to talk to their wives first, and only if these are willing for their husbands to act as semen donors are the husbands themselves approached. It is also well to select only those couples who appear to be intelligent enough to comprehend the reason for the appeal. (In the case quoted by Dr. Harper my judgment must have been at fault.) A clean bill of health, a sound intelligence, and a high grade of fertility are all essential in a donor; wherefore the building up of such a panel is no easy matter and places a grave responsibility on the doctor who attempts it. In this help might well be given by such expert bodies as the Medical Research Council and the Eugenics Society.

The legal position with regard to artificial insemination from a donor has not yet been defined in this country. In America, where artificial insemination has been done for many years, it is an accepted part of legitimate medical practice in carefully selected cases; even there the legal position is still fluid. When Dr. Harper says that the matter requires full ventilation and direction from competent authorities we must all agree. It is noteworthy, however, that demand by the citizen for legal protection in this matter has not yet been voiced nor has organized religion committed itself.

One last point. If by "veterinary" Dr. Harper had meant scientific, which it is to be suspected he did not, it would have been a well-deserved compliment to the Cinderella of the professions.—I am, etc.,

Credition, Devon.

MARGARET HADLEY JACKSON.



hydrolysates. In the meantime I hope that these preliminary observations will act as a stimulus to further efforts in this field.—I am, etc.,

DAVID LEWES,  
Medical Registrar, Southend General Hospital.

### "Dissident Doctors"

SIR,—The Dr. Samuel Smith referred to in your annotation of Oct. 14 last is a member of the Socialist Medical Association but not of its council or executive. He is also, I understand, a member of the B.M.A. From the S.M.A. point of view he was exercising his democratic rights as an individual member in sending to his friends and acquaintances the duplicated memorandum referred to.

Statements of S.M.A. policy are made openly from the official address.

Prophets are indeed without honour in their own country, for you, Sir, have seen Dr. Smith's memorandum, whereas I had not even heard of its existence till I read my *B.M.J.*—I am, etc.,

SOMERVILLE HASTINGS,  
President, Socialist Medical Association.

SIR,—It would, no doubt, be difficult to say how far your warning in the *Journal* of Oct. 14 against the introduction of doctrinaire politics into medicine should be directed against the profession as a whole. One fact, however, does require to be emphasized: that there never was a time when the need for a rational and scientific attitude to political problems was greater than it is at the present day. There should be no question that a body of intelligent men and women engaged in applying the scientific method in the professional half of their lives are not justified in relapsing, in the other half, into an infrascientific state of mind when social and political issues are under discussion.

It is over 50 years since Karl Pearson pointed out in *The Grammar of Science* that the scientific method was applicable in the social as well as the physical sphere, that one of the aims of this method is to enable judgments to be formed independent of the idiosyncrasies of the individual, and that the scientific habit of mind is an essential for good citizenship. Your esteemed contemporary (*Lancet*, 1944, 1, 571) aptly summed up the situation a short time ago in stating that the scientific method was the only possible basis for an ordered life, individual or national. No demonstration is required to indicate the strong position the profession would be in if it could claim, and show, that its judgments on the present important medical-political problems were based on an objective and scientific consideration of the data.—I am, etc.,

London, W.1.

FREDERICK DILLON.

SIR,—I have been reading your annotation in the *B.M.J.* on the subject of dissident doctors. As I see it, the meaning of the article is, apart from personalities, "Socialist doctors are entitled to join the B.M.A., but should maintain a decent silence about their political opinions." Believing, as we do, that the White Paper is, in the main, in the interests of the health workers and the people, we naturally support it. But it is only a beginning. We believe with our splendid Archbishops in equality of opportunity for all, we believe in the abolition of poverty. We believe that Socialism is the most potent factor in the prevention of war. Is it likely, Sir, that when we have this gospel to proclaim we should be silent? Rather with almost religious fervour, in season and out of season, by any legitimate means, we shall seek to further our views, believing in the rightness of our cause, and following the glorious example of the U.S.S.R.—I am, etc.,

London, N.16.

D. S. BRYAN-BROWN.

SIR,—As a regular reader of the *B.M.J.*, if not an active member of the Association, may I be allowed to express an opinion about both the article "Dissident Doctors" and the doctor who appears to have incurred your vast displeasure. You state Dr. Smith is one of those members who whilst parading the fact they are members of the B.M.A. are not

content to work within it in a democratic way. Surely your article is the very negation of democracy. Government by Parliament, local bodies, etc., consists of free expression of opinion, argument, and counter-argument, thus arriving at the best laws or solution in the matter *sub judice*. This certainly applies to the Government's White Paper, and I hold Dr. Smith has every right to voice his views not only to the vociferous minority but to all medical men. We all have our own views and need not be proselytized.

I, too, am an East End doctor, and my views are diametrically opposed to his, being all in favour of "private enterprise" with the minimum of interference by the State, despite the many efforts of Dr. Smith to convert me. The medical profession are not sheep to be led.

As regards the remark "shortage of doctors, etc.," I would like to say Dr. Smith conducts a very large practice in a most efficient manner. It is only his boundless energy and philanthropy that make me ashamed.—I am, etc.,

London, E.3.

E. O. MORPHY, M.B., D.P.H.

SIR,—It is high time that the ostrich-like attitude concerning the political functions of the medical profession displayed by your annotation in the *Journal* of Oct. 14 is challenged. Many doctors, even the B.M.A. Council themselves, have recently and repeatedly stressed the greater importance in the promotion and maintenance of health of such primary fundamentals as food and housing over secondary factors such as the provision of personal medical services. In doing so they indirectly admit the political functions of our profession, whose aim I assume is the betterment of human health. If it is believed that better town and country planning, housing, feeding, and education, at least two of which are dependent on the value of income relative to prices (rent and cost of food)—to say nothing of improved personal health and social security services by means of which the occurrence of sickness or accident will not cause financial loss to the sufferer and embarrassment of the above-mentioned income-price ratio—are necessary for the raising of the level of the nation's health, surely it is the business of members of the medical profession not only to proclaim these beliefs but also to take all possible steps to further their implementation. The scientific method of taking such steps is by utilizing the political machinery of the country, and the fact that a proportion (is it such a minor one?) of the profession is now waking up to this fact should be the occasion for rejoicing rather than moaning.

Some of us doctors consider ourselves citizens first and doctors second, and therefore owe our allegiance to the greater democracy, or to democracy before a possible technocracy. Therefore we feel that it is morally our duty to support whatever democratic political or medico-political organization we believe is most likely to press for the improvements we desire, and to put them into practice if elected to power. And, therefore, whether we join on the one hand Common Wealth or the Conservative Party or on the other hand the S.M.A., the M.P.A., the Sword of the Spirit, or the Child Health Planning Group in addition to continuing our membership of the B.M.A., I maintain that the B.M.A.'s *Journal* in attacking the activities of two of the four organizations in the second group above is not only unjust but also blind.

The Churches have for centuries been more acutely aware than the medical profession of their political duties in their endeavours to influence public policy. The fact that such so-called "interference" has not always seemed either righteous or satisfactory in the light of history does not invalidate the underlying general moral principle. Members of the medical profession might well emulate their clerical colleagues, Non-conformist, and, more recently, also Church of England, in standing more frequently for membership of their local authorities, bodies which doctors often criticize and blame without being prepared to take the obvious step of standing for election themselves, and, if successful, endeavouring to reform or guide the authority from within, a process in which hitherto the medical officer of health has usually been engaged in a lone struggle. This leads to the final observation that in a properly organized national health service the doctor, with his valuable working time economized by the provision of clerical and auxiliary medical personnel, should at last have

enough leisure to enable him to play his rightful part—one aspect of which I have just indicated above—in a democratic fellowship—I am, etc.,

Devon

F JOHN GARRATT LISHMAN

"\* We agree that medical men as citizens should utilize the political machinery of the country " in order to play their part in 'a democratic fellowship'. But are the Socialist Medical Association and the Medical Policy Association parts of this machinery? The former, at least, wants the B.M.A. to attack the latter—Ed. B.M.J.

### Reserve of Medical Students

SIR—I have been approached on several occasions by medical students whose reservations have been cancelled by the Ministry of Labour because they have failed in one examination in the medical course. The most onerous effect of this procedure is seen in cases where a student has failed in the second M.B. examination at a university but has passed the equivalent examination of the English Conjoint Board, and upon the latter achievement has been accepted for his clinical training at a London teaching hospital, and some months later—in one instance after the student had completed nine months' clinical training to the satisfaction of the hospital authorities—has been called up and forced to relinquish all prospects of qualification. The Minister in reply to myself (*Hansard*, July 29, 1943) described his procedure as follows:

One of the conditions for the continued reservation of a medical student is that he shall be periodically certified by the responsible authority of the university or other training establishment as making satisfactory progress in his studies. This restriction is necessary not only for some general reasons but because the number of places for medical students is limited, and an unsatisfactory student is not only failing to qualify himself but is preventing someone else from doing so.

I submit, Sir, that this is putting too high a premium upon the result of one examination. There must be few of us who have not failed at some part of the very arduous preparation for the medical profession. I have repeatedly pointed out in such cases to Mr. Bevin that the consequence of his regulations is to withhold from qualification a number of candidates for the medical profession and thus invalidate the success of schemes for post-war reconstruction which depends so largely upon securing an adequate number of doctors to work them. The demand is likely to be at least three times as great as the present supply, and inasmuch as the minimal period for training a doctor is some six years, preparation for that demand should be put into operation now—I am, etc.,

House of Commons

E GRAHAM LITTLE

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SIR—After reading Sir Adolphe Abraham's stimulating letter on postgraduate study (Oct. 7, p. 480), may I offer a humble suggestion whereby some of the issues raised may be approached. A little closer co-operation between hospital consultant staff and G.P.s may result in more instructive handling of the clinical material which presents itself in the realms of one's own practice.

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One last point. If by 'veterinary' Dr. Harper had meant scientific, which it is to be suspected he did not, it would have been a well-deserved compliment to the Cincarella of the professions—I am, etc.,

Credaon Devon.

MARGARET HADLEY JACKSON.

SIR,—The rational view of the moral aspect of this problem would seem to follow from considering the normal and definite way in which procreation of children takes place. It is not a manipulative procedure by a third party, or an operative procedure, but proceeds by way of sexual intercourse between man and woman. To do without sexual congress is a perversion which should be morally condemned. It involves masturbation, which should be condemned also on other grounds. This disposes of the case where it is proposed to inseminate a woman with the semen of an unknown donor.

The only cases in which artificial insemination may morally be resorted to are those in which, although coitus takes place, there is no reasonable likelihood that the semen can penetrate the uterus—e.g., malformation of the cervix, ectopia vesicae successfully operated on so that semen is ejaculated into the husband's rectum. In such cases normal intercourse is not dispensed with. The procedure follows such coitus; it is not morally wrong though it may be difficult and unsuccessful.

The medico-legal aspects of the problem are not referred to by Dr. Richard Harper. They have been discussed in the *Journal* of Jan. 9, 1937.—I am, etc.

London, N.16.

E. H. STRANGE.

### Gestation Period and Ovulation Time

SIR,—The present abnormal circumstances, whereby thousands of couples are permitted occasional, and thus memorable, opportunities for cohabitation offers to medical men an unrivalled opportunity for collecting data on the above subject. Despite the many researches detailed in such works as *The Time of Ovulation in Women*, by C. G. Hartman (London, Baillière, Tindall and Cox, 1936), controversy still arises over the relatively simple matter of gestation time, while the more abstruse affair of ovulation time in relation to menstrual period is obscure in the extreme. I would like to suggest that practitioners consulted for the first time by pregnant women make a note of all who admit to pregnancy from single coitus and publish their findings on the resulting gestation periods. If women were encouraged to keep a calendar record of their menstrual history an estimate of the ovulation time in relation to the menstrual cycle could also be made with some accuracy, provided that a decision is arrived at on the question of survival time of spermatozoa in a fertile state in the female genital tract. This could be done by washing out inseminated monkeys and using the washings for artificial insemination of other female monkeys who are fit for impregnation. From such data an accurate estimate of the day of ovulation in the cycle can be made and thus a sounder basis be secured for opinions on the matter of the so-called "safe period."

*Starling's Physiology* (8th edition, Churchill, London, 1941) suggests a period of 280 or 281 days from conception to expulsion of the foetus, being a multiple of 10 menstrual cycles, while W. H. Howell (*Textbook of Physiology*, 14th edition, Saunders, Philadelphia, 1940) merely says 280 days after the last day of the last menstrual period, while some textbooks of obstetrics say 272 days from conception to parturition. Recent experience has led me to believe that a proportion of healthy women are producing normal infants with a gestation period about 285 days on the average. With regard to the time of ovulation there might be said to be two schools of thought: those such as Knaus (1929), Bourne and Williams (1942), Pryde (1941), Shaw (1925), and Allen (1930), who are fairly dogmatic on the subject and venture a limited period of ovulation occurring from the 8th to the 17th day of the cycle; and those such as Siegel (1916), Hammond and Asdell (1926), Langman and Burr (1942), or Hamblen (1939), who are more vague. The following details of a case which can be vouched for illustrate some points in this theme:

A healthy 3-para aged 29 years gave birth to a mature child on Sept. 24, 1944, at 21.30 hrs., weight 8 lb. 11 oz., after 10-hrs. parturition. Single coitus took place on Dec. 13, 1943, at 05.00 hrs. Menstrual cycle for two years 26 days plus or minus 2, usually 26 days, flow 5½ days, L.M.P. Dec. 5 to 10, 1943. The period from insemination to delivery was thus 286 days 16½ hours, or, perhaps of more interest, the period from fertilization, when the embryo may begin to act upon the mother by production of diffusible agents, until the commencement of labour, when the maternal organism decides to expel the foetus, was about 285 days. This period resembles 11 menstrual cycles for this subject.

If the survival time for viable sperm is a maximum of 48 hours, as suggested by Starling, then ovulation in this case occurred on or about the 10th day of the cycle.

In conclusion I should like to suggest that it is advisable to record data at the first interview and contain oneself in patience for the final result rather than record answers from tired and "hazy" women in the puerperium. Coitus dates can thus be checked with husbands before they forget their occasional leaves.—I am, etc.,

York.

JAS. D. P. GRAHAM, M.D.

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### The Hazard of Anaesthesia

SIR,—May I make a belated contribution to the question of anaesthetic hazards. I doubt very much whether publication of our individual mistakes is really going to help others. It is difficult to learn from other people's errors, however willing we may be. There must be a stage in each doctor's career when he has to start with a great deal of theoretical knowledge and not much practical experience. I do not see how the young anaesthetist is to get experience except by practice, nor how the public is to be protected. It is certainly desirable that an inexperienced anaesthetist should choose his cases so far as possible, but no one can say precisely beforehand how any anaesthetic is going to shape.

My first essay at open ether ended in fatality. I was suddenly called upon to give an anaesthetic in a major abdominal section where the staff anaesthetist had failed to arrive. I knew nothing about the case; I had never given open ether. The house-surgeon in charge assured me that the patient was sound, and he added that you could not possibly kill anyone with open ether. Yet I did—or the system which permitted such a happy-go-lucky arrangement. It did not save my conscience that a famous pathologist found a degenerated heart muscle and several lesions in the lungs, or that the jury exonerated and even thanked us all. I knew that my inexperience plus a faulty system were to blame.

Later on in South Africa I built up a considerable anaesthetic practice, giving anaesthetics regularly for a well-known local surgeon, and my colleagues—both medical and nursing—paid me the compliment of calling on me to anaesthetize themselves, their wives, families, and relations as occasion arose, and I can therefore claim to have acquired some degree of skill. It may be that my early fatality helped me to a greater skill than I might otherwise have attained, and therefore benefited many other people. I should like to think so.

With regard to Dr. J. M. H. Hannan's letter (May 6, p. 634), I rarely give anaesthetics now, and am unfamiliar with all the more modern methods, but I agree with him about open ether. Though I lost my first case with it, it became my stand-by afterwards, and I would still back it, properly given, against any other anaesthetic with which I am familiar. I believe that the anaesthetist's armamentarium should be as simple as possible, and apart from that there are two essentials: slow induction and plenty of air. In big operations accompanied by much shock I used to add continuous subcutaneous saline. If a patient is taken under slowly, regardless of an impatient surgeon, and if he is kept a good colour throughout, he will give little trouble, and will have a minimum of vomiting and discomfort afterwards. It is the patient who is pushed under who becomes cyanosed, secretes plenty of saliva, strains his heart, and vomits afterwards. But you will never go far wrong with gradual induction and free airway. I still think my greatest triumph was putting a child under in its sleep without waking it up. I dislike anaesthetics for tonsils and adenoids above all other cases for the reasons that the child is frequently unhealthy, respiration is obstructed by the condition itself, and more so by the operative procedure. My nearest approach to another fatality was a T. and A. case in

a private house, which I saved by adrenaline into the ventricle. I think the surgeon was even more relieved than I, as the parents were personal friends of his. Slow induction and plenty of air.—I am, etc.,

Nanyuki, Kenya Colony.

G. DUNDERDALE.

### Arsenic in Malaria

SIR,—Recent references in your columns to quinine and quinine substitutes in the treatment of malaria prompt me to suggest an alternative method that might be tried in cases resistant to such treatment.

It has been my experience that an intravenous injection of neo-kharsivan (0.45 g.) is invariably effective in terminating malaria artificially induced for the treatment of such conditions as general paralysis of the insane. One injection is sufficient and no relapses occur. Various (theoretical) contraindications to such arsenical treatment instantly suggest themselves. In my experience, however, no adverse effects occurred even in patients weakened by as many as fifteen to twenty rigors. Whether neo-kharsivan would be effective against strains other than *P. vivax* (the strain commonly employed in the treatment of general paralysis of the insane) cannot be said, but I suggest that arsenical treatment might be tried in cases of malaria, naturally acquired, which do not respond to quinine, etc.

I should add that the foregoing method of treatment is not an original suggestion. It was, I believe, first suggested by Dr. W. McAdam in the observation wards of the Southern General Hospital, Glasgow. As one of his successors, I can testify to its efficacy.—I am, etc.,

R. GOOD,  
Capt., R.A.M.C.

### Dermatitis in Coal-miners

SIR,—In his article in the *Journal* of Sept. 30 (p. 430) Dr. Knowles mentions constitutional factors as playing a part in connexion with the oncoming of dermatitis, but refrains from telling us exactly what he means by such a statement. He admits that only a small percentage of miners develop industrial dermatitis, so it ought not to be difficult to obtain more detailed information as to the peculiar "constitutional factor" which plays a determining part. I have pointed out that "miner's knee" is a form of rheumatism determined to some extent by kneeling, but only in those who belong to what I call the "acid class." This class is made up of those whose food contains too little of the lime-containing foodstuffs—milk, eggs—and too much of the acid condiments—vinegar, pickles, sauce—which tend to destroy the vitamins in the food to which they are added. In members of the "acid class" there is nearly always evidence of blood deterioration, which lessens their oxygen-carrying capacity, and if carbon monoxide be present in increased quantities such people have their susceptibilities intensified greatly, because the oxygen carried is still further reduced.

Dr. Knowles states that the highest percentages of cases of dermatitis occur in pit F, which is deep and hot, and where there is a higher percentage of carbon monoxide gas than in the other pits. Had the miners working in these pits dealt with by Dr. Knowles been examined before starting in a colliery, he would have been in a better position to assess the constitutional factor, and consequently to prevent disease.—I am, etc.,

Swansea.

G. ARBOUR STEPHENS.

### The Cat's Milk

SIR,—In the *Journal* of July 8 (p. 58) a letter by Dr. W. N. Leak once again raises a matter which to my mind is of paramount importance. A few days after reading it and heartily agreeing with him I received a letter from my wife describing a visit to a mutual friend who has just borne her first baby after a somewhat long and trying labour. I quote the following extract:

"M" has not felt very thrilled or maternal. I gather, but that, I think, is the fault of the nursing home. She has never seen more of the baby than his face and his toes. She is not allowed to unwrap him at all. It might be anybody's baby brought in for her to feed, and there is no time allowed for mothering. 'X' [a

casual acquaintance] saw him long before she did; she was mad about that. She wasn't allowed to see him till the evening, though she was perfectly well all the time. I thought she wasn't as well as she should be; too many visitors and pain with stitches. . . ."

Quoting such an account and observing individual mothers and infants under varying circumstances in a country practice, seeing the astonishingly plentiful evidence of successful breast-feeding in this country, where Nature takes her course in the most open-handed manner, may not have the value of controlled experiment. In some fields of work where an unknown number of factors are at work, I think that what *feels* right may at long last be "scientifically proved right," and I am certain that conditions described in the letter I quote do not feel right, whatever may be the causes of that state of affairs.

Air mails are precious and surface mail slow; if that were not the case Service M.O.s over-seas might write more often. Red tape exists and I do not know its full length, so I sign myself

"R.M.O., ITALY."

### Asylum Doctors' Pay

SIR,—Since the nursing and catering staffs of mental hospitals have under recent awards all received considerable increases in pay, is it not time that the medical officers should be considered?

A matron may receive £600, plus £200 emoluments; yet the average rate for a medical officer with a D.P.M. is £450 to £500 a year—frequently only £400. The scale which governs these deplorable rates is so antiquated that few even know of its existence. The continuance of this niggardly remuneration is not likely to increase the repute of a branch of medicine which in the past has not enjoyed the prestige it deserves.—I am, etc.,

"A.M.O."

## Obituary

### ARNOLD CHAPLIN, M.D., F.R.C.P.

We regret to announce the death on Oct. 18 of Dr. Arnold Chaplin, a learned physician who was for many years Harveian Librarian of the Royal College of Physicians of London.

Thomas Hancock Arnold Chaplin was born at Fulbourn, in Cambridgeshire, on Aug. 30, 1864, the youngest son of A. T. Chaplin, a member of a Puritan and Nonconformist family which has been resident in that neighbourhood for more than two and a half centuries and has always been engaged in the occupations of farming and allied trades. In the time of the great Civil War many members (ten) of the family played their part as troopers in Cromwell's Ironsides. Arnold Chaplin was educated at Tottenhall College near Wolverhampton, and then in 1883 went to St. John's College, Cambridge. In 1886 he took his B.A. in the Natural Sciences Tripos, and went on to St. Bartholomew's Hospital to complete his medical studies, graduating in medicine in 1889. At Cambridge he had also paid considerable attention to literature, especially history and biography. In 1892 he took the M.R.C.P., and in 1893 the M.D. of Cambridge, and in 1902 was elected a Fellow of the Royal College of Physicians.

In 1889 Dr. Chaplin was appointed house-physician to the City of London Hospital for Diseases of the Chest, Victoria Park, and at the end of the year resident medical officer. He occupied this post until 1892, and was then appointed registrar and pathologist. Having decided to make a specialty of the study of chest disease, he was elected assistant physician in 1893. He became full physician and in 1922 consulting physician, after serving the hospital for thirty-three years. From 1893 to 1904 he held the post of assistant physician to the East London Hospital for Children, and he was also physician in London to the Ventnor Consumption Hospital and physician to the Metropolitan Dispensary for twenty years. It had always been his wish to use what medical skill he might possess for the benefit of great commercial concerns. With this end in view he began practice in the City of London in 1892, and in 1898 was elected physician to the Marine and

General Life Office, a position he held for more than thirty-three years. He was medical adviser to many banks and commercial firms in the City, of which the National Bank of India, the Mercantile Bank of India, the Imperial Bank of Persia, and the P. & O. Banking Corporation may be mentioned. All of these positions he held for more than thirty years. He was also physician to the Standard Life Office in London for more than twenty years, and physician to the Chinese Imperial Customs for fifteen years. But while he held these appointments his main interest in the City was the important position of medical inspector to the P. & O. Company. To this office he was appointed in 1903, and he held it for thirty-five years. Besides being responsible for the medical control of this great company he was also medical inspector to the New Zealand Shipping Company and the British India Steam Navigation Company. While he held these shipping appointments many improvements calculated to make medical service at sea more efficient were put into operation. He was also medical adviser to the Chamber of Shipping, and on two occasions was chairman of the committee set up by the Board of Trade for the revision of drugs to be carried on board ship.

In 1918 Dr. Chaplin was appointed Harveian Librarian to the Royal College of Physicians. In 1917-18 he was FitzPatrick Lecturer in the history of medicine, and in 1922 delivered the Harveian Oration. For two years he served on the Council. He was a close student of English and French literature, especially that belonging to the seventeenth and eighteenth centuries. In fact the whole of his leisure may be said to have been spent in the study of literature. He was much interested in medical history and had been President of the History of Medicine Section at the Royal Society of Medicine. For many years he was a persistent collector of the engraved portraits of British medical men, and from this fine collection he gave 250 portraits to the Royal College of Physicians and 350 to the Medical Society of London. He was three times called upon to address the social gatherings at the Royal Society of Medicine, and twice chose as the subject of his discourse the engraved portraits of medical men, and on the remaining occasion great figures in the world's history. Another favourite study was the St. Helena period of the career of Napoleon while a prisoner there. During the later years of his life Dr. Chaplin acted as informal adviser to the Royal College of Obstetricians and Gynaecology on matters connected with the library.

Arnold Chaplin's literary output was select rather than large. In his younger days several papers on diseases of the heart and lungs were followed by co-operation with Sir Andrew Clark and W. J. Hadley in writing a monograph on *Fibroid Diseases of the Lungs, including Fibroid Phthisis*. Chaplin wrote jointly with E. H. Colbeck in 1902 a small book on the *Science and Art of Prescribing* to give the student and practitioner some knowledge of the principles that underlie the administration of drugs. So much prescribing was done by means of stock hospital formulae that such information was of importance, and the book met with a demand, for a second edition was issued in four years. In 1913 he wrote a full account of the final illness of Napoleon I. This was read as a paper before the Historical Section of the International Congress of Medicine in London and was published, with some additions, in the same year as *The Illness and Death of Napoleon Bonaparte*. Besides reviewing the published accounts of the various doctors in attendance at St. Helena, he considered the illnesses which the Emperor had been subject to and which were attributed to epilepsy. Napoleon had an habitually slow pulse—rarely above 50 when well—and the vomiting, lethargy, and stupor (almost unconsciousness) which he suffered from after unusual strain and effort were, Chaplin thought, quite possibly due to some passing form of heart-block. Some of his military failures were attributed to this weakness. The final illness, as revealed at the post-mortem, was diagnosed as gastric ulcer and cancer of the stomach; in life it had been put down to tropical abscess, to liver disease, and (two weeks before death) to hypochondriasis; no one suspected the stomach. The FitzPatrick Lectures, privately printed for the author, were on *Medicine in England during the Reign of George III*. They conveyed a good deal of general information about medical affairs over the sixty years of the history, 1760-1820: medical education, hospitals, public health, the medical press, progress of knowledge, with personal notes on many of the leading physicians and surgeons of the time. An interesting section is that on the Royal College of Physicians and the prolonged struggle between its licentiates and Fellows which lasted close on a century. The subject of the Harveian Oration was "Medicine in the Century before Harvey." It had as its thesis the comparative dearth of scientific endeavour before the date of his work and the

stimulus scientific research received after its appearance. Interesting accounts are given of scholar-physicians before Harvey's time—Linacre, Caius, and others—who created a spirit of wide culture in the College of Physicians—and of those who followed his precepts or original research in the period immediately succeeding the appearance of his book—Glisson, Wharton, Willis, and Grew. The Oration concluded with a tribute to Sydenham's subsequent work of stressing the importance of clinical investigation in the treatment of disease.

Arnold Chaplin joined the B.M.A. in 1910. He held office as vice-president of the History of Medicine Section at the Annual Meeting of 1927 and as president of that Section in 1936. He was a member of the International Medical Sea Code Committee, of the Ship Surgeons Postgraduate Training Committee, and of the Ship Surgeons Subcommittee.

#### R. J. ROWLETTE, M.D., F.R.C.P.I.

We have to announce with regret the death on Oct. 14 of Dr. R. J. Rowlette, a distinguished Dublin physician who represented Dublin University in *Dail Eireann* for four years and had been President of the Royal College of Physicians of Ireland and of the Royal Academy of Medicine in Ireland.

Robert James Rowlette was born on Oct. 16, 1873, second son of Matthew Rowlette, of Carn Cash, Sligo. He was educated at Sligo School and at Trinity College, Dublin, where he graduated B.A. as Senior Moderator in Ethics and Logic in 1895. He took the M.B., B.Ch., and B.A.O. degrees in 1898, proceeded M.D. a year later, and was elected F.R.C.P.I. in 1913. Early in his career he was pathologist at Queen's College, Galway. Among the positions he held in Dublin were those of King's Professor of *Materia Medica* and Pharmacy at Trinity College, physician to Mercer's Hospital, and consulting physician to the Royal Hospital for Incurables, Donnybrook. During the last war he went to France with the rank of lieutenant-col., R.A.M.C., and was mentioned in despatches. He served on the Irish Public Health Council after returning to civil life and was professor of pharmacology at the Royal College of Surgeons in Ireland for five years. He was also a member of the Committee of Inquiry on National Health Insurance and the Public Medical Services.

Dr. Rowlette joined the B.M.A. in 1900 and represented his Division at two Annual Meetings; he was president of the Leinster Branch in 1922-4, and at the Annual Meeting in Dublin in 1933 presided over the Section of Pharmacology and Therapeutics. He was a past president of the Irish Medical Association and for many years acted as Irish editor of the *Medical Press and Circular*, whose history he wrote for its centenary in 1939; he also edited the *Journal of the Irish Free State Medical Union* and wrote memoirs of Irish physicians and surgeons for the *Dictionary of National Biography*.

From 1908 to 1920 he was president of the Irish Amateur Athletic Association and was always keenly interested in its work; he had been a famous athlete in his youth, and was honorary physician to the Irish Olympic teams that went to Antwerp in 1920, to Paris in 1924, and to Amsterdam in 1928.

Dr. ANDREW GRAHAM RITCHIE, who died in Edinburgh on Oct. 12, was born in that city on Sept. 3, 1884, and from Edinburgh Academy went to study medicine at the Universities of Edinburgh and Berlin. He took the B.Sc.Ed. in 1907, the M.B., Ch.B. in 1910, and was elected F.R.C.P.Ed. in 1920. For several years after qualifying Dr. Ritchie held resident posts at the Edinburgh Royal Infirmary, and then became clinical tutor. He was also for a time resident surgeon at the Royal Maternity Hospital and physician to the Livingstone Dispensary; later he became physician to the Cowgate Dispensary and to the Longmore Hospital for Incurables. During the last war he served in No. 8 Mobile Laboratory, B.E.F., with the rank of captain, R.A.M.C. He contributed papers to the *Journal of Pathology and Bacteriology* and the *Quarterly Journal of Medicine*. He joined the B.M.A. in 1922 and represented his Division at the last two Annual Representative Meetings in London. A colleague, in the course of a tribute published in the *Scotsman*, has written: "Those who remember his father recognize how much Andrew Ritchie derived from him—in particular the strong, almost stern, sense of duty and the realization of the 'high calling' of his professional work. His experience as a pathologist in the Army in the last war filled him with such a love of the scientific side of medicine that at the end of the war he was much tempted to devote himself to it, but he saw it to be his duty to take over the large family practice with



which his father's increasing years were making him unable to cope. How well he succeeded in that vocation is attested by the devotion of his many patients.

Dr NOEL F ROWSTON of Sunderland, who died on Sept 19, was born in Corunna Spain 74 years ago and educated at St. Bartholomew's Hospital, taking his M.B. degree at Durham University in 1893, and later his M.D. for which he was gold medalist. About 1899 he settled in Sunderland as a general practitioner. In the list war he served in Malta, and on his return was appointed V.D. medical officer in the Royal Infirmary, Sunderland, at which he practised to the day of his death. He was a member of the British Medical Association nearly all his professional career, and was founder of the West End Society—a subsidiary in the Sunderland Division of the B.M.A. A colleague writes: "Since 1912 this society has drawn its members into close collaboration, improved their scientific knowledge, and ameliorated conditions of work. The members admired the enthusiasm of our friend both in his profession and in our society, and feel in debt to his untiring efforts."

Dr. VICTOR JENNER BATTESON of Ilford, who died on Sept 29, was for some years an active member of the B.M.A., representing the Stratford Division at nine Annual Meetings and serving as chairman of the Division in 1930-1, he had also been a vice-president of the Metropolitan Counties Branch. He was born in Mile End in 1867, the son of John Batteson, M.R.C.S. After seven years at University College School, London, he entered University College Hospital Medical School and qualified L.S.A. in 1894. During three years' service as temporary captain in the R.A.M.C. he held the post of sanitary officer at Malta. For a short time after returning to civil life he was assistant physician to the Queen's Hospital for Children, having served earlier as physician to the Plaistow Baby Clinic. Dr Batteson gave much time to lecturing for the St. John Ambulance Association which made him an honorary life member.

Dr Charles Vincent Mackay, F.R.A.C.P. writes from South Yarra Melbourne. In the obituary columns of the *Journal* of April 22 you published an appreciation of the late Sir HENRY MAUDSLEY by Sir Thomas Dunhill, his house physician at the Royal Melbourne Hospital in 1904. The memory picture which he has so clearly drawn of this great physician teaching neurology at the bedside, will recall many such scenes to those who enjoyed the same privilege as himself. Sir Thomas is however, not quite accurate in his dates. Sir Henry Maudsley was appointed directly to the in-patient staff of the Royal Melbourne Hospital on Aug 27 1903, and retired in 1919. Sir Richard Stawell was appointed to the out-patient staff on May 19 1903. He actually preceded Sir Henry Maudsley on the teaching staff of the hospital and succeeded him as in-patient physician on April 25 1919. The praise which Sir Thomas Dunhill gives to these two great teachers of medicine is echoed back to him by all their students in Australia, who are so much indebted to them.

## The Services

Major Gen. R. E. Barnsley, M.C., K.H.S. late R.A.M.C., has been appointed C.B. (Military Division) in recognition of distinguished services in connexion with the landings in Normandy.

The *London Gazette* has announced the following appointments, awards, and mentions in recognition of gallant and distinguished services in Burma and on the Eastern Frontier of India.

*C.B.E. (Military Division)*—Col (Temp) A. N. T. Meneces, R.A.M.C.

*M.B.E. (Military Division)*—Capt (Temp Major) D. B. Jamie, R.A.M.C. Capt (Temp Major) A. M. Nolan, I.A.M.C., Capt M. L. Sudan, I.A.M.C.

*M.C.*—Capt K. B. Fraser, R.A.M.C.

*Mentioned in Despatches*—Majors (Temp Lieut Cols) T. E. A. Carr and P. D. Johnson, Capts (Temp Majors) T. S. R. Fisher and A. D. Stoker, Capt A. G. H. Clay, R.A.M.C.; Capt (Temp Major) A. Lakshminarayana, Capts B. N. Blagran, J. W. A. Crabtree, S. N. Basu, M. K. Akhtar, S. K. Ghosh, F. M. Khan, and U. P. Mukherjee, I.A.M.C.

Major Gen. Sir P. S. Tomlinson, K.B.E., C.B., D.S.O., K.H.P., late R.A.M.C., has been mentioned in despatches in recognition of gallant and distinguished services in the Middle East.

Capt G. E. Wodehouse and Lieut L. Dallan, R.A.M.C., have been awarded the M.C. in recognition of gallant and distinguished services in the field.

Capt (Temp Major) J. G. B. De Vine, R. W. Jones, and J. L. Nicol, Capt (acting Major) D. R. Sandison, Capts T. G. Grav, P. G. Griffiths, C. C. Laird, W. W. Marsden, and J. Thompson, and Lieut F. S. Cooper, R.A.M.C., have been awarded the M.C. in recognition of gallant and distinguished services in N.W. Europe.

Temp Surg Lieut G. A. Gould, R.C.N.V.R., has been mentioned in despatches for good services to the survivors when H.M.C.S. *Regina* was lost.

## CASUALTIES IN THE MEDICAL SERVICES

Fl Lieut A. J. Chiappa Sinclair, who died on Oct 2, was born in April 1893, studied dental surgery and medicine at Middlesex Hospital, qualifying L.D.S. in 1919, and M.R.C.S., L.R.C.P. in 1922. After holding appointments at the Dental Hospital, Great Portland Street, he entered general practice. He was commissioned in the Medical Branch of the R.A.F.V.R. on June 13, 1941. At the date of his death he was serving as medical officer at a mobile field hospital overseas.

*Killed on active service*—Capt Ernest Lawrence Holden Ellis, R.A.M.C.

*Killed in action in N.W. Europe*—Capt James Thorburn Doyle, R.A.M.C.

*Died of wounds*—War Subs. Capt Hayter Arnett Wells, R.A.M.C. Previously reported missing now officially presumed killed—Surg. Cmdr Humphrey de Bohun Kempthorne, R.N.

*Reported missing at Arram*—Majors C. J. Longland and G. Regby-Jones and Capts J. H. Keeseey and J. E. Buck, R.A.M.C.

*Reported missing*—Capt R. E. Bonham Carter, R.A.M.C.

*Reported missing in Holland*—Capt P. Eous, R.A.M.C.

*Reported missing believed prisoner of war*—Capt C. C. M. James, R.A.M.C.

*Missing in N.W. Europe believed prisoner of war*—Lieut Col M. E. M. Herford, M.B.E., M.C., R.A.M.C.

*Wounded and missing in N.W. Europe believed prisoner of war*—Capt G. F. H. Dravson, R.A.M.C.

*Wounded*—War Subs. Capts N. R. Carlson and J. R. Kyles, R.A.M.C.

## Medical Notes in Parliament

### Tuberculosis Treatment

In the House of Commons on Oct 10 Sir WALDRON SMITHERS called attention to the increase of tuberculosis in Kent and the lack of institutional accommodation for patients. It was reported that there were at present 350 patients awaiting institutional treatment and owing to the shortage of beds and staff, men could not be accommodated for at least three months and women and children for about five months. The incidence of tuberculosis went up in wartime. In reply to a question he had put to the Minister of Health on July 27, he was told that the rate per 1,000 went up from 0.704 in 1938 to 1.248 in 1941, 1.017 in 1942, and back to 0.984 in 1943. While realizing all the difficulties, had every possible step been taken to see that all available staff and accommodation were economically used? The Minister had tried to put as good a case as he could by saying that the number of deaths which was considered the truest guide to the incidence of the disease, showed only an increase of 0.1% over the same period. It was not a question of the number of deaths but of the terrible danger of the spread of infection. The admission of patients was strictly in accordance with the date of recommendation. Why should that be? Surely some consideration should be given to the state of health, age, and home surroundings of the patient.

The conditions at the clinic at Bromley, to which, although it was not in his constituency, his constituents had to go, was appalling. There were no beds, and the accommodation for patients and the dressing-rooms was most primitive. The tuberculosis officer for that clinic, to whom he paid a tribute, was a splendid man and was heartbroken at the distress around him and his inability to help. The medical officer of health for Kent had written him (Sir Waldron Smithers): "You will appreciate that the doctor at the clinic at Bromley is an officer on my staff, but as tuberculosis officer to the Bromley area he is not familiar with the questions of policy raised. In any event, as a subordinate officer on my staff, it would be improper for him to answer your questions." Here was a foretaste of a State-run medical service, a service run too much by people sitting in offices and tending to get out of touch with the realities of medical practice. The medical officer of health also complained that he (Sir W. Smithers) had shown a report of his to the wife of a tuberculous patient in his constituency.



The war boggy had been overdone. Tuberculosis was bad all over the country. The Minister had a very grave responsibility in this matter in trying to alleviate human agony and suffering, which might have been avoided in some degree had he been a stronger man and shown some foresight and courage.

SIR HENRY MORRIS-JONES said that Sir Waldron Smithers's remarks on what was said by the chief medical officer about his subordinate officer was characteristic of what was likely to happen in this country when we got a National Health Service under the State. There was a medical man who, when asked his opinion, was not allowed by his superior officer to give it. The thing would have been quite impossible in a voluntary hospital. The position in regard to institutional vacancies and to tuberculosis cases which were compelled to be in homes that were often overcrowded was very serious in this country. Conditions in Wales were growing more serious. It was time that the Minister of Labour released generally more women for domestic and institutional help.

MISS HORSBRUGH said that they all realized what difficulties the hospitals were facing at the present time. Patients who would benefit most from sanatorium treatment and rest had to be taken before other cases which, although distressing, would receive no real lasting benefit from treatment. She agreed that they should have sufficient beds and institutional accommodation for both kinds of cases. Even in wartime they had practically the same number of beds as they had before the war, but that was not enough. The real difficulty was the question of staff—nursing and domestic. The pool of trained nurses had at present to be drained for service all over the world. They were asked for more midwives, more mental nurses, more staff for sanatoria, more general nurses. The Minister of Labour had set up a National Advisory Council for the Recruitment and Distribution of Nurses and Midwives. But it was just as important to see that they had enough domestic workers. They had asked the Minister of Labour to do more about this.

The death rate from tuberculosis was down practically to the figure for 1938—there was a small increase in the number affected, but nowadays they were discovering the disease earlier. They must have buildings, and above all trained men and women to look after these people. The Ministry of Health and the local authorities were doing their best, and there was an economic use of our facilities at present. The facilities were not great enough, and she hoped when the war ended they would be able to get on with a bigger and better health service, which would have the approval of the House of Commons and the country as a whole.

#### Inoculation in the Forces

On Oct. 17 Mr. A. EDWARDS asked the Secretary of State for War if he would consider making a King's Regulation prohibiting the vaccination or inoculation by force of any member of H.M. Forces, and the imposition of any punishment or disability on men who exercised their right to object to these operations. Sir JAMES GRIGG said that King's Regulations laid down that inoculation against tetanus and the enteric group of fevers was voluntary, and the *Manual of Military Law* stated that a soldier could not be punished for disobedience of an order to be vaccinated or for refusing to be inoculated. This was well understood, and he was not aware of any need for further regulations.

#### Parliamentary Medical Group and Medicine in India

During his visit to India last winter Prof. A. V. Hill had special opportunities of learning about the present situation and needs of India in connexion with education and research in medicine and public health. On his return he discussed these with the Parliamentary Medical Group, which was keenly interested in some of the proposals and took steps to facilitate a project for providing postgraduate training in the United Kingdom of selected Indian medical graduates. These would be key men for future developments. More recently two members of the Parliamentary Medical Group discussed these and kindred matters with Lieut.-Gen. J. B. Hance, D.G.I.M.S., and Dr. C. G. Pandit, director of the King Institute of Preventive Medicine, Madras. The Group is keenly aware of the urgent need of India for great improvements in the fields of medicine and public health. It hopes to keep in close touch with developments, and will do what it can to facilitate cooperation with and help from the U.K.

#### Penicillin

Answering questions on Oct. 19, Mr. WILLINK said no facilities had been granted to Mr. Kendall, M.P., to obtain penicillin. Mr. Willink had no information as to the source of his supplies. The value of penicillin for the treatment of bacterial endocarditis had not been established. In view of the limited

amounts available for civilians he had not felt justified in recommending its use for this disease. He was not aware if civilians were being allowed to die because they were refused treatment with penicillin. For many diseases treatment with penicillin would be ineffective.

Mr. GEORGE GRIFFITHS asked whether Mr. Willink knew a discovery in a laboratory of the West Riding County Council where penicillin was being made. Had not permission been given to use this on West Riding patients? Mr. WILLINK said questions on the production of penicillin were not for the Department. His responsibility was to advise on the distribution and use of what was available for civilians. There was shortly to be a debate in the House on penicillin, during which he proposed to speak. Mr. KENDALL said larger quantities of this drug were now available.

#### Establishment of Married Women Doctors

Captain PRESCOTT on Oct. 19 asked the Minister of Health what disqualifications or disabilities attached to the establishment or promotion of married women doctors, either in the local government service or in the Ministry of Health, a whether he would consider recommending their removal. Mr. WILLINK replied that there was in all Government Departments a ban on the establishment of married women civil servants. This was removable in exceptional cases where was considered that the efficiency of the Department would suffer by the loss of the officer's services. When a woman doctor in his Department was retained after marriage there was no disqualification as regards promotion. The abolition of the ban in the Ministry of Health was a general service question within the province of the Treasury. There was no statutory bar to the employment by local authorities of married women medical officers. The question was one entirely within the discretion of local authorities. A similar rule to that applied in the Civil Service was commonly applied in local government but had been widely relaxed during the war.

#### Anaesthetic Cylinders

Mr. WILLINK told Mr. George Strauss on Oct. 19 that attention had been drawn to the recent death of a child at Bath during an operation as a result of the use of a badly marked nitrous oxide anaesthesia cylinder. The British Standards Institution had appointed a committee to consider what measures could be adopted to distinguish more readily than at present between the various medical gas cylinders used in the administration of anaesthetics for the purpose of avoiding repetition of such a tragedy. His Department was represented on this committee.

#### Battle Casualties

From the opening of the campaign in Western Europe up to the end of August the casualties sustained by the British Imperial Forces engaged totalled 103,842, of whom 20,795 were killed, 63,193 wounded, and 19,854 missing or taken prisoner.

#### Health of Miners

Replying to a debate on Oct. 18 about recruitment for the coal industry, Mr. TOM SMITH said the greatest wastage from the industry was through men who left it on medical certificate. That question was constantly under review. The fatal accident rate still showed a decline and progress had been made with rehabilitation in fracture cases. The rehabilitation centres were appreciated by patients who had been treated in the Through the Home Office the Ministry of Fuel and Power had been able to do a little in regard to silicosis. No time had been lost in the efforts to prevent pneumoconiosis, which was wanted watching constantly. Some progress had been made.

**Goodenough Report.**—The recommendations of the Goodenough Report, including the wider admission of women to the medical schools, are under consideration, and Mr. Willink hopes to be able to make a statement soon.

**Proprietary Medicines.**—Mr. JOHN DUGDALE on Oct. 19 asked the Minister of Health to inquire into all proprietary medicines claimed to cure certain diseases with a view to warning the public against those found not to act in accordance with their claims. Mr. Willink did not think that action on these lines would be practicable. It was already unlawful to advertise any article for the treatment of certain diseases, including cancer, diabetes, tuberculosis, and venereal diseases.

**Serum for Rheumatoid Arthritis.**—On Oct. 19 Cmdr. LOCKE LAMPSON inquired whether particulars of the cure for rheumatoid arthritis announced in Russia had been secured. Mr. WILLINK said the Empire Rheumatism Council had carried out tests with a small supply of serum sent to them from Russia. The results obtained did not justify a favourable verdict. The council proposed to make further investigations when war conditions permitted, but meanwhile were not prepared to recommend the use of this serum.

No. 40

## INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended Oct. 7.

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year for: (a) England and Wales (London included) (b) London (administrative county), (c) Scotland, (d) Eire (e) Northern Ireland.

Figures of Births and Deaths, and of

for: (a) The 126 great towns

(b) London (administrative county)

The 13 principal towns in Eire. (c)

A dash — denotes no cases; a blank space denotes disease not notifiable or no return available.

Disease	1944					1943 (Corresponding Week)				
	(a)	(b)	(c)	(d)	(e)	(a)	(b)	(c)	(d)	(e)
Cerebrospinal fever	24	1	15	1	1	30	4	18	—	—
Deaths ..	—	—	—	—	—	—	—	—	—	—
Diphtheria	509	7	144	116	25	732	37	167	93	44
Deaths ..	10	1	1	—	—	9	1	3	—	1
Dysentery	390	42	134	1	—	263	52	96	—	—
Deaths ..	—	—	—	—	—	—	—	—	—	—
Encephalitis lethargica,	—	—	—	—	—	—	—	—	—	—
acute ..	1	—	—	—	—	1	—	2	—	—
Deaths ..	—	—	—	—	—	—	—	—	—	—
Erysipelas	—	—	52	13	—	—	—	59	9	1
Deaths ..	—	—	—	—	—	—	—	—	—	—
Infective enteritis or	—	—	—	—	—	—	—	—	—	—
diarrhoea under 2	—	—	—	—	—	—	—	—	—	—
years ..	59	6	30	20	4	46	6	10	72	5
Deaths ..	—	—	—	—	—	—	—	—	—	—
Measles*	2,492	38	173	54	57	581	55	52	18	4
Deaths ..	3	—	—	—	—	—	—	—	—	—
Ophthalmia neonatorum	58	3	11	—	—	70	3	19	1	2
Deaths ..	—	—	—	—	—	—	—	—	—	—
Paratyphoid fever	7	—	1(B)	—	—	8	—	1	—	—
Deaths ..	1	—	—	—	—	—	—	—	—	—
Pneumonia, influenzal†	628	39	4	2	5	557	37	5	2	4
Deaths (from influ-	19	3	2	—	1	14	1	2	—	—
enza) ..	—	—	—	—	—	—	—	—	—	—
Pneumonia, primary	—	—	173	15	7	—	—	177	19	13
Deaths ..	21	—	—	—	—	20	—	—	—	—
Polio-encephalitis, acute	—	—	—	—	—	1	—	—	—	—
Deaths ..	—	—	—	—	—	—	—	—	—	—
Poliomylitis, acute	19	—	11	2	—	15	—	2	2	—
Deaths ..	—	—	—	—	—	—	—	—	—	—
Puerperal fever ..	—	1	13	—	—	—	4	14	—	1
Deaths ..	—	—	—	—	—	—	—	—	—	—
Puerperal pyrexia‡	166	4	7	1	—	159	6	8	—	3
Deaths ..	—	—	—	—	—	—	—	—	—	—
Relapsing fever	—	—	—	—	—	—	—	—	—	—
Deaths ..	—	—	—	—	—	—	—	—	—	—
Scarlet fever ..	1,932	41	321	27	55	3,249	309	385	47	95
Deaths ..	—	—	1	—	—	1	—	—	—	—
Smallpox ..	—	—	—	—	—	—	—	—	—	—
Deaths ..	—	—	—	—	—	—	—	—	—	—
Typhoid fever ..	7	—	—	8	—	9	—	3	13	—
Deaths ..	—	—	—	1	—	—	—	—	—	—
Typhus fever ..	—	—	—	—	—	—	—	—	—	—
Deaths ..	—	—	—	—	—	—	—	—	—	—
Whooping-cough*	860	50	77	38	5	1,481	101	181	42	19
Deaths ..	6	—	2	1	1	11	2	3	1	—
Deaths (0-1 year)	32	31	81	44	20	27	35	42	3	24
Infant mortality rate	—	—	—	—	—	—	—	—	—	—
(per 1,000 live births)	—	—	—	—	—	—	—	—	—	—
Deaths (excluding still-	4,068	510	650	163	123	3,861	591	550	182	127
births) ..	—	—	—	—	—	—	—	—	—	—
Annual death rate (per	—	14.9	10.6	5	—	—	12.4	12.0	5	—
1,000 persons living)	—	—	—	—	—	—	—	—	—	—
Live births ..	6,695	438	1,057	397	269	6,290	785	937	400	284
Annual rate per 1,000	—	—	21.5	25.7	5	—	19.1	26.3	5	—
persons living)	—	—	—	—	—	—	—	—	—	—
Stillbirths	212	15	44	—	—	190	27	27	—	—
Rate per 1,000 total	—	—	—	—	—	—	—	—	—	—
births (including	—	—	—	—	—	—	—	—	—	—
stillborn) ..	—	—	40	—	—	—	—	—	—	—

\* Measles and whooping-cough are not notifiable in Scotland, and the returns are therefore an approximation only.

† Includes primary form for England and Wales, London (administrative county), and Northern Ireland.

‡ Includes puerperal fever for England and Wales and Eire.

§ Owing to evacuation schemes and other movements of population, birth and death rates for Northern Ireland are no longer available.

## EPIDEMIOLOGICAL NOTES

## Discussion of Table

In England and Wales during the week measles, acute pneumonia, scarlet fever, and dysentery continued to rise in incidence, notifications being respectively 477, 149, 94, and 39 higher than last week. There were 122 fewer cases of whooping-cough and 36 fewer of diphtheria.

Whooping-cough notifications fell most noticeably in the south-west and south midlands from 190 to 101. Lancashire reported 18 fewer cases of diphtheria than last week. Measles notifications are still mounting in the north; Lancashire had 328 more cases than last week, Cheshire 71, and Warwickshire 55; in Durham the total fell by 137.

In Scotland there was a general lowering of the incidence of infectious diseases. The decreases were scarlet fever 51, acute primary pneumonia 43, measles 28, dysentery 11, diphtheria 15; but the total for whooping-cough rose by 22. The largest returns for dysentery were Glasgow 64, and Edinburgh 32.

In Eire diphtheria notifications rose by 26 and measles by 8. The chief outbreak of measles was in Dublin North Rural district, which had 23 cases.

In Northern Ireland measles notifications rose by 15, but those for diphtheria fell by 6, and for scarlet fever by 8. There has been an outbreak of typhoid fever, involving 11 persons, with 2 deaths, in the village of Lisbellan, Co. Fermanagh.

## Dysentery

In England and Wales during the present year dysentery notifications have been high, the weekly totals ranging between 127 and 622. In the past five weeks 2,108 cases have been notified. The total notifications for the first, second, and third quarters of this year are 9,178, compared with 1,174, 3,665, 1,368, 1,698, 4,487, 5,118, 5,453 for the corresponding periods of 1937-43. During the week reviewed the largest returns were Glamorganshire 54, Lancashire 52, Suffolk 43, London 42, Pembrokeshire 36, Essex 24, Northamptonshire 20, Surrey 18, Kent 11.

The age and sex distributions for the first quarter of the year are given in the recently published report for the June quarter. They are:

Ages	Civilians		Non-civilians	
	Male	Female	Male	Female
0-15	676	563	—	—
15+	440	343	115	21
Unknown	30	43	—	—
Total	1,146	1,464	115	21

## Quarterly Returns for Eire

The birth rate during the June quarter was 23.6 per 1,000, which is 2.1 above the average of the five preceding second quarters. The infant mortality was 70 per 1,000 registered births—2 above the five-years average. The general death rate was 15.1 per 1,000, which is 0.5 above the average of the second quarters of 1939-43. 436 deaths were attributed to the principal epidemic diseases, compared with an average of 318. Increases over the June quarter of 1943 were as follows: measles 56; typhoid 6, diphtheria 5; there were 9 fewer cases of whooping-cough, 8 of scarlet fever, and 230 of diarrhoea and enteritis under 2 years than for the same period last year. The 222 deaths from the latter disease were, however, 63 above the five-years average. 871 deaths were due to respiratory tuberculosis, and 280 to other forms, the former being 107 below and the latter the same as in the corresponding quarter of last year.

## Week Ending October 14

The returns of infectious diseases in England and Wales during the week included: scarlet fever 2,152, whooping-cough 897, diphtheria 567, measles 3,088, acute pneumonia 655, cerebrospinal fever 43, dysentery 358, paratyphoid 7, typhoid 9, poliomyelitis 24.

W. A. Blankenhorn (*Ann. intern. Med.*, 1944, 20, 423) records six cases of multiple peripheral neuritis which occurred among 600 patients treated with sulphonamides. In 5 the total dose was 50 g. or more; 6 g. a day was administered by mouth. The largest dose was 197 g. and the smallest 36 g. In several cases other factors may have contributed. Eight cases showed signs of neuritis before sulphonamide drugs were given.

## Universities and Colleges

## Letters, Notes, and Answers

### ROYAL COLLEGE OF SURGEONS OF ENGLAND

#### Annual Meeting of Fellows and Members

The annual meeting of Fellows and Members will be held at the College on Thursday, Nov. 16, at 2.30 p.m. A good attendance is hoped for, because there will be important matters for consideration, such as the attitude of the profession to the White Paper, which was dealt with at the Fellows' meeting in May and reported on pages 14-17 of the annual report, copies of which may be had from the secretary of the College, Lincoln's Inn Fields, W.C.2, who will send also a copy of the agenda to any Fellow or Member applying for one. Other matters for discussion at the meeting are the implications of the report of the Goodenough Committee, and the attitude of the College in regard to the possibility of developing a conjoint building in which the three Royal Colleges and other academic bodies can be housed.

### ROYAL COLLEGE OF SURGEONS OF EDINBURGH

At the annual meeting of the College held on Oct. 18 the following officers were re-elected for the ensuing year: *President*, Prof. R. W. Johnstone. *Vice-President*, Mr. J. W. Struthers. *Secretary and Treasurer*, Mr. K. Paterson Brown. *Representative on General Medical Council*, Mr. Henry Wade. *Convener of Museum Committee*, Mr. W. Quarry Wood. *Librarian*, Dr. Douglas Guthrie.

The following candidates were elected Fellows of the College, having passed the requisite examination:

H. H. Atkinson, P. H. Beales, H. M. MacCarthy, Mary Savory.

### UNIVERSITY OF SHEFFIELD

At a meeting of the University Council held on Oct. 13 a donation of £100 for cancer research was received from Mr. George I. Forster of Northwood, Middlesex, in memory of his father and mother.

The following academic staff appointments were made: Dr. I. F. S. Mackay, as lecturer in experimental physiology; Dr. H. R. Vickers, as honorary lecturer in dermatology; and Dr. D. P. Graves and Miss E. M. Spedding, M.B., as temporary demonstrators in anatomy.

## Medical News

Dr. Janet M. Vaughan, F.R.C.P., has been appointed a member of the Royal Commission on Equal Pay for Men and Women in the Public Services, in Industry, and in Other Fields of Employment.

The Society of Apothecaries of London announces that Col. Elliott C. Cutler, chief consultant in surgery, U.S. Army, European Theatre of Operations, will deliver a lecture on "Military Surgery in 1944" at Apothecaries' Hall, Black Friars Lane, Queen Victoria Street, E.C.4, on Friday, Nov. 3, at 2.30 p.m. Members of the medical profession and senior students will be welcomed. Later in the session Brig. L. E. H. Whitby will lecture on blood transfusion; Sir Howard Florey on penicillin; and Mr. Eardley Holland, F.R.C.O.G., on midwifery.

At a meeting of the Society of Public Analysts and Other Analytical Chemists to be held at 3 p.m. on Wednesday, Nov. 1, at the Chemical Society's Rooms, Burlington House, Piccadilly, W.1, the following papers will be presented and discussed: "Some Experiences of Microbiological Assays of Riboflavin, Nicotinic Acid and Other Nutrient Factors," by D. W. Kent-Jones, Ph.D., and M. Meiklejohn; "A New Method for the Estimation of Micro-quantities of Cyanide and Thiocyanate," by W. N. Aldridge. Guests introduced by members are welcomed at the meetings by the Council.

A Congress of Friendship and Co-operation with the U.S.S.R. will be held in London on Nov. 4 and 5, in the Central Hall, Westminster, and the Coliseum Theatre. The sponsors of the congress include Lord Horder, Sir Alfred Webb-Johnson, Sir Philip Manson-Blyth, Sir Boyd Orr, Prof. F. Wood Jones, and Sir E. Rock. The programme of the congress is to survey the successes already achieved in the field of British-Soviet co-operation within the framework of the United Nations, and to consider ways and means of further extending such co-operation in the post-war period.

Dr. M. J. C. Gardner reports that a small quantity of DDT (dichlorodiphenyl trichlorethane), which has been produced to combat infestation by vermin, and was used with telling effect in Naples, has been placed at the disposal of the Salford Health Department for testing purposes, and will be applied to the disinfection of houses. Salford is the only authority outside London to be issued with the powder, because war needs in the Middle and Far East make it impossible for quantities to be made available in this country.

All communications with regard to editorial business should be addressed to THE EDITOR, BRITISH MEDICAL JOURNAL, B.M.A. HOUSE, TAVISTOCK SQUARE, LONDON, W.C.1. TELEPHONE: EUSTON 2111. TELEGRAMS: *Articulate Westcent, London*. ORIGINAL ARTICLES AND LETTERS forwarded for publication are understood to be offered to the *British Medical Journal* alone unless the contrary be stated.

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### ANY QUESTIONS?

#### Ammon. Chlor. for Soda-ash Burns

Q.—Is the 5% solution of ammonium chloride issued to firms for treating burns caused by soda ash to be used neat or diluted?

A.—If the bottle issued is labelled "5% solution" it should be used neat, to drench the affected tissues, and may be followed by bathing or irrigation with normal saline or plain water. (See *B.M.J.* 1943, 1, 756.)

#### Sero-fibrinous Pleurisy

Q.—What conditions in sero-fibrinous pleurisy would lead one to believe that the effusion is non-tuberculous?

A.—All recent work tends to show that in the vast majority of instances sero-fibrinous pleurisy is tuberculous in origin. All cases of pleural effusion should be investigated thoroughly with a view to ascertaining the cause; a careful history, x-ray examination of the chest, and examination of the fluid are essential. Where there is no clear indication, such as the presence of a neoplasm, heart failure, acute rheumatism, or injury, to suggest that the condition is non-tuberculous, it should be assumed that tuberculosis is the cause. It must also be remembered that a persistent sterile effusion is a common sequel to pneumonia which has been treated with sulphonamides in inadequate doses.

#### Bed-sores

Q.—An enfeebled lady of 82 years of age with myocardial degeneration and anginal symptoms was admitted to hospital with a fractured neck of femur and Colles's fracture, the result of a fall. Within four days she developed two pressure sores, one on the buttock and one over the scapula. Is this attributable to careless nursing as is so often thought to be the case by the public? The pressure areas had been treated in the usual manner, but in spite of this the abrasions appeared and progressed. Is this inevitable, and if not how can it be avoided? The question is one of supreme importance to hospitals nursing this type of case.

A.—The occurrence of bed-sores in this case was by no means necessarily due to careless nursing. The measures taken to prevent such sores have each their special aim. The gentle rubbing during the process of cleansing with soap and water, the drying, and the powdering aim at improving the local blood supply; the application of spirit is meant to harden the skin so that it may be better withstand unavoidable pressure; the care taken to avoid rucks in the sheet and to distribute pressure by pads and rings aims at avoiding undue pressure or irritation on any one spot. In addition if the heart action be weak it may be advisable to stimulate it by appropriate drugs.

In the lady of 82 with double fracture and suffering from myocardial degeneration it would be difficult to maintain a good peripheral circulation by any means and bed-sores might be inevitable. It must be understood, however, that in the great majority of cases, even at that advanced age, the above precautions should suffice to prevent the occurrence of sores.

#### Indoor Ripening of Tomatoes

Q.—Is there any difference in the vitamin content of tomatoes that ripen on the bush and those that ripen indoors?

A.—Very little information on this subject is available, although published results suggest that tomatoes which have been picked green and ripened in storage contain not only less vitamin C but also less carotene than similar fruit allowed to ripen on the vine. Conditions of storage have their effect, however, and it has been found that if unripe tomatoes are exposed to sunshine after picking their vitamin C content is much higher than that of tomatoes stored in the dark. Other factors, such as season, variety, and soil also influence the vitamin value of fruits, and consequently indoor-ripened tomatoes may or may not be nutritionally inferior.

## Workmen's Compensation

**Q.**—*What is the procedure for a patient without means who does not belong to a trade union to apply for compensation? My patient suffers from disseminated sclerosis which has apparently been aggravated by a fracture sustained at work and he has only since then become unfit for work.*

**A.**—The workman should go to the county court nearest to his workplace and explain the position to the registrar or his deputy. He will be instructed how to make a claim, and if the registrar considers that he should have legal aid he will be directed to the secretary of the local Poor Persons Committee of the Law Society. The registrar will probably himself communicate with the secretary. County courts are used to poor litigants, and their officials are humane and helpful. If the workman is physically unable to go to the registrar's office, any friend may go in his place. The local Poor Man's Lawyer might have something useful to suggest. The police, or the Citizens Advice Bureau, or the local social welfare society, or the town hall staff, will almost certainly know whether a P.M.L. is available in the district.

## Boy or Girl?

**Q.**—*I have recently been approached by a patient who has read an article in a periodical about the predetermination of sex and he now wishes to know whether there is any possibility of ensuring that a child of one sex should be born by taking the appropriate measures.*

**A.**—Many fantastic theories have been advanced, but none of them are supported by evidence. The P.H. story continues to crop up at intervals, but it has no better support than other less probable hypotheses.

## Motile Spermatozoa in the Vagina

**Q.**—*I have been in the habit, when examining a couple for childlessness of examining microscopically a vaginal smear for motile spermatozoa as soon as possible after intercourse. This examination should determine whether ejaculation occurs into the vagina and whether the spermatozoa are capable of remaining motile in the vaginal secretions. Surprisingly enough, however, I have seldom been able to detect active or even dead spermatozoa although the male partner usually turns out to have no abnormality of the genitalia. Is this test a misleading one and do spermatozoa in fact tend to disappear very soon from the vagina?*

**A.**—The reaction of vaginal fluid is almost invariably acid, in a series of more than 400 electrical estimations of vaginal pH the range was 4.2 to 7.0 and was below 6.0 in more than 90% of cases. Sperms (even from a perfectly fertile man) that remain in the vagina are rapidly immobilized within 1 to 3 hours in most cases, though there are fairly wide variations from one couple to another, depending on such things as the volume and quality of the ejaculate, the volume and pH of the fluid present in the vagina prior to ejaculation, the occurrence of orgasm on the part of the female, and the phase in her menstrual cycle. Motile sperm have rarely been found in the vaginal vault up to 7 hours after intercourse (and once at an interval of 14 hours, and this vagina had a pH of 7.2), but unless the examination of vaginal contents is made within two hours of coitus little weight can be attached to the absence of motile sperm. On the other hand, with careful searching small numbers of immobilized sperm can frequently be found in vaginal fluid up to 24 hours after coitus—later than that they are only rarely found and then usually in a state of disintegration—e.g., tailless forms. Certainly a complete absence of sperm (motile or immotile) from a properly collected and examined sample of vaginal fluid obtained within 10 hours of coitus must cast grave doubts on the potency and/or fertility of the male. A more profitable and informative test, however, is the post-coital examination of adequate samples of mucus extracted from the cervical canal, in a satisfactory test it should be possible to find motile sperm in the cervix 40 hours or more after coitus during the second and third week of the cycle, whereas when the husband is inadequately fertile or impotent, or when the cervical mucus is hostile, motile sperms are not to be found even within a few hours of coitus.

## The Injured Man's "Fag"

**Q.**—*(1) Is nicotine volatile enough to disappear when a cigar or cigarette or pipe is lit? (2) If not, does it find its way into the lung? (3) Surely if that is the case a smoker must acquire some form of immunity? (4) Is it not likely that nicotine is drawn off when the tobacco is alight and that the ill effects of smoking are due to products of combustion (CO, CO<sub>2</sub>, etc.)? (5) Should an injured man or woman be given his/her fag as treatment for shock? (6) Is it given as a sedative or stimulant, or both?*

**A.**—The vapour of a cigarette, pipe, or cigar contains a considerable quantity of nicotine, which is absorbed through the mucous membrane of the upper respiratory tract and in the lungs. This causes a fall in pulse rate and skin temperature, and in excessive doses, nausea, vomiting, and diarrhoea. While a certain degree of

tolerance to the inhaled nicotine is acquired after the first few trials this tolerance is never absolute, and toxic effects are inevitable if the dose is large enough. The untoward effects of smoking are adequately explained by this absorption of nicotine, but there is no reason to withhold a cigarette from an injured man. Nicotine is a central stimulant but in small quantities is unlikely to have either a beneficial or a deleterious effect in traumatic shock.

## A.T.S. for Minor Cuts

**Q.**—*Are the three doses of 3 c.c.m. A.T.S. recommended for air-raid casualties necessary for uncomplicated minor cuts due to glass? If the three doses are not considered necessary, is it worth while to give a second dose to lessen the chance of sensitization?*

**A.**—Is antitoxin necessary? That depends on one's interpretation of "necessary". The conditions predisposing to tetanus are fairly clearly understood. The bacillus or its spores must be present, also a suitable material in which it can grow and develop its deadly toxin. A severe compound fracture with lacerated and necrosed muscle deprived partly or entirely of oxygen-carrying blood, and fouled with tilled manured soil, provides a dangerously high chance of tetanus. That patient should receive at once two or three times the ordinary prophylactic dose of 3,000 international units, repeated seven and fourteen days later. At the extreme other end of the scale of danger come trifling injuries. The sewing housewife who pricks her finger and the man who nicks his face while shaving are not in danger of tetanus, and no one gives antitoxin. Where in the scale do we place "minor uncomplicated cuts due to glass"? It is improbable that anyone has ever found tetanus spores on window panes, and it is improbable that an "uncomplicated minor cut" would provide a nidus in which tetanus can grow. In private practice in pre-war days probably very few doctors would give antitoxin to such a patient. However, the opinion of the Ministry of Health is clear (*Monthly Bulletin*, Oct., 1943). "However trivial the wound may be" the doctor is to give 3 c.c.m. and repeat it twice at weekly intervals. The doctor may feel that this practice leans towards over insurance, and he may intensely dislike serum rashes, but when he complies he will feel that he has the weight of official responsibility behind him, and, after all, in the chaos of a raid he may have overlooked some other small but dangerous wound demanding antitoxin. If he makes certain that he is injecting modern enzyme treated ("refined") antitoxin, he will reduce the risk of serum reaction to a minimum. The average immunologist would not in these circumstances give a second dose.

## Cleaning the Glans

**Q.**—*It would be helpful to know whether the foreskin should be retracted and the glans cleansed in (1) the child, (2) the adolescent, and (3) the adult after intercourse and at other times.*

**A.**—The less attention drawn to a child's genitalia the better, and special cleansing is not usually necessary before puberty. After puberty, and still more in adult life, the foreskin should be withdrawn and the coronal sulcus cleansed whenever necessary. How often this will be required will depend on the amount of smegma and other sexual secretions produced.

## Arcus Senilis

**Q.**—*Is this a record—the arcus senilis practically disappearing? A year ago mine was very noticeable quite a wide ring of yellow fatty deposit. Now nothing is left but a very narrow and grey ring.*

**A.**—The arcus senilis, once definitely established, very rarely disappears. The distinctness with which an arcus is seen depends to some extent upon the colour of the iris which forms the background. Should the iris become lighter in shade, as sometimes happens, the arcus will be less noticeable.

## Sterilizing Thermometers

**Q.**—*What is the best way of sterilizing thermometers for taking temperatures by mouth in the surgery of a busy single handed practitioner?*

**A.**—A clinical thermometer placed in the mouth or rectum may be contaminated with pathogenic bacteria and convey infection to another patient unless disinfected. Phenolic disinfectants of various kinds are efficient for this purpose, but tend to dissolve the markings on the thermometer, thus making it difficult to read. The disinfectant most commonly used is spirit, and this is satisfactory if certain precautions are observed. The thermometer must be wiped clean after use, so that no mucus or other material remains adherent to it. It should then be placed in 70% spirit, this being the optimum concentration for bactericidal action. Undiluted spirit is much less effective. Spirit in pocket cases should be renewed often enough to ensure that approximately this concentration is maintained. Harman, Gorton, and Parker (*Public Health Nursing*, 1939, 31, 23), who demonstrated the efficiency of this method by cultural tests, obtained somewhat better results when a few drops of liquid green soap were added to the spirit.

## LETTERS, NOTES, ETC.

## "Heel Reform"

Dr. PERCY TATCHELL writes: "She caught her heel in the carpet and fell." How often is that statement heard in the casualty department! On the stretcher lies an elderly woman, with a fairly obvious fracture of the neck of the femur, to judge by the position of the foot. Searching for the reason why people trip on carpets and fall downstairs, attention fixes on the sharp points at the sides of the heel, relies perhaps of days when we had to scramble up and down stony paths and really no longer essential under present conditions except for hill-climbing. Fig. 1 is an attempt to design an improved

A NON-TRIPPING HEEL

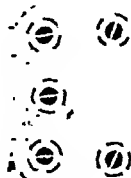
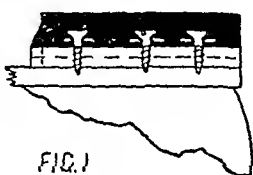


FIG. 1

form of heel. Gone are the points at the side, yet the vertical wall in front in the middle is retained as a safeguard against slipping. This heel has strong economic advantages too. Secured simply by six screws it could easily be replaced at home; also being twice as thick as the standard rubber heel, it should last a year, at a cost of about 10d. a pair. Contrast this with having to send shoes away every six months to have the heels rebuilt: generally a delay in execution of several weeks, and a bill of three or four shillings to pay.

RUBBER HEELS WILL TAKE THE CURVE OF THE WORN SURFACE

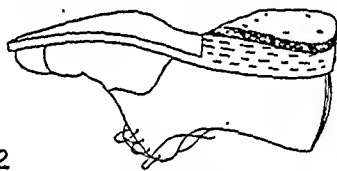


FIG 2

MAKING A COMFORTABLE WALKING SHOE

Fig. 2 suggests that the ordinary rubber heel sold in the cheap stores will take the curve of a worn leather heel, and give a reasonably finished appearance. To apply them they are first stuck on with rubber solution, and then nailed with the nails thoughtfully provided by the makers with each pair. To fix to the worn heel, after solutioning both surfaces, and when the solution is nearly dry, get the bend-up portion in position first, and secure with a brad or a small screw; afterwards press down the rest of the heel, drill out the holes, and knock the nails in with a punch. Finally, with a pocket knife pare away the angles in front, and so lessen the risk of tripping.

## Ingrowing Toenail

Dr EVA MCCALL (Sunninghill) writes: With reference to the answer in the *Journal* of Sept. 16 (p. 390), I have found powdered lead in rate packed round the nail very effective. Vaseline or lanolin rubbed into and round the nail is also useful. Most important, too, is the choice of footwear. Shoes or boots made with a raised toe, to obviate pressure on the nail, are a great comfort.

## Brandy as an Anaesthetic

Dr R K BROOKS (Chipping Sodbury) writes: A fortnight ago I was in attendance on a multipara and successfully delivered her of a female child with the use of instruments. Before cutting the cord I noticed an unusually large stump continuous with a protruding umbilicus. On close examination this was not mere jelly but what appeared to me to be mesentery. Under the unusual anaesthetic of brandy Miss Betty Fox of the Bristol Royal Infirmary operated in four later, and this child is alive to-day and should do well. The details of the findings at the operation and what was done have been supplied to me by Miss Fox. "The caecum, appendix, and some 8 in. of the terminal ileum was found to be protruding through the umbilicus along the side of the cord, and encased in a membrane and a coating of jelly. The umbilical ring was made slightly larger by a niche in the skin and the bowel returned to the abdomen; two purse-string catgut sutures were tied closely round

the peritoneal margin of the umbilical opening, and a pressure dressing applied. The child was returned to its mother the following morning, and the umbilicus on inspection about a fortnight later was soundly healed." I write to inquire as a point of interest if there is on record an account of any such or similar operation being performed on a baby an hour and a half old and under the influence of brandy.

## Injections for Osteo-arthritis

Dr. LEOPOLD MANDEL (London, W.1) writes: In your issue of Sept. 2 under "Any Questions?" (p. 326), your correspondent asked if procaine injected into the hip-joint in cases of intractable painful osteo-arthritis had met with any success. In the answer it was stated it had met with but short-lived success. I quite agree. I have also tried it combined with histamine; this also gives transient relief. More recently I have been using a solution of acid potassium phosphate, with the addition of a small amount of procaine, with quite striking results. Relief from pain is practically instantaneous and in several cases has lasted for 2 months while under observation.

## Pest of Flies

Mr. J. COSSEY (Leatherhead, Surrey) writes: In the *Journal* of Aug. 26 you published a communication from Lieut.-Col. R. M. Barron in which he writes: "Breeding places outside houses should be searched for and, if found, dealt with." How this is to be done is not stated. However, he does give some useful hints for dealing with the flies themselves. Undoubtedly the remedy lies in destruction of, or in rendering the breeding places incapable of supporting larval growth. It may interest your readers to know that powdered borax or boric acid, if used correctly, are most satisfactory to dealing with fly-breeding places, such as garbage stands or similar areas. The borax or boric acid should be dusted lightly at interval over the surface as the pile of refuse builds up, or they may be dissolved in water (3% solution) and the solution sprinkled. About 5 lb. of borax or boric acid per ton of garbage or manure is considered sufficient. These recommendations come from the Vermont University Agricultural Experimental Station, U.S.A., where investigations were carried out in 1942, the report being published in the *Journal of the American Society of Agronomy*, September, 1942 which should be consulted for more detailed information. Supporting evidence of the efficacy of borax is provided by the issue of the U.S. Army of packages of borax which bear the following instructions: "In pit latrines apply in the ratio of 1 lb. per 3-hol latrine every 5 days. If the pit contents are moist, apply the dry powder directly by dusting it evenly over the surface. If the pit contents are dry, use just sufficient water to dissolve the borax and then spray pit contents. Do not use an excessive amount of water. If needed borax may be used in trench latrines in the same manner as in pit latrines. To control fly-breeding around garbage stand and similar areas powdered borax should be dusted lightly over the moist earth after each cleaning of the area. On compost piles use borax in the ratio of 1 lb. per 8 bushels of manure. The compost should be thoroughly wet when the borax is applied. *Caution* For external use only. Store away from food."

## Cracked Fingers

Dr. W. MURRAY (Hessle, Yorks) writes: I wonder if the doctor who writes for advice about cracked fingers (Sept. 9, p. 361) has ever heard of a method of treatment which was old when I started practice 53 years ago and which I have used both personally and in my practice with unflinching success ever since. It consists simply in filling the cracks with cobbler's wax. You obtain a small lump of cobbler's wax, and to keep it from sticking to everything you put it in a very small chip ointment box without a lid. You draw the crack, using alcohol if you don't mind the momentary stinging pain. You heat a large-sized needle in the flame of a spirit lamp to a dull-red heat. With the hot needle you take off the surface of the wax as much as you can get on to the needle and coax it by manipulating it in the flame until a drop of liquid wax hangs from the point of the needle, just as a Chinese manipulates his pellet of opium before he transfers it to the bowl of his pipe. You then open the crack as wide as you can and lay the drop of molten wax along the crack, using the needle, which can be gently heated several times, to get the wax well into the crack. Then press the wax-filled crack into the warm palm of the opposite hand. The result is just as if a piece of old-fashioned black silk court-plaster had been applied. The pain goes immediately. If the wax gives way before the crack is quite healed, repeat the process. Cellulose dissolved in acetone and amyl acetate can be used in the same way. The consistency has to be that of a thick syrup. This takes a few minutes to dry.

## Correction

We regret that a mistake crept into the note by Lieut.-Col. Orr Wilson (Oct. 14, p. 520) which made nonsense of his opening words. What he wrote was: "Another very good reason for cracks on the finger-tips, which are very painful and difficult to heal, is the use of methylated ether to cleanse the skin after the removal of plasters."

## INFECTIVE HEPATITIS IN THE GARRISON OF MALTA\*

BY

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AND

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This paper is based on the clinical observation of 450 cases admitted to a general hospital during 1941, 1942, and early part of 1943. The siege conditions prevailing in Malta at the time facilitated this investigation.

**Epidemiological Consideration.**—The epidemic is practically confined to autumn and early winter, but sporadic cases are seen throughout the year. Over 65% of the cases occur in the peak months of October, November, and December, about 86% falling in the age group 20-29. Men over the age of 40 appear to be less susceptible to the disease. The majority of cases occur in the fourth week after exposure to infection, but there is considerable variation in the incubation period. Infectivity seems to be confined to the pre-icteric stage. There is a tendency for the cases to appear in series at intervals of about four weeks. The probable explanation is that the disease is infectious only for a short time, and the cases occur in series at intervals corresponding to the incubation period. It is probably airborne through infectious droplets, and overcrowding in barracks and quarters tends to its spread. About 6% of the cases occurred in the R.A.M.C., including medical orderlies of other units. This is a high figure considering the proportion of R.A.M.C. to the whole Army.

### Clinical Types

Infective hepatitis may be described under four clinical types according to the mode of onset, signs and symptoms, and course of the disease: (i) gastro-intestinal, (ii) febrile; (iii) icteric, and (iv) the group without jaundice (hepatitis sine icterus).

(i) **Gastro-intestinal Type (52%).**—The onset is insidious. This type starts with malaise, nausea, anorexia, vomiting, constipation, or (rarely) mild diarrhoea. Epigastric pain or a feeling of discomfort or distension is present in most cases. After the lapse of three to five days the urine turns dark. Within an interval of 24 to 48 hours an icteric tinge appears in the conjunctivae. Frontal headache, retro-orbital pain, generalized muscular pain, pain in the loin, vague pain in the joints, and a feeling of chill and faintness have been noticed at the onset. Injection of conjunctival vessels, giving the appearance of radiating streaks from the corneal margin, was observed in a number of cases. Flushing of the face and a faint generalized erythematous rash were seen in a few very early cases. The signs, symptoms, and course of the disease in this type closely resemble the so-called catarrhal jaundice of civil life.

(ii) **Febrile Type (30%).**—All patients with marked pyrexia at the onset (100° F or higher) are included in this group. The temperature may rise to 105° F. The onset is more rapid than in the previous type. Usually the patient notices a sensation

of cold or chill, not amounting to a rigor, accompanied by frontal headache, retro-orbital pain, and sometimes generalized muscular pain. Rarely it begins with a rigor. Injection of conjunctival vessels and mild erythematous rash have been noted in some cases of this type too. The temperature after three or four days usually drops by rapid lysis. Within a day or two after lysis bile appears in the urine and 24 to 48 hours later there is an icteric tinge in the conjunctivae. Relative bradycardia is a noteworthy sign. Some typical cases were very closely observed, and four hourly pulse and temperature charts were maintained. The charts revealed Faget's sign in a number of cases. Symptoms usually subside soon after the onset of jaundice. The subsequent course of the disease is similar to that of the previous type. Post-influenza jaundice has been recorded, especially towards the end of the last war. It is extremely doubtful whether influenza is responsible for jaundice at all. The fever resembles influenza very closely, but by tracing the source of infection we have been able to establish the fact that the febrile type may be the source of infection to a case of the gastro-intestinal type and vice versa. Besides in barracks and billets both types occur side by side.

(iii) **The Icteric (Ambulatory) Type (10%).**—No definite prodromal symptoms are observed in this group. Occasionally there may be a feeling of general malaise for two or three days. These patients report sick only if the icteric tinge of conjunctivae is pointed out to them by some other person or noticed in the looking glass by themselves. Teetotalers, patient over the age of 35, and Maltese usually belong to this group. The great majority feel quite well subjectively. Jaundice is no deep. Bradycardia is as frequent as in the other types.

(iv) **The Group without Jaundice (Hepatitis sine icterus).**—We came to know about the existence of this group under the following circumstances. Eight officers were staying together in a billet. In the last week of Oct., 1941, one of them developed jaundice and was admitted to hospital. About five weeks later four others developed the same symptoms—fever, headache, nausea and slight epigastric pain—and were also removed to hospital, where three of them developed jaundice, but the fourth did not, though he had the same symptoms at the onset. On admission his liver was enlarged and tender. White cells: 5,200—polymorphs 44.5%, eosinophils nil, basophils 1.5%, lymphocytes 51.5%, monocytes 2.5%. Van den Bergh—direct and indirect, negative. The onset in this group is similar to that of the first two groups. One feature is the definite enlargement of the liver (often two fingerbreadths or more below the costal margin). The spleen may or may not be palpable. Relative lymphocytosis is more pronounced. The temperature settles down in less than a week; the liver returns to the normal size in a fortnight. Urine is normal throughout. Sometimes a trace of bile may be seen for a few hours only.

\* Abridged specially for the B.M.J.



The main signs and symptoms are as follows:

Symptoms and Signs	Frequency %	Remarks
Anorexia, nausea, and general malaise	90	Usually appear at onset. Very mild in icteric type
Vomiting .. ..	46	Most marked in gastro-intestinal type. Not present in icteric type
Headache, retro-orbital pain, vague pain all over body	21	More severe in febrile type
Pruritus .. ..	10	May occur just before, during, or after appearance of jaundice
Fainting .. ..	2	At the onset
Bradycardia .. ..	75	Lowest pulse rate recorded 34. In febrile cases there is always a relative bradycardia
Icterus .. ..	All except group without jaundice	First appears in conjunctiva a day or two after urine turns dark; then spreads to trunk and limbs. Disappears in same order
Haemorrhagic signs:	Rare	The case with haematuria had <i>B. coli</i> infection of urinary tract complicating infective hepatitis
Epistaxis .. ..	One case	
Echymosis .. ..	" "	
Petechiae .. ..	" "	
Haematuria .. ..	" "	
Herpes labialis ..	3	In one case herpes appeared on forehead
Erythematous rash ..	5	Very faint generalized macular rash all over trunk. Face escapes. Seen only in very early cases. Easily missed
Flushing of face ..	4	Seen only in very early cases
Conjunctival congestion	10	Blood vessels dilated to show red radial striation. Some of these cases complained of photophobia
Urine .. ..		Mild amber to deep dark; acid. Bile pigments plus. Bile salts present only in about 3%. Bile free in about 12 days. Extremes: few hours and three months
Bowels:		
Constipated at onset	51	Stools usually light in colour, but may vary from almost normal to definite clay colour. Stercobilin present even in palest stools
Diarrhoea .. ..	9	
Loose bowels .. ..	12	
Normal .. ..	28	
Liver:		
Lower edge below rt. costal margin	15	Area of hepatic dullness increased in many patients when examined early enough, but soon shrinks after onset of jaundice. When hepatomegaly marked, jaundice usually mild. Gall-bladder not palpable
Enlargement of spleen	15	Splenomegaly may exist independently of hepatomegaly
Distension of rt. lateral thoracic vein ..	15	This vein becomes distended in some cases late in the disease. The flow is upwards. Liver dullness diminishes at same time. It is probably a sequel to intrahepatic obstruction to blood flow
B.S.R. (Westergren) (studied in 25 cases)		Within normal limits in uncomplicated cases. Slightly raised during pyrexial period and also if there is any lung complication
Leucocyte count (taken in 50 cases)		Slight leucopenia in most cases at onset of jaundice. Total W.B.C. may be as low as 2,550. Relative or absolute lymphocytosis usual. Leucopenia may be followed by slight leucocytosis
Van den Bergh test (qualitative) (made in 25 cases)		Direct reaction is either prompt positive or biphasic; becomes negative soon after urine is bile-free. Indirect reaction is positive a little longer
Van den Bergh (quantitative) (done in 10 cases)		Bilirubin content varied from 0.4 to 28 mg./100 c.cm., according to intensity of jaundice

**Prothrombin Content of Blood.**—Estimation of prothrombin content of blood was carried out in a group of 18 patients and two controls by one of us (S. J. H.). Quick's method of estimation as modified by Kark and Lozner was employed, using the stable thromboplastin preparation described by Souter and Kark. In seven of these patients, in whom a low prothrombin level was found, the estimation was repeated in four weeks to ascertain the progress of the case. The prothrombin percentage varied from 35 to 100, depending upon the severity of the case. There was considerable improvement after an interval of four weeks, but in severe cases the prothrombin level was still low (about 60%). Assuming that the liver was the source of prothrombin, it was seen that the liver function was deranged, at least so far as it affected the manufacture and release of prothrombin.

### Complications

**Acute Hepatic Necrosis (Icterus Gravis).**—This is the most serious and fatal complication, and its possibility renders the disease potentially dangerous. Fortunately this complication is exceedingly rare. We have come across only one fatal case out of 450. A few days after onset of jaundice, mental irritability, vomiting, and stupor supervene. Cheyne-Stokes breathing, coma, and pyrexia supervene, and the patient usually dies in three days. Haemorrhagic manifestations such as epistaxis, epistaxis, or haematuria may occur. Urine contains bile, albumin, and casts. Either suppression of urine or anuria may occur. A marked diminution in liver dullness can be made out on percussion, and the right lateral thoracic vein may be very much distended. The clinical picture is that of cholaemia

(icterus gravis), and the necropsy findings are those of acute necrosis of liver.

**Subacute Hepatic Necrosis.**—This is a more frequent but less fatal complication. It is met with in all grades of severity. At the onset there is nothing to distinguish it from an ordinary case of jaundice, but gradually jaundice becomes deeper. Liver is tender and slightly enlarged in the beginning, but shrinks later. Nausea, vomiting, and constipation are more pronounced than in an average case of jaundice. The stay in hospital and convalescence are prolonged, but these cases have a fair chance of ultimate recovery.

Other complications are not worth mentioning here.

### Second Attacks of Jaundice; Relapse

Apart from icterus neonatorum and relapse due to alcohol, second attacks of jaundice occurred in two cases—two years and five years after the first attack, respectively. In both cases the second attack was milder than the previous one.

**Relapse.**—True relapse, though rare, is occasionally met with. It appears to be favoured with too early convalescence or too early discharge from hospital. Bile reappears in the urine. The patient may develop a mild pyrexia and feel sick. The icteric tinge of skin and conjunctivae deepens and stools turn pale. The signs and symptoms clear up quicker during this type of relapse than during the original attack.

**Relapse due to Alcohol.**—The following case first made us realize the part played by alcohol in bringing about relapse of jaundice.

A corporal aged 25 was first admitted on Sept. 8, 1941, with jaundice of moderate intensity. There was tenderness in the hepatic area, but liver and spleen were not palpable. Urine bile-free on Sept. 16. Jaundice had cleared up well on discharge to unit on Sept. 26. Took 5 or 6 bottles of beer a day since the beginning of Nov., 1941. Took 18 bottles of beer on Nov. 19, 1941. Felt pain in the hepatic area on the 22nd. Vomited once in the night. Next day jaundice obvious. Readmitted on Nov. 24 with jaundice of moderate intensity. Lower edge of liver just palpable and tender. Urine contained both bile salts and pigments. Bile-free on Nov. 30.

We have come across eight more similar cases of relapse due to alcohol. The amount of alcohol taken in each case is quite considerable, and is the maximum consumed on any single day since leaving hospital. Beer, whisky, gin, sherry, champagne, all appear to be capable of bringing about relapse. Urine turns dark within 24 to 48 hours after taking alcohol in such cases, and jaundice is quite obvious in 3 or 4 days. The following case illustrates the facts mentioned above.

An officer had his first attack of jaundice two months previously. Took 10 oz. of sherry, 10 oz. of champagne, and 4 oz. of liqueur one day. Within two days developed jaundice again. Urine bile plus; hepatic tenderness plus; liver not palpable; spleen palpable. Total W.B.C., 2,550. Blood bilirubin, 20 mg./100 c.cm. Prothrombin content of blood, 40%; a month later increased to 60%. Urine bile-free a month after onset. Ever since, similar attack of jaundice occurred within 24 hours of taking any alcohol. Finally boarded out to U.K.

Alcohol sometimes produces a hepatitis without jaundice:

An officer attended a party four weeks after hospital treatment for infective hepatitis. Took 12 oz. of whisky. Within about 12 hours developed a mild rigor. Temperature 102° F.; liver enlarged 1 in. below costal margin; urine N.A.D. Temperature normal next morning. Liver appeared normal five days later.

### Effect of Liver Poisons on Infective Hepatitis

1. **Alcohol.**—The effect of alcohol on infective hepatitis was studied in over 300 cases. Relapse due to alcohol has been discussed above. Apart from relapse, alcohol appears to precipitate jaundice in persons who are incubating the disease. If an appreciable amount is taken any time between three and six weeks after infection jaundice is very likely to be precipitated within from a few hours to three days. We have about 100 cases to illustrate this fact. The following is a typical example.

A sapper aged 22 had been in contact with a case of jaundice five weeks previously. Did not take any alcohol for three months previous to Oct. 17, 1942. That night he took two cocktails, two bottles of stout, and three glasses of imbec (crude Maltose wine—alcoholic content 15%). Next day he had a good amount of rum and imbec. Noticed dark urine within 48 hours. Deep jaundice on admission to hospital on Oct. 23.

The intensity of jaundice increases if alcohol is taken during the course of the disease.

Two oz. of brandy, 3 oz. of gin, 3 oz. of whisky, 10 oz. of imbec, and three bottles of beer appear to have a more or less equal precipitating effect on jaundice. In all probability the factor responsible for the toxic action on the liver is the alcoholic content of the liquor and not any flavouring agent in it. A bottle of beer or an

equivalent quantity of wine or spirit does not seem to have any effect. It is also doubtful whether two bottles of beer would precipitate jaundice. But if in addition to two bottles of beer some other alcoholic beverage is taken within 24 hours there is a possibility of some effect on the intensity and onset of jaundice. In several instances jaundice has become manifest 24 to 72 hours after taking three bottles of beer. A fortnight's ration of three bottles of beer is usually issued on a single day. Men usually empty the three bottles at the same time, and two or three days later develop jaundice. Alcohol of all kinds was severely restricted in Malta during the latter part of 1942. There was an appreciable fall in the incidence of jaundice, especially among officers, during that period as compared with the previous year.

2. *Arsenic*.—There has been no general agreement as to the causation of jaundice occurring during and subsequent to the treatment of syphilis by arsenamine preparations. Though syphilis itself can cause jaundice, the fact that the latter often occurs after the serum reactions have been rendered negative proves that syphilis has very little to do with it. The incidence of jaundice due to arsenamine therapy has increased in recent years *pari passu* with "catarrhal jaundice" in the areas affected. A seasonal prevalence has also been noticed. The signs and symptoms closely resemble those of catarrhal jaundice or infective hepatitis. There is considerable evidence to support the view that the majority of cases of jaundice met with during and subsequent to arsenamine therapy are not due solely to arsenic, though that drug is a strong contributory factor. The incidence of jaundice is less in American clinics, where arsenamine is administered by continuous I.V. drip or by frequent I.V. injections during a short period of intensive treatment varying from 1 to 5 days. We have come across 14 cases of jaundice in syphilitic patients. The majority occurred during the season when infective hepatitis was prevalent. All were sero-negative when jaundice was manifested. There was no definite relation between the total amount of arsenic given and the onset of jaundice. Jaundice occurred in the beginning, middle, or towards the end of a course of injections or, in some cases, even long after the last injection. If an injection was given after the urine turned dark jaundice was precipitated within 48 hours. In such cases the jaundice was deep and the course of the disease prolonged. Jaundice which occurred a considerable interval after a course of injections was very mild when compared with that occurring during the course of injections. In all these respects the effect of arsenic is similar to that of alcohol, already discussed, but is more pronounced. Nine out of 14 cases arose in naval personnel. Two main reasons for this preponderance seem to be the daily issue of the rum ration and the I.V. administration of arsenic.

3. *Gold*.—In reviewing 900 cases of arthritis (rheumatoid) treated with gold at an arthritis clinic in Leeds one of us (S. J. H.) noticed a high incidence of jaundice after gold treatment. Among the first 100 cases (1935) there was no jaundice. In the second series, of 300 cases (1936), 3.5% developed jaundice, and in the third series (900 cases) 9.4%. The clinical picture was indistinguishable from the classical catarrhal jaundice. The van den Bergh test gave biphasic reactions, and in severe cases a transient positive direct reaction. There was a sparse outbreak of infective hepatitis (sporadic) for about eighteen months during 1936 and 1937 in the area from which most of the cases came. The proportion of cases of toxic jaundice among patients on gold treatment was much greater than could be accounted for by chance infection. Presumably the cause of jaundice was the temporary toxic effect of the gold salts on the liver cells, inducing a hepatitis which in some cases progressed to subacute necrosis. Gold is therefore brought into line with arsenic in producing similar toxic effects upon the liver. All evidence favours the view that gold was not entirely responsible for the jaundice, but was only accentuating the effect of the attack of ordinary infective hepatitis.

### Discussion

The clinical findings, already discussed, indicate that the jaundice is, at least partly, obstructive in nature. The gall-bladder was not palpable in any of our cases. Our post-mortem cases showed no evidence of obstruction in the bile ducts, cystic duct, and bile canaliculi, but there was diffuse hepatitis with necrosis. The obstruction lies in the liver parenchyma, resulting from the swelling and compression of liver cells consequent upon direct damage to them.

*Relationship with Catarrhal Jaundice*.—Virchow, in 1864, first put forward the view that catarrhal jaundice was due to catarrhal swelling of the opening of the common bile duct the result of an acute gastro-intestinal disturbance. Later it was believed that the inflammation extended into the smaller ducts. Eppinger described obstruction of the ostium of the common bile duct by a mucous plug in his much-quoted post-mortem report of a jaundice patient who died by accident. Later, however, after following up his cases for over 18 years, he supported

the view "that acute catarrhal jaundice is merely acute yellow atrophy in miniature." Schrumph, in 1932, secured a piece of liver removed on the eighth day at an operation undertaken for a mistaken diagnosis, and described the changes as those of "acute yellow atrophy in miniature." Gaskell, in 1933, described a case of jaundice which ended fatally at an earlier stage (third day) from another cause, and the condition found in the liver was an acute inflammation with degeneration of the liver cells. The bile ducts were intact with normal epithelium, and appeared to be in no way involved in the inflammatory process. A M. Gilchrist recently published pathological reports upon material removed at operation from the liver of two patients with jaundice who were operated on because of "mistaken diagnosis." The finding in both was a subacute hepatitis with swelling and albuminous degeneration of the liver cells, accompanied with necrosis of a few liver cells in the centre of the lobules. Findley, in 1941, reviewing catarrhal jaundice, quoted post-mortem records of eight published cases in which were found degenerative changes in the liver cells and round-cell infiltration in the portal tracts with no change in the bile ducts or duodenum.

Clinically, it is impossible to separate catarrhal jaundice from infective hepatitis—especially the gastro-intestinal and icteric forms—the symptoms and signs of the two conditions are identical. There is usually leucopenia, the total W.B.C. reaching a figure as low as 2,000. There is a relative lymphocytosis, and primitive forms sometimes occur. The monocytes are increased. It also sometimes occurs in sporadic outbreaks. In fact, there is nothing to distinguish widespread catarrhal jaundice from infective hepatitis. It breaks out in epidemic form when conditions are favourable for its spread. During the epidemic in Malta the few cases admitted to the civil hospitals were diagnosed and treated as ordinary catarrhal jaundice. In the light of these facts the theory of catarrhal pathogenesis of jaundice is not tenable.

### Aetiology

The long incubation period, the seasonal prevalence, the appreciable immunity after the first attack, and the high infectivity during the pre-icteric stage favour the view that it is a virus disease. We know very little about the nature and paths of entry of the virus. The prodromal malaise, the occasional generalized rash, and the early splenomegaly rather suggest a generalized blood-borne infection. The mode of infection is probably droplet, after brief exposures as in "speech contact," with a possibility of transmission by fomites. Since the period of infectivity is very limited, conditions in civil life are less favourable for its spread. Overcrowding in barracks and billets is an important factor for its epidemicity in the Army.

*Alcohol* is another contributory factor. It seems that two hepatotoxic factors—virus plus gold, virus plus N.A.B.—increase the liability of the patient to develop hepatitis. We have no doubt that the same explanation holds in relation to virus and alcohol. During the incubation period alcohol is capable of precipitating jaundice, and after the onset of jaundice it is capable of intensifying it. It is quite probable that alcohol precipitates jaundice in the group of hepatitis without jaundice. In civil life it is impossible to identify this group. Teetotallers appear to be less susceptible to jaundice. During the last war Indians serving in the Middle East were found to be much less susceptible to infective hepatitis. The mortality due to jaundice among the Indian force was less than half that among the other forces. During the present war the number of infective hepatitis cases treated in Indian hospitals in the Middle East is negligible when compared with that treated in British hospitals. The vast majority of Indians are teetotallers. The Mauritians serving in the Middle East are more susceptible to infective hepatitis, though the majority of them are descendants of Indians originally settled in Mauritius. The Mauritians are addicted to alcohol as much as anybody else.

### Prophylaxis

Under war conditions the temptation to indulge in alcohol is great, and it is difficult to avoid overcrowding. But the disease is most prevalent in September to January, and restrictions are needed only during these months. A possibly useful preventive measure would be the reduction of consumption of alcohol to one bottle, or perhaps two bottles, of beer or an

equivalent amount of other alcoholic beverage for periods of three days during these months. Measures should also be taken to prevent overcrowding, so far as is possible, from the middle of August to the end of December.

One might ask how soon after discharge from hospital can a patient take alcohol or resume arsenic or gold therapy? We have come across cases in which a considerable amount of alcohol was taken a few weeks after discharge without any untoward effect. We know at least one patient who received a complete course of arsenic injections after an interval of only five weeks from the date of discharge without any toxic manifestation. It should be remembered that the normal liver can withstand large doses of all these drugs. The capacity of a damaged liver depends upon the amount of damage already done. Recovery is complete in a short time in mild cases, whereas in severe cases it may be months before the liver is capable of withstanding even small doses of these drugs. In a case of moderate severity a period of six months is a reasonable interval, after which the administration of these drugs can be resumed with safety. Great caution and longer intervals are needed in relapse cases. Evidence is accumulating to support the view that a weak liver poison such as alcohol may have a stimulant action on the fibrous tissue stroma of the liver while exerting a degenerative effect on the liver parenchyma, and the prolonged stimulant action may lead to cirrhosis in course of time. In all probability these properties of the drug hold good only if the liver is already damaged by a previous attack of hepatitis, with or without jaundice. If the stroma is as much damaged as the parenchyma, stimulation can produce no proliferation, and cirrhosis is unlikely in cases of moderate or severe jaundice except as replacement fibrosis in multiple nodular hyperplasia. This is rather speculative, but it is hoped that future work will confirm it.

#### Summary

A review is given of 450 cases of infective hepatitis treated in a general hospital in Malta. The epidemiology, clinical types, signs, symptoms, diagnosis, complications, and cause of relapse are discussed. The effect of liver poisons—alcohol, arsenic, and gold—is described. The pathogenesis of catarrhal jaundice is reviewed critically.

The clinical findings suggest that the jaundice is partly obstructive in nature.

We wish to express our gratitude to Col. Morrison and Col. Whalley for permission to carry on this investigation and publish this paper. Our thanks are also due to Lieut.-Col. McPherson, Major Kidson, Major Wilson, Major Shucksmith, Major Light, Capt Oakes, Sister Bevan, and Sister Nicholson.

## HUMAN-MILK INTOXICATION DUE TO B<sub>1</sub> AVITAMINOSIS

BY

LYDIA FEHILY, M.D.

From the LMO (Maternity and Infant Welfare), Hong Kong

For the first few months after the birth of their infants the Chinese women in Hong Kong live in constant dread of losing them. This anxiety is comprehensible, taking into consideration the infantile mortality, which amounted to 345 per 1,000 live births in 1939 (Hong Kong Annual Medical Report)—more than one-third of all infants born alive died within the first year of life. A certain proportion of deaths occur suddenly in apparently healthy, well-fed, and well-cared-for babies with a predilection for the male sex, thus giving rise to a belief among the Chinese that evil spirits, out of jealousy, snatch their infants, especially plump baby boys. Hence the rather pathetic efforts of the parents to protect their infants from such a fate: "joss" papers are pasted on the windows and "joss" sticks are burned before the entrance of their homes to prevent the incursion of evil spirits; the infants are disguised as animals by sewing fur ears on their caps; protective talismans are hung on their necks and chains on their ankles to fetter them, allegorically, to their homes. However, in spite of all these "precautions," a mother may find, to her

horror, that her infant has died, unobserved, during the night or while strapped to her back (the usual method of carrying infants in China). Sometimes the mothers observe that their infants suddenly become cyanotic and dyspnoeic and die, apparently of suffocation. In such cases women believe that suffocation is due to "wind" which drives mucus into the child's throat. Furthermore, they believe that this "wind" is transmitted to the infants through their own milk, which is considered to be "no good."

#### Aetiology

Actually the belief that their milk is not good has been scientifically proved. In 1888 Hirota, in Tokyo, was the first to observe a complex of symptoms in infants fed by beriberic women; and he called this complex "infantile beriberi"—thus connecting this disease with a condition later found to be B<sub>1</sub> avitaminosis. Since then a number of Japanese workers (Ito, 1911; Asakura, 1932; Takamatsu, 1934), and also I myself (Fehily, 1940), have suggested that the milk of B<sub>1</sub>-avitaminotic women, besides being vitamin-deficient, contains some toxic substance or substances. We now know that in B<sub>1</sub> avitaminosis, owing to a reduction of certain co-enzymes, the intermediary products of incomplete carbohydrate oxidation accumulate in the tissues, organs, and body fluids, including human milk. These intermediary metabolites are believed to consist of lactic acid, aceto-acetic acid, glycuronic acid, glyceraldehyde, acetaldehyde, dihydroxy-acetone, methylglyoxal, and others. Most of these intermediary metabolites (lactic acid excluded) are estimated as "bisulphite binding substances" (B.B.S.), which are found to be increased threefold to fourfold over normal values in all body fluids in B<sub>1</sub>-avitaminotic living beings. After the administration of vitamin B<sub>1</sub>, the B.B.S. decrease almost immediately to the normal values. Although the correlation between the intermediary metabolites and B<sub>1</sub> avitaminosis has been definitely established, many workers (Haynes and Weiss, 1940, and others) have proved that these metabolites are not the causative factor in the development of the acute nervous and cardiac symptoms encountered in this condition.

One of these substances—methylglyoxal—has been shown to be actively toxic (Kermak, Lambie, and Slatter, 1927; Vogt-Moller, 1931), and as it is never found in the milk of healthy women it has been suggested that this product is the toxic factor in the milk of B<sub>1</sub>-avitaminotic women. However, various authors have stated (not in connexion with infantile beriberi) that other intermediary products, if in excess, are toxic, and this seems to have been demonstrated by many experiments, including the following (Haynes and Weiss, 1940):

The administration of large doses of pyruvic acid or sodium pyruvate to normal and deficient rats was followed by death of the rats, both normal and deficient. Pyruvic acid in sublethal doses was especially irritating to the throat and had an injurious effect on the digestive and respiratory systems, whereas sodium pyruvate in sublethal doses produced diarrhoea. In the case of B<sub>1</sub>-avitaminotic rats, the lethal dose of sodium pyruvate is smaller than that for normal rats, and the animals developed neurological symptoms shortly before death.

It would seem that the amount of pyruvic acid and sodium pyruvate in the milk of B<sub>1</sub>-avitaminotic women is beyond the infantile tolerance, as one encounters all the above-mentioned symptoms as well as similar modes of death in infants fed on such a milk. It would seem also that besides methylglyoxal and pyruvates, other intermediary metabolites, in the amounts encountered in the milk, may take part in the intoxication, and their action would appear to be synergic and also cumulative, as even a few feeds may be fatal to an infant. This action is especially evident in acute cases, in which the intermediary metabolites may possibly give rise to acidosis similar to that of diabetic coma—an acute intoxication caused by the products of disordered carbohydrate and fat metabolism. In addition, it seems that the accumulation of intermediary metabolites alters the taste of the milk, as obviously hungry infants, after sucking greedily for a few moments, avert their heads protestingly and spill the milk (while water or cow's milk is taken without trouble).

Thus infantile beriberi differs considerably from the adult type, being primarily and mainly an intoxication, with acute

symptoms, short duration, and bad prognosis. Consequently the term 'infantile beriberi' would seem to be misleading and this may account for the non-recognition of the disease in some countries until comparatively recently. A more suitable term is therefore desirable, in 1911 Ito suggested that the disease be called breast milk intoxication and recently I (Fehily, 1943) suggested the term 'human milk intoxication'.

### Symptoms

Although infants fed on the milk of B<sub>1</sub> avitaminotic women may present a characteristic habitus or acquire some persistent symptoms, the disease generally manifests itself in the form of attacks which develop shortly after breast-feeding. These attacks are characterized either by vomiting, abdominal pain (accompanied either by crying or by screaming), diarrhoea, and abdominal distension, or by vomiting, stiffness of the neck and extremities, and convulsions. In the most acute form the attack consists of dyspnoea, cyanosis, and running pulse. The attacks often end fatally, but in case of survival the infants pass into the chronic stage with symptoms of oedema, oliguria, aphonia, constipation, meteorism, neck retraction, enlargement of liver and right side of the heart, loss of weight, retarded growth, and narsismus. At the beginning of the intoxication the infants sometimes present a characteristic habitus, they are fat and flabby, pale and restless, and often have cough, which in some cases may be due to irritation by intermediary metabolites. The condition of the reflexes is variable, being normal, exaggerated, diminished, or absent. The temperature in uncomplicated cases is normal or subnormal. Probably as a result of the irritation and of the oedematous condition of the respiratory tract, intercurrent diseases, such as bronchitis and bronchopneumonia, are present in the majority of cases and these complications contribute greatly to the extremely high mortality, which amounts in untreated cases to approximately 95%. Before the main cause of this high infantile mortality was recognized, in infant welfare centres in Hong Kong cod-liver oil, iron and calcium mixtures were administered prophylactically as a routine, but without any noticeable effect on infantile morbidity or mortality.

The acuteness of milk intoxication is dependent on the amount of milk ingested, consequently overfed babies are more liable to acute attacks and to sudden death. These attacks, as well as other symptoms of the disease, disappear on the cessation of breast-feeding and its substitution even by foods such as diluted sweetened condensed milk or rice paste, which are deficient in vitamin B<sub>1</sub> and consist mainly of carbohydrates. With the resumption of breast-feeding the attacks reappear and eventually lead to death, unless the secretion of the mother's milk ceases or considerably diminishes. It would seem that infants born alive possess a reserve, however small, of vitamin B<sub>1</sub> and may progress satisfactorily until the accumulated intermediary products of carbohydrate metabolism are ingested in the milk of vitamin-B<sub>1</sub>-deficient women. Thereafter the infants try to get rid of these intermediary metabolites by excretion through the kidneys (methylglyoxal can be found in the urine) and the lungs (the pungent smell of the breath often noted is probably due to pyruvic acid), but mainly by further oxidation of the metabolites to harmless end products, provided sufficient vitamin B<sub>1</sub> is available. Consequently infants succumb to intoxication when their vitamin reserves become depleted. In infants born with a low vitamin reserve or those fed previously on vitamin-B<sub>1</sub>-deficient food the intoxication is greatly accelerated. I observed the symptoms of acute milk intoxication in a 5 months old poorly nourished infant, whose mother admitted, on close questioning, that until a week previously the child had been fed on sweetened condensed milk, she being a professional wet-nurse. (Incidentally during these five months she nursed two infants, both of whom succumbed to a disease similar to that of her own child.)

During the year 1939, of the infants brought to an infant welfare centre in Hong Kong, 18% showed manifest signs of milk intoxication, while 25% of the mothers complained of one or more of the following symptoms: weakness, numbness or oedema of the extremities, dyspnoea, palpitation, or meteorism (this latter condition often being an early sign of B<sub>1</sub> avitaminosis). The maternal beriberi and the milk intoxication in infants did not always correspond owing to the fact

that most of the women with manifest B<sub>1</sub> avitaminosis ceased to lactate, while those with good lactation were still in a latent stage.

### Findings at Necropsy

In post mortem examinations the most striking feature of human milk intoxication (in uncomplicated cases) is the absence of any, or any significant, pathological lesions to account for death. The appearance of the infants, especially of those who died in an acute attack, is that of fat well-cared-for babies, sometimes cyanotic, but otherwise with normal organs and tissues. This absence of pathological lesions puzzled the medical profession in Hong Kong, and it was suggested that death might have been due to overlaying to asphyxiation from charcoal fumes or to accidental poisoning with native medicine. In some cases of milk intoxication oedema of the larynx was noted, in others hyperaemia of the intestines or enlargement of the right heart. In subacute cases one may find an internal varicella—namely, oedema of the brain, respiratory tract, right heart (cause of its enlargement), spleen, liver, gall-bladder, and kidneys as well as slight effusions into serous cavities. External oedema is comparatively rare, and if present is most likely to be seen in the form of a slight general puffiness or as a localized oedema—e.g. of the scrotum. This increased water retention may be due to acidosis (mainly lactic and pyruvic), as it has been pointed out (Fischer, 1921, Fliederbaum, 1932) that acidosis of tissues and organs increases their affinity for water. Death from human milk intoxication, as in the acute cardiac beriberi of adults, is attributed to heart failure, caused through degeneration of the vagus nerve or loss of contractility of the heart muscle (owing to water retention). However, it is remarkable that no vagus degeneration has been reported in the case of infants who died of 'infantile beriberi' and, furthermore, death may occur before the appearance of any pathological cardiac lesions, such as hydrops. It is also remarkable that cardiac stimulants do not produce any effect on the symptoms, whereas administration of vitamin B<sub>1</sub> is followed by a dramatic improvement and eventually by a *resitutio ad initio*. These facts would suggest that death may be of central origin (probably due to a biochemical lesion).

Since human milk intoxication in infants is due to the ingestion of milk from B<sub>1</sub>-avitaminotic women, one is inclined to seek an explanation for such widespread maternal B<sub>1</sub> avitaminosis.

### Reason for Prevalence of Maternal B<sub>1</sub> Avitaminosis

It is generally accepted that the requirements of vitamin B<sub>1</sub> are in direct proportion to the intake of carbohydrates. In Hong Kong highly milled rice is the only staple food of the Chinese, and consequently B<sub>1</sub> avitaminosis is widespread. In the case of pregnant and lactating women this condition becomes aggravated and often manifests itself as beriberi because of (a) increased physiological requirements, (b) increased excretion of vitamin B<sub>1</sub> in milk, (c) increased appetite being satisfied mostly by highly milled rice, and (d) food prejudices. Thus they believe that fruit and vegetables are unhealthy because they give rise to wind, which is transmitted with their milk to their infants. Consequently, they abstain from fruit and vegetables for at least one month after delivery—in the case of male infants often during the whole period of nursing. This custom, as well as the fact that male infants are often overfed, explains the apparent predilection of milk intoxication for the male sex.

From the beginning of the war large stocks of milled rice were stored in Hong Kong. Even highly milled rice, if fresh, contains a certain amount of vitamin B<sub>1</sub>, but this gradually disappears on storage. In the course of time rice which had been stored for longer periods than hitherto was distributed to the population, with the result that B<sub>1</sub> avitaminosis, followed by pellagra and arboflavinosis, increased tremendously and appeared even in institutions which up to then had been free of any deficiency diseases. Consequently, human milk intoxication among infants must have correspondingly increased (no statistics are available). Indeed, one could see on the streets a greater number of infants with the characteristic habitus or the symptoms of chronic intoxication, or with the incipient cyanosis and dyspnoea of an acute attack. After the Japanese

occupation of the colony this long-stored rice was severely rationed, so that individuals received approximately only one-third of the amount previously consumed. Consequently undernourishment was added to B<sub>1</sub> avitaminosis, with the result that the secretion of lactating women either considerably diminished or completely ceased. Thereafter one could see many undernourished infants with the symptoms of chronic milk intoxication, while acute milk intoxication had apparently disappeared. It may seem incongruous, but the fact remains that a high incidence of acute human-milk intoxication in infants indicates a certain degree of prosperity in the case of the native population. The observations of Bray (1929) on the island of Nauru support this statement. There the natives were given royalties for their phosphate deposits. As a result there was a distinct drop in their production of native foods, which were replaced by imported white flour and tinned meat. As palm toddy was prohibited they consumed large quantities of sugar-water instead. This change of diet resulted in the appearance of acute human-milk intoxication, and the infantile mortality rate rose to 40%.

Human-milk intoxication occurs whenever the staple foods of women are vitamin-B<sub>1</sub>-deficient carbohydrates. Admittedly, in Great Britain such staple foods as the national loaf and potatoes have enough vitamin B<sub>1</sub> for their own metabolism; however, if the bulk of the diet consists of carbohydrates, some of them refined, the balance may be upset and result in deficiencies. In fact, deficiencies of other components of the vitamin B complex—such, for example, as riboflavin and nicotinic acid—have been reported recently in England (Slater, 1942; Duckworth, 1942; Clarke and Prescott, 1943; and others).

An apparently healthy mother with latent B<sub>1</sub> avitaminosis may produce milk containing intermediary metabolites just above the infant's tolerance, which would lead to predisposition to infantile complaints such as respiratory infections or persistent intestinal catarrhs. Even before the war Geiger and Rosenberg (1933), in Palestine, reported that Jewish sucklings suffering from persistent diarrhoea with toxic symptoms and excreting methylglyoxal in the urine, were cured after the administration of vitamin B<sub>1</sub>. Popoviciu and Munteanu (1934) observed similar gastro-intestinal disturbances in Rumanian infants, which they also attributed to deficiency of vitamin B<sub>1</sub> in human milk. Occasionally in the paediatric wards in continental Europe and in the United States of America one encounters cases of sudden dyspnoea and cyanosis or learns of cases of sudden death in breast-fed infants. Where no pathological lesions are found to account for these occurrences, death is usually presumed to be due to status lymphaticus, laryngeal spasm, or oedema, to asphyxiation caused by blankets, pillows, or overlaying, or to strangulation with the strings of a jacket. May it not be possible that some, at least, of these puzzling and inadequately explained cases are due to human-milk intoxication?

#### Causes other than B<sub>1</sub> Avitaminosis

Furthermore, it is quite possible that accumulations of intermediary metabolites may also occur in other conditions in which there is a disordered carbohydrate metabolism, as in cases of glandular dysfunction—e.g., diabetes; or in other vitamin-deficiency diseases such as nicotinic acid and riboflavin deficiencies (the last two conditions most probably associated with B<sub>1</sub> avitaminosis).

It is conceivable that human milk intoxication occurs whenever BBS are increased in the human body; and their increase has been found in various conditions other than B<sub>1</sub> avitaminosis—viz., acidosis, ketosis, anoxaemia, toxæmia, and uraemia (Wilkins, Taylor, and Weiss, 1937), as well as in diabetes, anaemia epidemic dropsy, and splenomegaly (Wilson and Ghosh, 1937). However, the correlation between the nature and amount of intermediary metabolites in human milk and the symptoms in an infant fed on such a milk have yet to be definitely established. To the best of my knowledge such work has not yet been undertaken, my own investigations in this field having been curtailed after a short time.

It would seem that the statement that breast milk is the best food for an infant should be qualified by the proviso that it is secreted by a healthy woman.

#### Summary

It is suggested that the term "breast-milk intoxication" or "human-milk intoxication" be substituted for the term "infantile beriberi."

It is also suggested that in addition to methylglyoxal, hitherto considered to be the only toxic factor in the milk of B<sub>1</sub>-avitaminotic women, other intermediary metabolites, in concentration encountered in the milk, may play an important part in human-milk intoxication.

The action of these intermediary metabolites appears to be synergic and cumulative.

The symptoms of human-milk intoxication are discussed.

It is pointed out that accumulation of intermediary metabolites in the milk of lactating women may be encountered in conditions other than B<sub>1</sub> avitaminosis and thus cause an intoxication.

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## ACUTE BRACHIAL RADICULITIS

BY

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Spillane (1943) has drawn attention to the comparative frequency of cases of neuritis of the nerves around the shoulder girdle in his experience with the M.E.F. Cases also occur in which the incidence is predominantly on the roots of the brachial plexus rather than on the peripheral nerves, and combinations of these conditions are seen in other patients. This paper is based on 36 cases—24 personally observed in various stages of the disease and 12 seen by Major Philip Buckley, R.A.M.C.

The essential clinical picture is a simple one: severe pain starts across the back of the shoulder and radiates down the outer side of the arm and sometimes on to the upper part of the chest; the pain remains severe for a few days and then weakness of the shoulder develops, sometimes accompanied by numbness. As the paralysis appears the severe pain usually passes off and is replaced by a dull ache, the paralysis persisting.

#### Illustrative Case History

An R.A.F. corporal aged 33 was admitted to hospital on Sept. 15, 1942, with the history that six weeks previously he had developed very severe pain across the back of both shoulder-blades, which radiated down the outer side of the right arm and forearm; the severe pain persisted for about five days and was then replaced by a dull ache. On the third day of the severe pain he noted considerable weakness of both arms, but especially the right, and this weakness had persisted unchanged. There were no general symptoms of malaise or fever at the onset of the illness, and his past history was uneventful except for attacks of migraine.

On examination he had winging of the left scapula due to paralysis of the serratus magnus. In the right arm there was considerable wasting of the spinati, deltoid, biceps, supinator longus, and the clavicular head of the pectoralis major. There was minimal voluntary power in the supinator longus, while the other wasted muscles were weak; the biceps and supinator jerks were absent, and the triceps jerk just present. On sensory testing there was impairment of cutaneous sensibility down the outer side of the right arm



and forearm in the distribution of C.5 and 6 segments. There were no other abnormal neurological signs. The W.R. was negative. The C.S.F. was under pressure of 150 mm. and there was no block on jugular compression; it contained 1 lymphocyte per c.mm. and the protein was 30 mg. per 100 c.cm.

He was treated with massage and exercises. In the course of two months there had been considerable improvement in the right arm; the biceps and deltoid were of normal power, the spinati and supinator longus moderately weak. The biceps jerk was feeble and the supinator jerk still absent: the sensory impairment was still present, but over a smaller area than previously. The left serratus magnus remained paralysed.

#### Anatomical Distribution of the Lesions in the Series

(a) *Cases Confined to a Single Peripheral Nerve.*—The peripheral nerve most commonly involved was the long thoracic nerve, with resultant winging of the scapula and difficulty in raising the affected arm above a right-angle. Isolated palsies of this nerve have been recognized for many years, and Richardson, in 1942, drew attention to their comparative frequency. The reason for including the isolated non-traumatic cases in this series is because in 4 instances paralysis of the serratus magnus has occurred on one side with involvement of other muscles in the other arm, while in 6 cases other muscles on the same side have been involved, together with the serratus magnus. There have also been 11 examples of isolated serratus magnus palsy. It has been found that if the paralysis of this muscle first occurs while the patient is in bed with some other complaint he may not notice the muscle weakness himself; it is usually first noted when he tries to stretch up to take something off a high shelf. The suprascapular nerve has been involved alone in two cases with paralysis of supra- and infra-spinatus and weakness of external rotation of the arm. It was noticeable in one case, seen some months after the onset of the disability, that the two muscles were involved in very different degrees, the infraspinatus being considerably weaker and more wasted than the supraspinatus. There were two examples of isolated circumflex palsies with paralysis of the deltoid and sensory impairment over the nerve distribution. In one case the musculo-cutaneous was the only nerve involved, with loss of power of the biceps and sensory impairment in the distribution of the lateral cutaneous nerve of the forearm. The disability was relatively slight, as good flexion of the elbow was carried out by the supinator longus, the main weakness being in supination.

(b) *Cases of Root Involvement.*—There were 5 examples of involvement of C.5 and 6 roots, of which the case described above is one. In these cases the muscles affected were the spinati, deltoid, biceps, supinator longus, and sometimes the clavicular head of the pectoralis major; and there was impairment or absence of the biceps and supinator jerks, with sensory impairment on the outer side of the arm and forearm. In one case the C.7 root was affected in addition to C.5 and 6, as shown by weakness of the triceps and extensors of the wrist and fingers as well as of the muscles just mentioned.

(c) *Muscle Involvement Not Explicable in Above Groups.*—In a number the muscle weakness was not explicable on the basis of involvement of a single peripheral nerve or in terms of root distribution, as in the following cases: spinati and serratus magnus on one side (2 cases); deltoid and spinati (7 cases); deltoid and biceps (1 case); spinati and serratus magnus on both sides (2 cases); sterno-mastoid, trapezius, deltoid, spinati, and serratus magnus (1 case); while in another case there was widespread bilateral involvement affecting the spinati, deltoid, and triceps on one side, with the spinati, biceps, triceps, and extensors of the wrist and fingers on the other; in this patient, sensory impairment was found over the lateral side of both forearms. In these cases there is often a different degree of involvement of the various muscles affected. It is possible that the distribution is explicable on the basis of involvement of more than one peripheral nerve—for instance, the long thoracic and suprascapular in the serratus and spinati cases—or by partial involvement of one or more spinal roots.

(d) *Bilateral Cases.*—In 9 of the 36 cases there has been bilateral involvement, usually asymmetrical. In 7 cases the two sides were affected at the same time or with an interval of one or two days, but in the remaining 2 cases there was a longer interval: in one, three weeks elapsed before the second

arm was involved; and, in the other, six months between paralysis of the serratus magnus on one side and the spinati on the other.

#### Other Features of the Disease

*Precipitating Causes.*—The age incidence has been 16 to 54, and all the cases have been in males; this is probably on account of the selected Service personnel seen. The geographical incidence of the disorder appears to be wide; in this series the onset has occurred in the United Kingdom, Iceland, the Middle East, Tunisia, Italy, Uganda, Nigeria, India, and in one case at sea off the West African coast. In a number of the cases a possible precipitating factor has been found. In no fewer than 9 cases the onset has followed closely on a surgical operation: in 8 of them herniotomy, and in the other excision of a pilonidal cyst. The anaesthetics were varied—spinal in 4 cases, general in 3, spinal in combination with a general anaesthetic in 1, and intravenous in the last. The time interval between the operation and the presenting pain of the radiculitis has been from 2 to 4 days in 6 cases, 6 to 7 days in 2 cases, and 10 days in 1 case. This time interval rules out as the causative factor trauma during the operation from pressure against the side of the table or other accident of that type. Eight cases were related to infections, the onset of the radiculitis usually being during the period of convalescence: malaria in 2, influenza in 2, and pneumonia, glandular fever, dysentery, and an axillary abscess in 1 case each. In this last case the disorder was bilateral and so could not have been the direct result of the abscess. Two cases followed a week after a fall on the shoulder; although pain and muscular weakness in each case developed on the same side as the fall, the trauma was slight and there was a complete absence of symptoms in the week immediately after the fall. One man developed the presenting symptoms of pain during a period of severe exposure to cold and rain while escaping from a P.O.W. camp. Two cases followed diagnostic procedures—one 10 days after a lumbar encephalogram for a suspected cerebral tumour, and one on the day after a lumbar puncture. (This was done on account of a prolapsed lumbo-sacral intervertebral disk.)

The question of prophylactic inoculations in the possible aetiology of these cases has been raised, but it is difficult to draw any conclusions from this series. One patient had an anti-typhus inoculation three days previously and 1 two weeks previously, while 3 patients had had T.A.B., the interval between inoculation and onset of symptoms being 18 days, 4 weeks, and 5 weeks. Another man had had A.T.T. three weeks previously, while in the remaining cases no recent inoculations had been given.

#### Onset of the Disorder

The absence of general symptoms of fever and malaise is remarkable; in only two cases was there slight malaise when the pain started. The presenting symptom is always pain; it is across the back of the shoulder and down the outer side of the arm; in bilateral cases it spreads to both shoulders and arms, and in cases in which the C.6 or C.7 root is affected it spreads to the outer side of the forearm. The pain is continuous and is usually of considerable severity; in only 3 of the cases was it described as slight.

The duration of the severe pain before muscle weakness first appeared has varied from a few hours to two weeks or possibly slightly longer, the usual length of time being three to four days. The severe pain tends to pass off as the weakness develops, and may be replaced by a dull ache; but in some cases severe pain has lasted for two to three weeks, although the paralysis has occurred within a few days of the onset of the pain. The onset of weakness in the majority of cases is sudden, with a maximum at the onset, but 4 patients said that the weakness had progressed over the course of two to three days.

#### Sensory Changes

No sensory impairment was found when a motor nerve, such as the long thoracic or suprascapular, was alone involved; in the cases of involvement of the circumflex and musculo-cutaneous there was cutaneous impairment to all forms of sensation in the area expected, and in 5 cases in which C.5



and 6 roots were affected there was impairment down the lateral side of the arm and forearm. Of the mixed cases only two (in which the deltoid was involved) showed some sensory impairment over the skin on the outer side of the arm, and the case previously mentioned in which there was impairment over the lateral side of both forearms. In the other patients no sensory impairment could be found.

### Special Investigations

As many of these cases have been seen some time after the onset, detailed investigations in the acute stage have been infrequent, but when they have been possible the C.S.F., blood count, and E.S.R. have been normal, and Spillane also found this in his cases. The only exception was the finding of 10 lymphocytes per c.mm. in the C.S.F. in the case of glandular fever with radicular involvement.

**Prognosis** is difficult to determine in view of the varying times after the onset at which these cases have been examined. The prognosis in the serratus magnus palsies is on the whole poor: of the 21 cases in which this muscle has been involved 3 were partial from the beginning, and of these one had shown definite improvement after three months, while the other two were apparently stationary in the same period. Of the complete cases, 1 recovered completely in four months, while 5 had shown partial recovery in periods ranging from three to seven months; the remaining cases still had complete palsies when last examined at periods ranging from three to eighteen months after the onset.

Once marked atrophy has occurred in a muscle the prospect of recovery is poor; when localized atrophy is only slight, considerable and even complete recovery may occur, though the onset of recovery may be delayed for as long as six months and possibly more. In a few cases recovery has started within three to four weeks and has progressed rapidly.

### Pathogenesis

There has as yet been no pathological material available from cases of this disorder; it appears, on clinical grounds, that the condition can affect single peripheral nerves, nerve roots, or combinations of these. Riddoch (1944) has suggested that the anterior horn cells may be involved in some cases, basing this view on the rapid muscular wasting which may be present and on the scattered nature of the muscular involvement which is occasionally seen. No exactly comparable condition seems to occur in the lower limbs.

The best name for the disorder is uncertain in the absence of a known aetiology or pathology. Acute brachial neuritis is already used for a different clinical syndrome, and the name applied by Spillane of "localized neuritis around the shoulder girdle" is hardly comprehensive enough. For these reasons the term "acute brachial radiculitis" has been applied to it for the time being till more is known about its aetiology.

The differential points from anterior poliomyelitis, to which it bears some clinical resemblance, have been admirably summarized by Spillane, the main ones being: the absence of signs of general disturbance in the acute stage; the normal C.S.F. when this has been examined early in the illness; the sensory impairment in a number of the cases; and the occurrence of these cases in the absence of typical cases of poliomyelitis in the same district at the same time. To these may be added the fact that it may occur at the age of 50—a most unusual happening with poliomyelitis.

The aetiology of the condition is still speculative, and the somewhat mixed group of apparently precipitating causes has not helped on this point. It has been suggested that a virus infection is the cause, the main point against this is the absence of fever or other signs of general infection and the normal C.S.F. findings. In most diseases due to neurotropic viruses—even in zoster, in which the main incidence of the infection is on the posterior root ganglia—an increase of cells is found in the C.S.F.

There is one condition which has a very close clinical resemblance to it, and that is serum neuritis (Kennedy, 1929; Young, 1932). This may occur after the injection of any form of serum, usually about the seventh to ninth day; there are frequently the usual symptoms of serum sickness, followed

within a day or two by severe pain in the region of the shoulder and upper arm; muscle weakness shows within the next few days, and when this happens the severe pain passes off. The paralysis which may be accompanied by sensory changes is most often in the distribution of the fifth and sixth roots or the circumflex nerve, but at times paralysis of the serratus magnus may arise. The exact cause of these cases is uncertain, but it is thought that oedema of the affected nerves occurs as a reaction to the foreign protein in the serum. I think that the possibility of some, as yet uncertain, aetiological relationship between serum neuritis and acute brachial radiculitis must be considered before assuming that neurotropic virus is the causative agent.

With the lack of knowledge of the aetiology, treatment can be only palliative—analgesics for the pain in the acute stage, support for paralysed muscles to prevent stretching, and active and passive exercises and electrical stimulation of the affected muscles when the painful stage has passed.

### Summary

The syndrome of pain around the shoulder, followed in the course of a few days by muscular weakness and wasting and times sensory changes, is described.

The anatomical distribution of the weakness can be a single peripheral nerve, two or more spinal roots, or combinations of these.

A number of apparent precipitating factors are mentioned, the most outstanding being operation for hernia in 8 of the 36 cases.

The possible aetiology is discussed and an analogy drawn between this condition of acute brachial radiculitis and serum neuritis.

My thanks are due to Major-Gen. Mitchiner, C.B.E., for permission to publish this paper; to Brig. Riddoch for help in its production; and to Major P. S. Buckley, R.A.M.C., for the use of notes of cases under his care.

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## THE TRANSNASAL INTRAGASTRIC RYLE'S TUBE IN TROPICAL PRACTICE A LIFE-SAVING MEASURE

BY

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Ryle's tubes have been used by us in a series of 355 acute medical cases during the past year. So far as can be ascertained, this represents the first extensive trial, in tropical practice, in which the method has been applied to the problems of hydration and alimentation presented by such acute cases. Its use was introduced, in the first place, to meet the special problem of the dehydrated patient who would not or could not drink that amount of fluid considered necessary for him. Dehydration, among coolies especially, was seen on a scale rarely encountered in civil practice, and in many cases was so gross as to resemble that of cholera. Marriott's (1943) teaching of the fatuity of what he calls "the homoeopathic dosage of a pint or two" is wasted unless we realize that in gross dehydration the fluid loss is to be measured in gallons. Furthermore, some of these patients refused to drink, and spat out the water or saline offered to them. In a series of 30 of our cases this symptom was found to be associated with a low serum chloride figure, and possibly represents a vicarious form of water intoxication. In the more robust patients this can be corrected by the intravenous injection of one or more pints of hypertonic (2 N) saline solution, after which the previously non-drinking dehydrated patient will drink avidly. Other patients, however, are often so enfeebled by disease on admission to hospital that for them to drink is too much effort. It is in such cases that the tube becomes a life-saving instrument, since by its use the body fluid may be restored in a few hours.

About five pints of normal saline solution can be given to these patients by slow intravenous drip in a 24 hour period, but this represents only a fraction of the fluid loss. To give more by the intravenous route, which has been tried, exposes the patient to the very grave risk of pulmonary oedema, particularly if there is any central circulatory weakness and if the serum proteins are low. On the other hand, a large quantity of fluid can safely be absorbed from the alimentary canal when administered through the Ryle's tube.

Appreciation of the advantage of this method after a short trial led to the extension of its use to include practically every type of case whose state of hydration was in any respect inadequate or in which fluids required to be forced. Such were the following cases: malaria and blackwater fever, cerebral malaria (over 100 cases), cerebrospinal meningitis (65 cases), enteric fever and typhus, pneumonia, psychoses, and coma due to other causes—e.g., head injuries.

#### Advantages of the Nasal Route

1 When *in situ* Ryle's intragastric tube is comfortable—indeed, not felt.

2 Food, fluids, and drugs may be given as necessary, independently of the patient's desires. Unpleasant-tasting drugs such as quinine and paraldehyde may be given without distress, and are retained.

3 In lung cases the respiration is not embarrassed.

4 Adequate fluid intake can be ensured, and its quantity accurately measured and recorded. The quantity given may be large and yet without the risk of producing pulmonary oedema. In gross dehydration the fluid required may be as much as 10 to 15 pints. In relation to this it is worthy of note that, although water absorbed from the alimentary canal is followed by a speedy diuresis, physiological saline does not have this effect. Further, saline absorbed from the alimentary canal is better retained and produces a less immediate diuresis than does saline given direct into the blood stream (Wright, 1940).

#### Technique of Passing the Tube

Cases may be divided into three groups: (1) those with a swallowing reflex even in the presence of coma, (2) those without a swallowing reflex—i.e., cases in deep coma, (3) refractory patients—e.g., maniacal and cerebral irritation cases. The first essential is to test the tube for patency and leaks by syringing a little water through it. Lubrication of the tube is all-important, and the best means is with liquid paraffin, although vaseline or olive oil may be used. With apprehensive or non-cooperative patients analgesia of the nose and soft palate may be induced by 5% percaine nasal spray, but this has not been necessary in military practice. It is desirable to sit up the patient and then proceed as follows:

**Group 1**—Pass the tube into the nostril, choosing the one which is the more patent, and gently push it backwards along the floor of the nasopharynx. The passage past the turbinates is assisted by tilting up the tip of the nose with the finger. Now pass 6 to 8 in. of the tube, when the patient will cough, wait until the inevitable retching occurs, followed by a swallow, which will draw the tube into the oesophagus; after this it may be rapidly pushed down to the third mark on the tube. Swallowing may be aided by instructions to the patient, by water to drink, or by placing something palatable on the tongue. There is no danger of getting the tube into the larynx if the act of swallowing is awaited before passing it onward.

**Group 2**—Prop up the patient and lean him forward. Put two fingers into the mouth and the posterior pharynx, using a mouth gag if necessary. Pass the tube through the nostril and into the pharynx as before, and use the fingers to guide it behind the epiglottis into the oesophagus. It is then pushed onward as before. A tube passed into the trachea speaks for itself. Prove that the tube is *in situ* by aspirating a little of the gastric contents.

**Group 3**—Refractory patients may be dealt with by either of two methods. One is to anaesthetize with an intravenous barbiturate (evipan sodium) just short of abolishing the swallowing reflex. If this is abolished, wait until it returns and then proceed as in Group 1. When the tube is in the stomach put in a dose of potassium bromide gr 40, chloral hydrate gr 20, with or without tinct. opii mm 20, or paraldehyde drs 2. The alternative method is to produce twilight sleep with intramuscular sodium luminal or subcutaneous scopolamine morphine before attempting to pass the tube. By employing these methods with judgment unseemly struggles are avoided.

With a little practice it is very easy to become really proficient at passing an intragastric Ryle's tube. Three or four successes make anyone confident. It is important to train as many as possible to do this. Our nursing officers and trained nursing *epoys* soon do it with ease.

#### Fixation of the Tube

Bring the free end alongside the nose and up to the forehead between the eyes and fix it with strapping. When not in use the free end should be tied or be closed with a clip. Some patients, especially psychotics, tend to pull out the tube at first. This may be overcome by splinting the arms to prevent flexion of the elbow and tying to the bed if necessary, and/or giving sedatives through the tube. Patients, however, soon become accustomed to it, and are scarcely aware of its presence. Recently a Chinese patient with a delightfully indolent attitude towards life became extremely annoyed when his tube was removed and he once more had to rouse himself for food and drink.

The period during which the tube is *in situ* is governed by the condition and progress of the patient. It varies between 12 hours and three or four days. One of our patients a psychotic had a tube in place for three weeks without ill effect or fouling of the tube. Fluids and feeds may be given either as a continuous drip, using a graduated flask and Murphy drip apparatus or by means of a funnel without drip connexion. The former method is preferable in cases of coma, since the rate of absorption proceeds *pari passu* with the rate of drip, and regurgitation is thus avoided.

#### Possible Drawbacks

In discussing this method with Brig H L Marriott, Consulting Physician, India Command, and Col G F Taylor, Consulting Physician, Eastern Army, two possible objections to its use were raised—namely, the possibility of ulceration of the laryngopharynx, and the danger of bronchopneumonia arising from the aspiration of gastric contents regurgitated alongside the tube. Consequently in 19 cases treated by this method which ultimately came to necropsy these ill effects were sought, but were never found. In coma the method of dripping-in fluid minimizes the risk of regurgitation.

Serum proteins have been estimated in some 300 cases of varying type coming under our care, and in an alarming proportion of these low albumin figures have been observed, especially among coolie personnel. Care must be taken not to force the fluid to excess in these, as in a few instances a generalized anasarca has resulted. Constant reference to a "fluid intake-output chart," which we always keep in our wards, forms a valuable guide to the fluid balance.

#### Discussion

Although this method has been employed previously in surgical practice for continuous gastric drainage and in head injuries (McAlpine, 1944), and in medical practice for the continuous duodenal drip feeding in peptic ulceration and recently during the Bengal famine (Indian Research Fund Association, 1944), its value is by no means so well known as it deserves to be. Recent graduates from the medical schools of Bombay, Madras, Calcutta, Patna, and Lahore are unfamiliar with its application to acute medicine, and as these have been interns, we can only assume that either the method is not used in the teaching institutions of India or its use has been sporadic.

One of us with five years' postgraduate experience of acute medicine in teaching hospitals in London and four in Singapore, regards the full application of this method, forced on him by the exigencies of war, as a considerable advance in treatment, and, had he only been earlier aware of its full possibilities, believes that certain patients who died in the Medical College Hospital in Singapore would have been saved by its bold use. Particularly has it solved the problem of hydration in malarial coma, in which, owing to the reduction of serum albumin brought about by the disease itself, and frequently a pre-existing condition as well, the risk of pulmonary and secondary cerebral oedema following intravenous saline infusion is very real, as has been widely appreciated in the past (Thomas and Svidenstricker, 1940).

A most important lesson we have learnt is that no patient is too ill to have a tube passed. Even seemingly moribund dehydrated cases of pneumonia and meningococcal meningitis have been saved by this method. These patients were so ill that had one not had previous experience of the intragastric drip one would not have dared to pass a tube. Brinton (1941) draws attention to severe dehydration developing during cerebrospinal fever, and mentions the method of giving fluid by means of a nasal catheter, but does not convey to the reader that an intragastric tube is used, and states that an adult should take 2 to 3 pints of fluid every 24 hours. This demonstrates the difference in tropical practice, in which, in the same disease, a fluid intake limited to 3 pints a day would lead to disaster not only from dehydration but commonly in the form of sulphapyridine haematuria. We have in these cases used Ryle's tube with such complete success for the administration of large quantities of fluid, and also sulphapyridine, that to pass a tube in cerebrospinal fever is now our routine procedure.

It was with some trepidation that this method was first employed in acute pulmonary disease, but the need for fluid was so great that it was attempted, the intravenous route being out of the question and the rectal "not satisfyingly certain" (Bailey, 1939). It was not found appreciably to embarrass respiration—rather less so than do many forms of oxygen apparatus in common use. An especial advantage is that hydration proceeds during sleep.

The attitude of our nursing staff, drawn from all parts of the British Commonwealth, has been one of unqualified approval, since it saves much of their time spent in repeatedly requesting the patient to drink. The tube achieves what may only otherwise be done by special day and night sisters under nursing-home conditions.

It is realized that this practice is not as familiar as it should be, and we are certain that an extension of its use and emphasis on the quantity of fluid needed will be found to save the lives of many people whom one would ordinarily expect to die in a few hours.

Our thanks are due to Col. F. R. Cawthorn, I.A.M.C., for the facilities given to us in developing this technique and for permission to publish this article. We also wish to acknowledge the valuable and willing co-operation of many nursing and medical officers.

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## SUPRARENAL HAEMORRHAGE

### REPORT OF A CASE

BY

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AND

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We report a case of suprarenal haemorrhage diagnosed by the clinical data are best presented as day-to-day

## Case History

The patient was an unmarried woman, aged 23, and before the symptoms were apparently in excellent health. The illness began on a Saturday, during the height of the influenza epidemic, but the patient did not send for her doctor until the following Monday.

**Saturday.** Onset of malaise, slight sore throat, short dry cough, and one attack of vomiting.

**Sunday.** Main complaint now was of "feeling cold." The throat was still sore, but there was in addition a complaint of pain in the lumbar region. This pain was never severe, and was not referred to the region of the loins. The symptom she stressed especially was the persistent feeling of cold.

**Monday.**—She called in one of us, and was seen for the first time at 3 p.m. The story of the preceding days was elicited, and in addition she complained of frontal headache, and was found to be menstruating. The menstrual period was to time, but the loss was excessive. The symptoms of the previous day were still present, but were no worse. On examination temperature 100°; pulse 84, with fair volume, regular and apparently normal tension; fauces and pharynx injected, but no gross clinical tonsillitis and no exudate. There was no cervical adenopathy or coryza. The heart, lungs, and abdomen presented no abnormality. There were no signs of meningeal irritation, and no change in the optic fundi or drum heads. The skin did not show any rash and there was no sweating.

**Tuesday.**—During the early hours of the morning the patient complained of intense cold and a feeling of profound fatigue. She was seen by C. J. W. again at 6 p.m. The whole picture was now in marked contrast with that of the previous evening. The woman was restless and had an anxious look. She was intensely cyanosed especially in the face and lips, hands and forearms, feet, and leg up to the knees. The temperature was 96° and there was a profuse cold sweat. The pulse rate was 120, regular, but of poor volume, respirations 30, with frequent sighings. Examination of lungs, heart and abdomen revealed nothing further. Central nervous system. Mentally clear and co-operative; cranial nerves normal, optic fund normal, pupils dilated but reacting normally; knee- and ankle-jerk absent; arm-jerks present but weak; plantar response flexor. The arms and legs could be moved only with difficulty. Light touch, pin-prick, heat, and cold were blunted over the extremities, but deep sensation was normal.

At 8 p.m. the same day the woman's condition was obviously worse. The cyanosis was deeper, and there was no pulse at the wrist; she was mentally apathetic but rational, and was still sweating profusely.

At 11 p.m. she was seen in consultation. The main findings were as above: the heart rate was now about 160 or over, and the clinical state was obviously deteriorating rapidly. At this stage a tentative diagnosis of suprarenal haemorrhage was made, and adrenaline, pituitrin, strophanthin, etc., were administered. No cortical extract was immediately available. The patient died three hours later, at 2 a.m. on the Wednesday morning, after an illness lasting about four days.

**Post-mortem Examination.**—The right adrenal was completely disrupted by haemorrhage, which had burst through the capsule of the gland. The left adrenal showed discrete haemorrhagic areas throughout its substance. The other organs were macroscopically normal. There was no haemorrhage into serous membranes or any splenic enlargement. The necropsy was performed under difficulties, but was reasonably complete.

## Discussion

This case presented great diagnostic difficulties. As mentioned previously, it occurred at the height of an influenza epidemic, with fresh cases of influenza being seen hourly, and not unnaturally the diagnosis when first seen was influenza—a diagnosis which may have been correct. But the striking change for the worse which occurred between the first and second visits of C. J. W. obviously called for a further diagnosis. The clinical picture was one of profound circulatory collapse, the cause of which an examination failed to reveal.

The unusually heavy menstrual period suggested the possibility of an abortion, and the question of poisoning by some drug taken to procure abortion was discussed. Hospital investigation was out of the question; the patient lived in a lonely farmhouse, and the weather was so foggy that she could be visited only with the greatest difficulty. At the mid-night consultation it seemed that the only diagnosis which would account for the profound asthenia was acute suprarenal failure. This very tentative diagnosis was confirmed by the necropsy.

The literature of acute suprarenal haemorrhage has become quite extensive, though the number of recorded cases, so far as we have been able to discover, does not exceed about 60: owing to wartime difficulties our search of the literature has not been as complete as we would wish, and we are open to correction on this point. By far the greater number of recorded cases and discussions concern the now well-recognized Waterhouse-Friderichsen syndrome, due in the majority of cases to meningococcal septicaemia, the symptomatology being characterized by sudden onset, malaise, restlessness, often vomiting and diarrhoea, followed by cardiovascular collapse with intense cyanosis, often a striking purpuric eruption, and death within 24 hours. But deviations from the syndrome have been recorded by many writers, and

classifications have been attempted based on the presenting or dominating symptoms. Thus we have the well-recognized "peritoneal" type, simulating the acute abdomen, a "nervous" type, presenting with convulsions and delirium; and a third variety simulating a severe purpura. An "asthenic" type was described by Arnaud as early as 1900, but the original reference is not available, and we know of no case-description, except the one recorded above, which typifies this asthenic group of Arnaud.

### Conclusion

The features of the above case which seem to deserve emphasis are: (1) The insidious onset, but ultimately rapid collapse due to apparently causeless circulatory failure. (2) The absence of abdominal pain, which if present would have been of real diagnostic help, and this despite the severe haemorrhage into the right suprarenal; the same applies to the absence of petechiae. (3) It has been suggested that the purpura, when it occurs, is merely a manifestation of severe septicaemia; our case would support this belief. (4) The diagnostic value of the intense cyanosis associated with cardiovascular collapse. The cyanosis is much more striking than in any ordinary variety of acute heart failure, such as that due to a coronary thrombosis. (5) Was the patient really suffering from influenza and, if so, was the influenza responsible for the suprarenal failure? At no time did the case suggest a septicaemic state.

### Summary

A case of suprarenal haemorrhage of the so-called "asthenic" type is described. The diagnostic difficulties are discussed. It was possible to suspect the diagnosis during life as the only explanation of the profound cardiovascular collapse.

## Medical Memoranda

### Acute Appendicitis, treated with Penicillin

I would like to bring forward the following case record to show the dramatic effect of penicillin in what would otherwise have been a hopeless case of acute appendicitis, with perforation, gangrene, and general peritonitis.

#### CASE HISTORY

A male aged 4 years 11 months was admitted to this hospital on Aug. 16, 1944, at 2.20 p.m. The previous day he had been ill with vomiting, and when seen by his own doctor had shown all the classic signs of acute appendicitis. On admission he had a tender and rigid abdomen, with pain more pronounced to the right iliac fossa. The knees were drawn up, he was restless, and he looked very ill. Temperature 101.8°, pulse 136.

Operation was performed at 3.5 p.m. under open ether—right pararectal incision. The abdomen contained thin greenish foul-smelling fluid, with gas. The appendix was found to be retrocaecal, coiled up on the caecum, with the thickened omentum wrapped over it. The omentum was separated and a small gangrenous portion removed. The appendix was perforated about the middle, and was also gangrenous in this area. The neighbouring bowel was covered with soft greenish fibrin over a wide area. The appendix was removed, the R.I.F. well swabbed out, a drainage tube inserted, and the wound closed.

A specimen of the fluid in the abdomen was sent to the pathologist at St. John's Hospital, and he reported the presence of *Str. faecalis*, *Staphylococcus*, and a Gram negative diplococcus.

Immediately after operation 12 c.c.m. of nukehamide (eoramine) and 1 c.c.m. of staphylococcus antitoxin were injected. Sodium sulphapyridine 3 c.c.m.—i.e., 1 g.—was injected 4-hourly, also transpulmin 1 c.c.m. b.d. The child's condition was very poor, temperature 99°, pulse 164, vomiting brown fluid, very restless, and delirious. 1 c.c.m. of camphor in oil was injected during the night. Next day his condition had not improved, temperature 97.8°, pulse 153, delirium, vomiting, and restlessness continued; sedatives had no effect.

At 6.15 on this day treatment with penicillin was begun, and the sulphapyridine was stopped. The method of administration was to run in 15,000 units, in a strength of 2,500 units per c.c.m., through a catheter and pass it into the abdomen through the drainage-tube. The catheter was clipped to keep the penicillin within the abdomen. This procedure was repeated every three hours, but before each fresh injection the fluid in the abdomen was withdrawn through the catheter by means of a syringe. Pathological tests were taken of each syringe of fluid so withdrawn. This treatment was carried out as stated every three hours for the next 48 hours, making 14 injections in all and employing 200,000 units of penicillin.

The child made little progress for the first 24 hours, but was quieter, with temperature 98.4° and pulse 136, and the report on the abdominal fluid showed that the growth of streptococci was

inhibited, while the Gram negative bacilli were still present, and were mostly coliforms.

After the first 24 hours the child began to make a striking recovery. The restlessness, vomiting, and delirium ceased, the temperature was 98.4° and pulse 132. He began to take fluids, and he had a good bowel action. On the third and fourth days after the operation penicillin was employed twice daily, morning and evening, in the form of an irrigation of the abdomen, with 20,000 units in the same strength as before, but it was not now retained in the abdomen, the catheter was not clipped, and a smaller drainage tube was inserted. A pathological report showed no growth of streptococci.

At the end of the fourth day the drainage tube was removed, there was no discharge, the wound was clean and healthy, and the child was quite well, taking food by mouth and sleeping normally. His subsequent progress has been uneventful.

### COMMENT

The above case shows that the abdominal cavity can be sterilized by repeated aspirations of exudate and replacement with penicillin and that the toxic condition is thereby relieved. Penicillin eliminated the infection so that the patient's resistance was raised and his general condition improved; this contrasted strikingly with his previous very toxic state, in which subnormal temperature, rapid pulse, vomiting, and delirium were all present, indicating a very poor prognosis.

A total of 200,000 units of penicillin was left in the abdominal cavity in the first 48 hours, and in the subsequent 48 hours 80,000 units were used for irrigation.

I wish to record my great thanks to the American Ambulance Unit of Great Britain who so kindly and promptly sent a supply of penicillin in one of their cars. They must be proud to know that they have saved the life of this child. I would also like to thank the pathologist for his interest and co-operation in carrying out the pathological investigations and the medical superintendent—Mr. G. Richardson—for helping me to write this report. I am very grateful that I have had this opportunity of treatment with penicillin for I can now spread the light of this experience in my own country when I return there after the war.

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### Agranulocytosis after Use of Thiouracil

The following case is indicative of a complication of thiouracil therapy which seems to occur with rather variable quantities of the drug. In view of the early stage in experience of the complication this record may merit publication.

#### CASE HISTORY

The patient was a married woman aged 61. In 1907, at the age of 24, she developed a localized enlargement of the left lobe of the thyroid gland with marked toxic symptoms. She underwent an operation for the removal of the left lobe. There were no further symptoms and she remained entirely fit until three years ago, when mild thyrotoxicosis recurred—sweating, nervousness, and slight tremor being the only symptoms. Owing to an exacerbation of symptoms, and a severe tachycardia having supervened, she was admitted to another hospital in Jan., 1944, for thiouracil therapy.

She was given five 0.2 g. tablets daily for one month, and by the end of that time had lost all her toxic symptoms and felt well. She was kept on a maintenance dose of one 0.2 g. tablet a day, and returned home three weeks later still taking this dose. At the end of March after about 10 weeks' treatment, she was told to have a white cell count done as an out-patient. She omitted to do this, and still continued to take 0.2 g. of thiouracil daily.

At the beginning of May, after three months and one week's treatment, she had an acute febrile attack with some ulceration of the mouth and sore throat, which were untreated but cleared up entirely within six days. On May 27, having had exactly four months of continuous thiouracil, she had an identical though very much more severe febrile attack, and was admitted on June 3, in an acutely ill state, to St. Bartholomew's Hospital at Hill End.

On admission the following positive findings were recorded: T 103°, P 108, R 24. Restless, skin hot and dry. There was much conjunctivitis of the left eye, with cellulitis spreading in the infra-orbital tissue. There was severe inflammation of the tonsils and fauces, the tonsils almost met in the midline, and spots of purulent exudate covered much of the oral and pharyngeal mucosa. The neck glands were bilaterally enlarged and tender. The thyroid was enlarged by an adenoma of the right lower pole about 3/4 in. in diameter. There were no eye signs and only slight tremor. Several petechiae were present over the chest and arms. The lungs and heart were normal. The spleen was enlarged to one inch below the costal margin, it was slightly tender. The urine had a trace of albumin, but was normal to other ward tests, it was acid, with a sp. gr. of 1.010.

The day before admission a white cell count of 1,200 had been recorded, it was mainly lymphocytic, with an occasional degenerate polymorph. 10 c.c.m. of pentnucleotide had been given. Shortly after admission a further 10 c.c.m. of pentnucleotide was given intramuscularly and a pint of blood, warm from the donor, was rapidly transfused, 500 mg. of ascorbic acid was also given intravenously, and oral glucose and copious fluid were encouraged.

On June 4 the general condition seemed slightly improved; the left eye was frankly purulent. Large doses of ascorbic acid, 500 mg.

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t.d.s., and 150 mg. of hesperidin were continued. A second pint of perfectly fresh blood was again rapidly transfused. The white cells at this stage numbered 1,500; a sternal marrow film showed marked hypoplasia with arrest of the granulocytic elements at the myelocyte stage.

On the third day, June 5, the pentnucleotide was increased to 20 c.cm. twice daily. The white cells had risen to 1,860, 149 of which were neutrophils. The fourth day saw the advent of moist sounds in the chest with some cough, but the patient herself felt much improved. A third pint of fresh blood was given. On the sixth day, June 8, there was less swelling of the neck glands, but still some rales at both bases, and the spleen had increased in size to 2 in. below the costal margin. The white cell count was then 6,700, of which 4,320 were neutrophils. A catheter specimen of urine was entirely normal microscopically and sterile. A fourth pint of fresh blood was again given. The 40 c.cm. of pentnucleotide was being maintained, though the injections gave pain and a feeling of severe malaise and anxiety of temporary nature; it was discontinued the next day, a total of 220 c.cm. having been given in seven days.

On June 13, the eleventh day, the chart was normal, the eye had almost entirely healed, and the throat was rapidly healing. The lungs were clear and the patient felt quite well. The white cells numbered 10,700. On the twenty-first day after admission the white cell count was 16,000; the spleen was easily palpable at over 2 in. below the costal margin.

Convalescence proceeded apace, and, though there was no further soreness of the throat, some considerable tonsillar enlargement remained. The patient was discharged feeling extremely well on July 12, 39 days after admission, the white cells on the last day totalling 8,100—neutrophils 65%, lymphocytes 29%, eosinophils 2%, basophils 1%, monocytes 3%.

This case had continuous thiouracil therapy for four months, with a dosage of 1 g. daily for one month and 0.2 g. daily subsequently. The neutropenia developed after three months and one week from the beginning of treatment, when the patient had taken a total of approximately 44 g. The total intake up to the second occurrence of symptoms was approximately 48 g.

Recovery was rapid after the cessation of thiouracil, and was probably due chiefly to this, although transfusion of fresh blood was no doubt of great benefit in maintaining a barrier to further spread of infection while the bone-marrow recovered its function.

I wish to express my thanks to Dr. Geoffrey Bourne for permission to publish this record for his encouragement.

DUNCAN LINSELL, M.B., B.S.

### An Unusual Case of Acute Pancreatitis

The following case is considered worth reporting because of the unusual features it presented.

#### CASE RECORD

A healthy, well-built, and well-nourished Indian soldier, aged 27, complained of a sudden and acute onset of pain in the abdomen on the night of March 22, 1944, about four hours after his evening meal. There was a rapidly progressive collapse, and he expired before the unit M.O., who was sent for, could arrive—a matter of about 20 minutes. Death was judged to be due to heart failure, but the body was sent to the field laboratory for necropsy. There was no suspicion of foul play or poisoning, and previous to this attack he was known to be a perfectly healthy man, not addicted to any drug or alcohol and with no history of any gastro-intestinal trouble.

At the necropsy, performed a few hours after death, the paracolic gutters contained about 4 oz. of sour-smelling haemorrhagic fluid, and the lesser sac showed small scattered areas of haemorrhage. The omental fat was stained red, but did not present any areas of necrosis. The pancreas was much enlarged—length 26 cm., weight 145 g.—and the whole of it was a dark purplish black; it was very friable and adherent at places. A search for biliary and pancreatic calculi yielded negative results. The solar sympathetic plexus and the suprarenals were swollen, red, and congested. The brain had few pin-point haemorrhages scattered throughout the cortex andulla. The rest of the necropsy, which was a complete one, called nothing abnormal. Heart-blood culture and Kahn test were negative. Histological examination, carried out at the Central Pathological Laboratory, M.E.F., showed the pancreas riddled with foci of acute necrosis. The immediate cause of death seems to have been a sudden and severe shock to the sympathetic system and the suprarenals.

#### COMMENT

The unusual features in this case were: (i) Extremely rapid fatal termination—in fact, within 20 minutes of the onset of the first attack in a previously healthy man; usually the time taken is hours or days. (ii) Absence of calculi or inspissated bile usually the commonest cause. (iii) Absence of septicaemia, the next commonest cause—though in the lack of any other evidence this must be assumed to have been responsible, the negative blood culture notwithstanding. (iv) Absence of the diagnostic foci of fat necrosis, probably due to the very short duration of the illness.

M. HATANGDI, M.B., B.S., D.T.M.  
CAPT. P.A.M.C.

## Reviews

### FOLLOWING UP THE HOSPITAL PATIENT

*Medical Care of the Discharged Hospital Patient.* By F. Jensen, M.D., H. G. Wenskotten, M.D., and M. A. Thomas, M.A. (Pp. 94; 51 00 or 6s.) New York: The Commonwealth Fund; London: Oxford University Press, 1944.

This is an American experiment from the University Hospital of Syracuse. It should be remembered that the American hospital system is different from the British and that a number of the poorer in-patients have no family doctor who can carry on the treatment begun in hospital. It is reckoned that a considerable State economy is effected by this experiment, since the chronic case is not allowed to slip back and his subsequent period of stay in hospital is materially shortened.

An extramural medical resident was appointed with requisite nursing and social worker auxiliaries, and his duties were to follow up all cases discharged from hospital. In addition to the economic saving effected and the obvious benefit to the patient from a proper continuity of medical treatment, the teaching of the students was much enhanced by the chance afforded of following into their own homes the patients they had studied in hospital. Of all patients admitted to the medical wards of the hospital 84.1% were suffering from chronic disease, and about one-third of these had chronic degenerative cardiovascular disease. The resident extramural medical officer worked in close conjunction with the patient's private doctor when such existed. It was found that only 59.3% discharged to such a practitioner ever reported to him, and only 23.2% of those discharged to the free dispensary ever got there until the follow-up was instituted.

It is obvious that such a service is very necessary when there is poor liaison between the hospital and the practitioners of the district who use the hospital, or where the hospital is not acting in a consultative capacity so that the patient short-circuits his own doctor; but if all "played the game according to the rules" such a service should not be needed except perhaps from the statistical scientific standpoint of a personal follow-up of the results of hospital treatment. Even this, however, should not be necessary in a well-regulated and closely knit medical service.

### ARTIFICIAL PNEUMOTHORAX

*Artificial Pneumothorax in Pulmonary Tuberculosis.* By T. G. Heaton, M.B. With an Introduction by Dr. C. D. Parfitt. (Pp. 217.) Canada: The Macmillan Company of Canada, Ltd.

In the first part of this book the author sets out the history of pneumothorax treatment, and follows this with a study of intrathoracic dynamics, the pathology and physiology of the collapsed lung, and, finally, the complications of artificial pneumothorax therapy. The information contained in these chapters is most useful, and they will be of interest to all who are engaged in treating pulmonary tuberculosis. The author has spent much time in searching the literature, and has collected valuable statistics on such subjects as the incidence of complications and the results of treatment. It is a pity, however, that most of the references quoted are at least ten years old.

The second part of the book, dealing with the indications for treatment and the technique and management of artificial pneumothorax, does not attain the same standard as the early chapters. The subject is controversial, and it would be difficult to please everyone, but this book does not give enough detailed instruction to help a novice faced with the practical problems which constantly occur in pneumothorax treatment. For instance, the management of effusions and empyema is dismissed in three short paragraphs, and it is doubtful whether the author's enthusiasm for oleothorax will be shared in this country. He also fails to point some of the morals which may be drawn from the collected statistics, so well presented in the earlier chapters: the clear demonstration that persistent adhesions carry a bad prognosis, and that such adhesions are present in more than 40% of cases, does not tally with the subsequent statement that not more than 3% of patients with pneumothorax will require adhesion section.



Of the more modern methods of treatment extrapleural pneumothorax gets only the briefest mention while pneumoperitoneum is described merely as a rare complication of pneumothorax. In conclusion, it is impossible not to comment on the statement that "it is possible to manage a pneumothorax fairly well without a ray control" surely this is putting the clock back twenty years at least?

## ORGANIC CHEMISTRY

*Principles of Organic Chemistry* By SYLVANUS J. SMITH M.A. (Pp 569) (S.) Lond n Macmillan and Co 1944

This new book on organic chemistry gives an introduction to the subject in an acceptable form. It is intended for the student who requires a manual that will serve him adequately during his three years' academic course. In this aim the author has fulfilled every reasonable expectation. Using a method which is the result of a gifted teacher's study he conveys the greatest measure of information in the smallest compass without incurring the risk of oversight on the part of the reader and without the ambiguity that may attend a paucity of words.

Chemical reactions and reactivities form the foundation of organic chemistry, and the book quite properly gives to these the chief prominence. The description of physical and other properties of substances, with remarks on their economic or industrial importance and other general information, is aptly included in the general text. A particular feature of value consists in the copious references to other pages on which is to be found supplementary information relating to the matter under consideration. Very helpful too is the revision exercise appended to every chapter. The revision exercise includes questions and problems the solutions to which are provided at the end of the book. The scheme of nomenclature applied to organic compounds is also fully explained, and the more recent development of theory connecting chemical properties with electronic arrangement is adequately treated. The book is a very serviceable students' manual and is also good as a general work of reference.

## Notes on Books

*Bay's Surgical Handcraft*, a favourite with house surgeons and junior practitioners for 60 years, has reached its 14th edition. Mr HAMILTON BAILEY is responsible for the book, as he has been since he succeeded the late H. W. Carson as editor in 1938. There are many new pictures, and Mr Bailey and his team of 45 collaborators have earned the gratitude of a new generation of readers for keeping this manual not only alive but in very good form. The publishers are still John Wright and Sons, Ltd., and the price is 25s.

The Board of Registration of Medical Auxiliaries has published the first *Register of Dietitians*, which contains the names of some 140 members of the British Dietetic Association. Dietetics is defined herein as the interpretation and application of the scientific principles of nutrition in health and disease. Registered dietitians, however, have agreed in cases of disease not to undertake the dietetic treatment of any condition except under the direction and control of a registered medical practitioner. The names are arranged in geographical order and then regrouped in an alphabetical list, followed by a special list of hospitals, etc., employing dietitians. Copies of the *Register* can be had free on application to the Secretary, Board of Registration of Medical Auxiliaries, B.M.A. House, Tavistock Square, London, W.C.1.

Nearly a dozen years ago Dr JOSEPH GARLAND of Boston wrote a charming and instructive book on *The Youngest of the Family*, which he has now revised (Oxford University Press, 11s. 6d.). It is a sound guide to be put in the hands of a mother or expectant mother, and medical practitioners could also read it with benefit, or it is full of facts, attractively presented and linked by common sense. At a time when "popular" books on babies seem to be the fashion this volume of Dr Garland's could well serve as a model.

The National Association for the Prevention of Tuberculosis has issued four new leaflets which in form and material are a departure from what has been done in this way before. The titles are *Learning to Live*, a word of encouragement for the tuberculous patient, *Good Luck*, a practical guide for the ex sanatorium patient, *Child-*

*hood Tuberculosis* a word for the health visitor, and *Dust Diseases Their Cause and Care* giving the essential facts for all connected with the dust-producing industries. Specimen copies of these leaflets can be had free, from the N.A.P.T., Tavistock House North, Tavistock Square W.C.1.

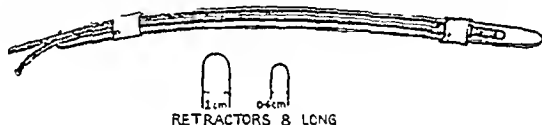
## Preparations and Appliances

### ILLUMINATED RETRACTOR FOR PENETRATING MISSILE WOUNDS OF THE BRAIN

Captain F. J. GILLINGHAM, M.B., B.S., R.A.M.C., writes from a neurosurgical unit in Italy.

The problem of careful and complete debridement of penetrating missile wounds of the brain is that of visualizing all dead tissue and indurated foreign matter within the track. If inadequate surgery is carried out, resulting in incomplete removal of bone fragments and of necrotic brain tissue, the nidus for early or late abscess formation remains.

The present methods of debridement—removal of bone fragments with forceps, irrigation, partial visualization by means of suction and good spot-lighting—may tend to leave one only too often in doubt as to the complete success of the operation. Missile tracks occur at many angles and defeat the best of lighting (spot-lights, and cumbersome headlights or mirrors). To meet this problem a malleable illuminated brain retractor was improvised and later perfected. It had to be of such small dimensions that even small wounds could be explored easily under direct vision, and without further destroying valuable brain tissue. Simple construction, reliability and facility in use, and ease of sterilization were the essentials. The diagram illustrates the retractor that is being used with considerable satisfaction and success.



By means of thin rubber bands it can be changed quickly from a smaller to a larger retractor, as is required. A small rubber catheter (size 4) is often attached with the light to provide suction as well as lighting. This removes any blood or fluid debris, visibility is increased, and a hand is freed which can be usefully employed removing bone fragments, etc. The instrument is easily sterilized in antiseptic fluid or by boiling, and can be cleaned without difficulty.

A number of cases have been dealt with by this method, and results are gratifying. In a series of 30 consecutive brain wounds operated on in the forward area post-operative cheek X-rays revealed no remaining bone fragments in 29 cases, and in two cases deep seated metal foreign bodies which previously would probably have been left were removed without difficulty.

Straightforward penetrating brain wounds can be sucked quite clean of all debris often to their complete depth, unless across the midline. Bone fragments are easy to find once the necrotic brain and blood clot are sucked away. They are seen as white broken bone fragments, tiny and large and often covered in part by necrotic brain or a few hairs. Gradually the normal brain forming the walls and depth of the track is seen, and all tags of dead brain sucked away until at last the track is seen to be quite clean. It is practically never necessary to enlarge the dural opening.

Abscesses presenting on the surface can be evacuated completely and explored to their depths. The collapsed lobulated walls fall together and prevent the insertion of a tube to the bottom but direct vision makes this a simple procedure. Orbital wounds involving the globe and the temporal or frontal lobes of the brain are often subjected to inadequate debridement owing to the difficulties of exposure but a track in the temporal lobe explored through the orbit was thoroughly cleared of its necrotic brain indurated bone, and metal foreign body without difficulty. Ventricular wounds with metal foreign bodies in the walls of the ventricle can be cleaned out and the foreign bodies removed.

It is early yet to say whether there will be any diminution in the abscess rate in this series.

I owe my gratitude to R.E.M.E. in this theatre of war, and particularly to Lieut. Ward, R.A.S.C., for their enthusiasm and help in constructing the instrument. I am also indebted to Brig. Hugh Cairns, Consultant Neurosurgeon, for his encouragement and advice.



## FUTURE OF ROYAL SOCIETY OF MEDICINE

## Appeal for Building Fund

The house of the Royal Society of Medicine at the south-east corner of Wimpole Street was considered palatial when it was opened by King George V in 1912. The Society since those days has trebled its membership and multiplied its services, and the number of its sections has risen to twenty-four. At many meetings, even during the wartime dispersion, its larger hall has been crowded out, and other rooms fully taxed. The larger of the two meeting rooms holds only 350.

A recent special meeting of Fellows unanimously decided to open a building fund of £50,000 for the enlargement and re-equipment of the house to meet present and future requirements. The recommended alterations will provide a new top floor to contain a large room fully equipped for the examination of clinical cases. A third meeting room is also proposed, as well as new common-room and committee-room accommodation. These developments, of course, will not be possible until there is a large release of labour, but it is hoped that the fund may reach workable proportions even before reconstruction is begun.

The Society now serves its membership in ways not dreamed of thirty years ago, when its *Proceedings* was the only means of contact with those of its members who did not live in the Harley Street neighbourhood. It has been quick to take advantage of the photostat, the microfilm, and the precision enlarger, so that instead of the student having to visit the library, the material he is in need of goes to him. The microfilm, which has proved of immense value in the recording of documents, has been taken up by the Society, and eleven "film readers" have been lent to the medical branches of H.M. Forces over-seas and two to the American medical Forces, so that medical officers on any of the war fronts have an opportunity of keeping abreast of medical literature. The microfilm is more convenient than the photostat, but the photostat is most useful where there is no access to a "film reader," and this is to be augmented by a special camera which will serve for making book records.

Another development in which the Society has taken part, in co-operation with the Scientific Film Association and other bodies, is the establishment of a library of medical films.

## MEDICAL SERVICE CONDITIONS IN TRINIDAD

The Legislative Council of Trinidad and Tobago has passed a resolution for the appointment of a committee to review the medical and health policy of the colony and to consider the reorganization of the health services. Mr. Gerald Wight, member for Port of Spain, in proposing the resolution, traced the past history of medical services and outlined the causes of present dissatisfaction. In his view no satisfactory service could emerge so long as the administration was on a purely Civil Service pattern, which in medical affairs meant an undesirable dictatorship. In Trinidad, he said, the authority in medical and health matters was concentrated in the Colonial Secretary, and below him in the Director of Medical Services. Out of 47 recommendations made by a Medical Reorganization Committee in 1934, only 22 had been completely implemented. An advisory council to the Surgeon-General was proposed and was actually set up in 1935, only to be abolished in the following year. Effect had not been given to recommendations for the enlargement of hospitals and the establishment of out-patient departments and for the making of staff appointments. Proposals for the establishment of blood transfusion centres, for the treatment of paying patients at general hospitals by private practitioners, for the appointment of part-time practitioners to carry out all forms of district work, and for the re-staffing of district hospitals had not been carried out.

Dissatisfaction in the service was such that there had been a number of resignations of medical and nursing staff. Mr. Wight also commented that Government policy concerning health insurance was ill-considered and ill conceived, as was illustrated by the appointment of an insurance committee without a single general practitioner among its members. Nothing had been done to implement the recommendations of the Royal Commission for better facilities for medical treatment in rural areas. Another member said that the district hospitals were small useless buildings, that there were no hospitals for infectious diseases, that patients with pneumonia had to be treated at home, and cases of diphtheria and poliomyelitis were treated in the ordinary wards of hospitals. The staff at the two general hospitals, San Fernando and Port of Spain, were said to be overworked. A reply was made by Mr. dos Santos, Acting Colonial Secretary, who pointed out that the expenditure on medical services had increased from 733,000 dollars in 1934 to over two million dollars in the present year's provision. He pleaded that owing to the war it had been difficult to obtain hospital personnel and equipment. Plans for a sanatorium were under consideration. Arrangements for clinics had been reviewed year after year and

readjusted to meet the needs of the population. Trinidad and Jamaica had the highest salary scales for medical officers in the West Indies, but the smaller colonies could not afford to pay the same scales, and there must be a levelling of salaries in any unified service. Another supporter of the administration pointed out that the death rate in Trinidad, which was 27.5 at the beginning of the century, had fallen to 17.5 by 1932, though since then it had remained stationary. It was announced on behalf of the Government that while it accepted the resolution the committee could not be appointed until a qualified person from abroad was available to act as its chairman.

## Nova et Vetera

## MEDICAL LICENCES IN THE 16th AND 17th CENTURIES

In these days of Governmental proposals to regiment the doctors for the benefit of the State, it is interesting to learn in John H. Raach's "English Medical Licensing in the Early Seventeenth Century" that in 1421 the profession itself petitioned for some measure of State control and definition of its duties. The lack of a corporate spirit in medicine in the Middle Ages, as compared with the elaborate organization of the crafts with their guilds, and the stable edifices of the Church and the Law, made some such step sooner or later inevitable. The petition, which is here for the first time published, had but little effect, and in the early years of the reign of Henry VIII the State took the initiative and passed two effective statutes. The first of these (1511) placed the regulation of the profession, both in London and throughout the country, in the hands of the bishops, while the second (1522) was concerned with London and the surrounding districts. The article is concerned mainly with the first of these statutes.

The power of the Church in medical licensing (and it retained this authority, in theory at least, until the creation of the General Medical Council in 1858) may seem anomalous, but the author goes to some pains to justify the choice of the bishops, and makes a good case for their stewardship. In an attempt to rid the country of quacks the Tudor Government, as was its wont, made use of an established institution; and its choice of the Church for this work was by no means unhappy. The two universities retained their licensing powers and although the soon-to-be-incorporated College of Physicians quickly obtained a monopoly of licensing in London, its attempt to replace the bishops as a licensing body in the country never became effective. The Church was, in practice, by far the most important licensing authority, and two-thirds of the licensed doctors in the early seventeenth century received their licences at its hands. The bishops were advised by a committee of "expert persons," usually local physicians, who could, after examination, testify to the candidate's ability. Stress was laid by the examiners upon knowledge rather than qualifications and licensees with medical degrees seem to have been in the minority. The area in which the ecclesiastical licence was valid was circumscribed and may have depended upon the fee paid, whereas a university licence cost more and permitted practice anywhere in England.

This informative and well-documented study reveals the early consciousness of the Government of some responsibility for the public health and its attempt to legislate for it in the statute of 1511, which resulted on the whole in an efficient system of medical supervision in England. Medical licensing occupies a small but important niche in English social history, and well deserves this careful elucidation of its early evolution.

G. O. M.

<sup>1</sup> *Yale J. Biol. Med.*, 1944, 16, 267.

H. Derron and E. W. Le Hcw (*Amer. J. med. Sci.*, 1944, 208, 240) record an epidemic of 129 cases of mumps in a small Tank force. The total days lost by hospitalization were 2,657, which, though a large figure, agrees with previous experience with mumps in the army. There was an evident correlation between inclement weather and crowded living conditions and the incidence of mumps. Thirty-five per cent. developed orchitis. Leukopenia with relative lymphocytosis was present in most cases. Sulphathiazole was given to eight patients without affecting the course of the disease.

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1. Della Vida and Dyke (1942) *Lancet* 2. 275 Riddle (1940) *Amer. J. med. Sci.* 200 45 Isaacs et al. (1935) *J. Amer. med. Ass.* 111 2291  
2. Munat et al. (1928) *Amer. J. med. Sci.* 175. 599



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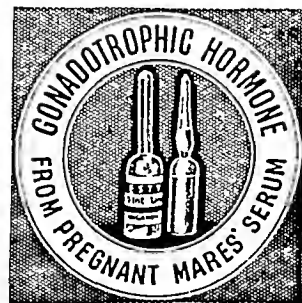
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## BRITISH MEDICAL JOURNAL

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SATURDAY NOVEMBER 4 1944

## ALUMINIUM DUST FOR SILICOSIS

Assuming that silica exerts its injurious effect upon animal tissue through a slow transformation into silicic acid, Denny, Robson, and Irwin<sup>1,2,3</sup> thought that if the solubility of siliceous material retained in the lungs could be sufficiently reduced the usual fibrotic response could be diminished or prevented. They discovered that aluminium powder rendered siliceous material insoluble *in vitro* by coating the silica particle with a thin film of gelatinous hydrated alumina, which on drying formed crystalline alpha aluminium monohydrate. The presence of this adsorbed layer on the surface of the quartz was shown by staining it with aurin. That metallic aluminium dust produced no fibrosis in the lungs was demonstrated by dust-inhalation experiments on eight rabbits. Attempts were therefore made to prevent silicosis by mixing quartz with metallic aluminium dust. Animals exposed to quartz dust developed typical silicosis in about 5 months, but the addition of 1% aluminium powder prevented this even after exposure had been lengthened up to 22 months provided the aluminium powder was of a particle size below 5  $\mu$ . This year Crombie, Blaisdell, and MacPherson<sup>4</sup> have reported the treatment of 34 silicotic miners by the daily inhalation of fine aluminium powder freshly ground from small aluminium pellets in a specially constructed mill. Daily treatment began with five-minute inhalations, which were gradually increased to 30 minutes. Some of the men received 300 treatments, but the majority only 200. Out of the 34 cases thus treated clinical improvement in 19 was manifested by lessening or disappearance of shortness of breath, of cough, of pain in the chest, and of fatigue. In 15 cases the condition became stationary and remained so in spite of continuous employment in silica dust throughout the treatment. The progress of the disease was assessed by means of tests for respiratory function repeated at three-monthly intervals. Obviously this treatment cannot be regarded as a cure for silicosis, since it cannot restore lung tissue which has undergone fibrotic change; but Crombie and his colleagues believe that the inhalation of finely particulate aluminium powder offers every prospect of preventing the development of human silicosis.

In view of these findings it is surprising that repeated papers by Goralewski<sup>5,6,7,8,9</sup> from Germany describe

various types of lung disease attributed to aluminium dust and press for them to be scheduled under the Workmen's Compensation Act in that country. Seven hundred workers were investigated. They were making, probably by a stamping process, aluminium powder containing about 4 milliards of particles of dust per grain, and are reported as complaining of dry cough with pain on breathing, shortness of breath, poor appetite, and gnawing abdominal pain. Spontaneous pneumothorax developed in four workers. No abnormal physical signs are described. Blood counts showed a relative lymphocytosis with an eosinophilia up to 10%. The sedimentation rate was within normal limits in 78% of the cases, but the vital capacity was decreased in 27 instances. Radiographs showed focal shadows in the apical region with an increase of normal bronchial markings in the upper and middle thirds of the lung, giving a reticular appearance which at a later stage tended to increase and become confluent. The development of the illness was rapid and appeared to bear no relation to the length of exposure to aluminium. Histological examination of the lung of one patient who died revealed coarse, branching, hyaline, collagenous fibres, which enclosed phagocytes containing fine and coarsely granular particles distinguished by their jagged outline from carbon particles. Jäger and Jäger<sup>10</sup> suggested that, while aluminium powder is highly resistant to aerial oxidation, it is freely soluble in sodium chloride solution, giving sodium aluminate and aluminium chloride in equilibrium. A colloidal aluminium hydroxide complex results if the sodium and chloride ions are allowed to diffuse away, and if protein is also present it is co-precipitated round the partly dissolved aluminium particles. Jäger and Jäger think it is this complex which causes the lung changes. Koelsch,<sup>11</sup> however, believes that mechanical factors were responsible and that the disease is a consequence of the unsatisfactory ventilation of workrooms resulting from the black-out.

Aluminium powder is used in incendiary mixtures and in paints and inks. It can be made by two processes: either it can be blown, when the particles will be covered with a thin film of alumina; or it can be stamped, when they are covered with a thin film of stearine. Crombie, Blaisdell, and MacPherson<sup>4</sup> investigated 125 workers employed in the Pittsburgh stamp mills of the Aluminium Company of America. The workers here had been exposed to aluminium dust for periods ranging from 6 to 23 years; their health was found to be better than that of the 3,000 other workers employed in the plant. X-ray films of the chests of all the men taken each year for three years showed no abnormalities which could be attributed to the inhalation of dust. In the current number of the *British Journal of Industrial Medicine* Donald Hunter and his colleagues<sup>12</sup> report an investigation into the effect of aluminium and alumina on the lungs of grinders of duralumin aeroplane propellers. The workers were exposed to a mixture of aluminium dust arising from the propeller and alumina from the aluminium grinding wheels. The average concentration of aluminium dust close to the operator's mouth was found to be 3 mg. per cubic metre of air, of which the

<sup>1</sup> *Canad. med. Ass. J.*, 1937, 37, 1.

<sup>2</sup> *Ibid.*, 1939, 40, 213.

<sup>3</sup> *Indust. Med.*, 1939, 8, 133.

<sup>4</sup> *Canad. med. Ass. J.*, 1944, 50, 318.

<sup>5</sup> *Arch. Gewerbepath. Hyg.*, 1939, 9, 676.

<sup>6</sup> *Ibid.*, 1940, 10, 384.

<sup>7</sup> *Ibid.*, 1941, 11, 106.

<sup>8</sup> *Dtsch. Tuberkul.*, 1943, 17, 3.

<sup>9</sup> *Arch. Gewerbepath. Hyg.*, 1943, 13, 102.

<sup>10</sup> *Arch. Gewerbepath. Hyg.*, 1941, 11, 117.

<sup>11</sup> *Beitr. Klin. Tuberkul.*, 1942, 97, 688.

<sup>12</sup> *Brit. J. Indust. Med.*, 1944, 1, 159.

particle size in 1 mg. was between 2 and 7  $\mu$ , the remaining 2 mg. consisting of larger particles. The alumina particles were mostly of less than 1  $\mu$  diameter. The health of these workers, as shown by the number of sicknesses during the preceding year, was better than that of those in a machine shop belonging to the same company. None gave any history of spontaneous pneumothorax, and no abnormality was found in their blood counts. Radiographs of 92 workers showed no evidence of lung disease which could be attributed to aluminium. Observations at factories where aluminium powder is made by the blowing process do not suggest that workers there suffer from a high incidence of pulmonary disease. The recent findings in Germany therefore remain a mystery; but reliable investigations in this country and in Canada and the U.S.A. now show that aluminium dust has no injurious effect on the lungs.

## HOMOLOGOUS SERUM JAUNDICE

Jaundice is one of the few diseases which have shown an increased incidence during the present war. Epidemics of what used to be called "catarrhal jaundice," but which from recent pathological work is more correctly termed "infective hepatitis," have been common in both civil and Service communities. Among the former the epidemiological pattern has for the most part been that of a droplet-spread infection with a three to five weeks' incubation period,<sup>1</sup> but in the Services<sup>2</sup> the disease has displayed some unusual epidemiological features. Besides this epidemic infective hepatitis, jaundice has occurred as a sequel to injection of pooled human serum such as is used in yellow fever vaccine or for protection against measles and mumps or in transfusion.<sup>3</sup> The rarity of jaundice after transfusions of whole blood or even pooled plasma and serum may be related to the so-called "dilution phenomenon," whereby neutral mixtures of virus and immune serum become reactivated when diluted.<sup>4</sup> Thus a hypothetical icterogenic virus would be held in check by the large doses of antibody given in transfusions, but would be liberated after injection of the very small doses of hepatotoxic serum which produces jaundice. Jaundice among patients under arsenical treatment for syphilis has long been regarded as evidence of toxicity of the drug, but recent work indicates that this form of jaundice is also due to the transfer of some noxious substance from the blood of one patient to another owing to improper sterilization of syringes and needles used for intravenous injections.<sup>5</sup> Both this post-arsphenamine jaundice and the homologous serum jaundice have a long incubation period of two to four months, but are accompanied by liver damage indistinguishable in kind and severity from that which occurs with infective hepatitis.<sup>6,7</sup> Apart from the incubation period, the main point which

distinguishes infective hepatitis from homologous serum jaundice—a term we may conveniently use to include both the pooled serum and the post-arsphenamine jaundice—is the apparent lack of infectivity of the latter disease. In addition Hawley and his colleagues,<sup>8</sup> in describing an outbreak of jaundice after use of convalescent mump serum, have drawn attention to the greater incidence of certain clinical phenomena—e.g., arthralgia, skin rashes of allergic (urticarial) type, and enlarged liver and spleen—among patients with homologous serum jaundice. Persistent vomiting was more common in the infective hepatitis series.

The problem which still remains unsolved is the relation of infective hepatitis to homologous serum jaundice. Are they one and the same? So far attempts to isolate a virus from either type of disease by inoculation of material—whole blood, bile, nasopharyngeal washings, liver and spleen from fatal cases—into a wide variety of experimental animals have been wholly unsuccessful. Attempts to infect human volunteers by injection of blood from patients with infective hepatitis<sup>9</sup> or by nasal instillation of nasopharyngeal washings from cases of homologous serum jaundice<sup>10</sup> have been rather more successful. Interesting data on the infectivity of serum from patients with homologous serum jaundice or of pooled serum that was known to be icterogenic have lately been provided by both American and British workers.<sup>11,12</sup> Thus an injection of 0.1 to 0.5 c.c.m. of an icterogenic serum produces the hepatitis syndrome in varying degrees of severity in 30 to 40% of volunteers. The active principle is filtrable; it survives drying *in vacuo* for more than a year and storage at 4° C. for long periods; it resists heating for one hour at 56° C., but may be neutralized by ultra-violet irradiation. There is even evidence that it may be capable of multiplying in tissue culture. It is present in the blood during the pre-icteric and icteric stages of the disease, but disappears after two months. But, again, it may be present in pooled serum from individuals who at no time showed any symptoms suggestive of infective hepatitis.<sup>13</sup> Sheehan<sup>14</sup> has discussed the possibility that infective hepatitis is transmitted by a biting insect, and this new point of view may explain some anomalous findings in the epidemiology of the disease among troops in the Middle East. He suggests that infective hepatitis and homologous serum jaundice are due to the same agent, presumably a virus, and that the incubation period in both may be around three months. Epidemiological evidence about infective hepatitis does not support this argument, nor is it easy to reconcile it with the apparent lack of immunity to infective hepatitis which victims of homologous serum jaundice show, although Findlay and others<sup>15</sup> have lately brought forward fresh evidence about cross-immunity which leads them to believe in a common antigenicity. For the final answer we must await the discovery of the causal agent of one or both diseases.

<sup>1</sup> *Brit. Med. Journal*, 1943, 2, 630.

<sup>2</sup> See review by White, L. J., *ibid.*, 1944, 1, 739.

<sup>3</sup> Bradley, W. H., Loutit, J. F., and Maunsell, Kate, *ibid.*, 1944, 2, 263.

<sup>4</sup> Andrews, C. H., *J. Path. Bact.*, 1923, 31, 671.

<sup>5</sup> Salaman, M. H., King, A. J., Williams, D. I., and Nicol, C. S., *Lancet*, 1944, 2, 7.

<sup>6</sup> Dille, J. H., McMichael, J., and Sterlock, S. P. V., *ibid.*, 1943, 2, 402.

<sup>7</sup> Bettle, J., and Marshall, J., *British Medical Journal*, 1944, 1, 547.

<sup>8</sup> *Lancet*, 1944, 1, 818.

<sup>9</sup> Cameron, J. D. S., *Quart. J. Med.*, 1943, 12, 139.

<sup>10</sup> Findlay, G. M., and Martin, N. H., *Lancet*, 1943, 1, 678.

<sup>11</sup> Oliphant, J. W., Gilliam, A. G., and Larson, C. L., *Publ. Hlth. Rep. Wash.*, 1943, 53, 1233.

<sup>12</sup> MacCallum, F. O., and Bauer, D. J., *Lancet*, 1944, 1, 622.

<sup>13</sup> McFarlan, A. M., and Chesney, G., *ibid.*, 1944, 1, 816.

<sup>14</sup> Sheehan, H. L., *ibid.*, 1944, 2, 8.

<sup>15</sup> *Lancet*, 1944, 2, 365.

## THE END OF PATULIN

Most of us would be more grateful for a real cold cure than for many a therapeutic discovery in connexion with more serious diseases: hence the sensation a year ago when it was announced<sup>1</sup> that a substance extracted from cultures of *Penicillium patulum* Bainier had proved its worth for this purpose in what appeared to be an adequate field trial. Patulin belongs to a class of antibacterial substances formed by moulds which differ from penicillin in having a lower order but a wider range of antibacterial activity and a considerable degree of toxicity. As was pointed out in these columns,<sup>2</sup> the toxicity of patulin, and the narrow margin between the concentration used for nasal spraying and the minimum required for bacteriostatic action, made it difficult to account for therapeutic effect on a simple antiseptic basis, even assuming that any action on ordinary bacteria will influence the early stages of a cold. The original report was followed shortly by the account<sup>3</sup> of another field trial with negative results, and since these conflicting findings derived respectively from the Navy and the Army we were left for the time being to speculate on possible differences in the nasal flora of the two Services.

Patulin is much easier to make than penicillin, and adequate supplies were evidently soon forthcoming for further trials. Two accounts of further work which have now appeared are wholly discouraging, and it must be concluded that patulin has not the action originally claimed for it. J. M. Stansfeld, A. E. Francis, and C. H. Stuart-Harris<sup>4</sup> have made both a laboratory and a clinical study of its properties, the former including observations on its toxicity and a demonstration of its failure to influence infection by either influenza virus A or *Bact. typhosum* (an organism fully sensitive to it) in mice. Their clinical trial was conducted on the same lines as that on a much larger scale described in a succeeding paper<sup>5</sup> by the Patulin Clinical Trials Committee of the Medical Research Council. The subjects were respectively 100 soldiers and 1,343 office and factory employees and public-school boys. Half the cases in each series were treated with patulin in phosphate buffer solution and half with buffer solution alone, the nature of the solutions being unknown not only to the patient but even to those responsible for administering it and observing the effects. Various methods of application were used, including precisely that of the original nasal trials, and one which appears to be an improvement on it—instillation in the head-low position. Ample precautions were taken to ensure and to demonstrate the activity of the preparations used. The proportion of patients relieved at different stages or professing that the treatment had been of benefit to them is almost identical in the test and control series of both studies. All the authors are at one in testifying to the difficulty of assessing therapeutic effect in a condition of which the manifestations are largely subjective. How, despite this difficulty, to explain the conflicting results of the original and subsequent trials remains a problem which no one can positively solve on the basis of published information. There seems to be no further need to study patulin for its own sake, but if further study could throw any light on this discrepancy it might expunge a disturbing question-mark from our records of this form of investigation.

## A LISTER MEMORIAL LECTURE

The first Lister Memorial Lecture of the Society of Chemical Industry will be given by Sir Alexander Fleming, F.R.S., in the Anatomy Lecture Theatre of Edinburgh University on Thursday, Nov. 9, at 5.30 p.m. The subject of his address is "Antiseptics," and the chair will be taken by Sir John Fraser, Principal of the University. Under the auspices of the Society of Chemical Industry endowed memorial lectures have recently been founded in different parts of the country to perpetuate the memory of scientists and industrialists whose work has assisted in building up our great chemical industry. The name of Lord Lister has been chosen for commemoration in the Edinburgh and East of Scotland Section of the Society on account of his connexion with Edinburgh and because of the stimulating effect his revolutionary medical methods had on the growth of the fine chemical industry in that country. The endowment has been the gift of two Edinburgh pharmaceutical chemical manufacturers, J. F. Macfarlan and Co. and T. and H. Smith, Ltd. The lecture will be delivered every four or five years in Edinburgh, Aberdeen, or St. Andrews.

## PRENATAL DIET AND THE INFANT

Much of the recent field work in nutrition recalls the retort of the professor in Bernard Shaw's *Black Girl*: "The fact was known, of course, to every child; but it has never been proved experimentally in the laboratory; and therefore it was not scientifically known at all. It reached me as an unskilled conjecture: I handed it on as science." It is accepted by the layman that a high nutritional standard during pregnancy is necessary for both mother and child. The reports of Ebbs, Tisdall, and Scott<sup>1</sup> and of the People's League of Health,<sup>2</sup> which produced evidence of the beneficial effect on the mother of supplementary feeding, have received a good deal of criticism. Nevertheless, the results cannot be entirely discounted, and it must be accepted that diet is an important factor affecting maternal health. As regards the effect of the maternal diet on the infant, the position is still more interesting. There must be few mothers who do not believe that what they eat profoundly affects their unborn child. Scientific opinion, however, has tended to minimize the effect of prenatal diet on the infant, and the general opinion at the Nutrition Society's meeting<sup>3</sup> in February, 1943, was that the child was unaffected except by gross deficiencies in the mother's diet. Nevertheless, Ebbs, Tisdall, and Scott showed that dietary supplements to the mother appreciably lowered the incidence of illness in infants up to 6 months of age. For example, 31% of the infants of mothers on ordinary diets suffered from some respiratory affection, compared with 8% of the infants of the mothers on supplemented diets. Similarly, 25% of the former were anaemic, compared with 10% of the latter. In addition to this experimental type of evidence a recent study<sup>4</sup> has been reported of the "field" type, in which the health of infants in the first two weeks of life has been correlated with the ordinary diet of the mothers. The infants were placed in four groups depending on their physical condition—superior, good, fair, and poorest. The diets of the mothers were classified into three groups—good or excellent, fair, and poor to very poor. The correlation between the physical condition of the infant and the prenatal diet was very high. For example, of the superior children, 56% were of mothers whose diet was good or excellent, and 9% of

<sup>1</sup> *Lancet*, 1943, 2, 625.<sup>2</sup> *British Medical Journal*, 1943, 2, 633.<sup>3</sup> *Lancet*, 1943, 2, 634.<sup>4</sup> *Ibid.*, 1943, 2, 370.<sup>5</sup> *Ibid.*, p. 371.<sup>1</sup> *J. Nutr.*, 1941, 22, 515. See also *British Medical Journal*, 1943, 1, 16, and correspondence, *British Medical Journal*, 1943, 1, 144, 204, 231, 263, 301, 353, 460.<sup>2</sup> People's League of Health Interim Report, 1942, *Lancet*, 2, 10.<sup>3</sup> *British Medical Journal*, 1943, 1, 297.<sup>4</sup> *Brites*, B. S., et al., *J. Nutr.*, 1943, 28, 569.



mothers whose diet was poor to very poor. Of the poorest children the figures were 3% and 79% respectively. Similarly, of the mothers whose diet was good or excellent, 94% of the infants were superior or good and 3% poorest; of mothers whose diet was poor to very poor the figures were 8% and 67%. Further, there was a close relation between the prenatal diets and the height and weight of the infants at birth. Infants from mothers on good or excellent diets were 51.8 cm. and 8.5 lb. at birth; infants from mothers on poor to very poor diets were 47.2 cm. and 5.8 lb. All the stillborn infants, all but one of those who died within a few days, and all the premature infants were born to mothers whose diets during pregnancy were very inadequate.

One would like to see many more such studies, covering many more individuals, and observed for much longer periods; for the importance of these observations cannot be over-emphasized if "positive health" is to be more than a new slogan for politicians.

### PLASTIC SURGERY IN WAR

The war of 1914-18 saw the birth of plastic surgery as a specialty, and in those years the foundations for further advance were laid. The relatively short interval of peace enabled the lessons learned to be applied to the treatment of injuries and deformities arising from accident, disease, and congenital defect. Improvements in technique and advances in knowledge altered the prognosis of many conditions, and the scope of the specialty gradually increased to embrace most soft-tissue deformities or losses. With the onset of this war there was created within both the E.M.S. and the Ministry of Pensions a service designed to deal with civilian and battle casualties. Units staffed by plastic surgeons and their dental colleagues were established throughout the country. During the first few months they continued to draw their patients from hospital waiting-lists, and in this time the opportunity was taken to co-operate in the training of personnel for service in our own Navy, Army, and Air Force, as well as those of some of the Dominions. Dunkirk, the Battle of Britain, and the subsequent bombing of London and the larger cities brought casualties suffering from all types of soft-tissue injuries and burns. Some of the lessons of peacetime were found to have been based on faulty premisses, and that was particularly true of burns. The coagulation technique, which had been considered invaluable, was found to be fraught with serious dangers. There is so little in common between the lesion acquired by upsetting a kettle of boiling water and that inflicted by exposure to burning petrol fanned by a 300-m.p.h. gale that it is hardly reasonable to expect one method of treatment to be equally applicable to both. Indeed, it becomes increasingly obvious that any one method is not only inapplicable to all burns but is not suitable for all phases of the treatment of any one

This is well illustrated in a recent symposium on surgery,<sup>1</sup> and even here only a few aspects of the problems of control of infection first by the sulphoamide drugs and now by penicillin. These have been or are being worked out. There is little indication of the amount of thought and labour devoted to the burned hand—to the question of restoring not only the skin but also the functions of muscle and joint. There seems to be little awareness of the advances in the treatment of fractures of the jaw. In spite of these omissions, it is of interest to note that the contributors to the symposium are concerned with the evaluation of different methods of treatment. This is a sign that the specialty has become mature and is no

longer concerned with the elucidation of basic principles. These are already accepted; but it must not be thought that new and better applications do not remain to be found. A case in point is the recent modification of the process of free skin-grafting by the introduction of coagulum-contact methods. This represents not an entirely new development but an elaboration of technique which has the advantage of simplicity.

And so progress is made. In common with the other interdependent specialties, plastic surgery is meeting the needs of the moment in providing the resources necessary for the repair of battle and civilian casualties.

### EDITORSHIP OF THE "LANCET"

The proprietors of the *Lancet* announce this week with much regret the retirement of Dr. Egbert Morland from the editorial chair. Dr. Morland joined the staff in 1915 and has been Editor since 1937. He is succeeded by Dr. T. F. Fox, with Dr. F. Clayton-Jones as assistant editor. As brother medical journalists we can appreciate better perhaps than others the skill and devotion with which Dr. Morland has served our profession through the columns of the *Lancet* during the past 29 years. His unremitting work for the advancement of medical science and practice, and for the maintenance of the traditions of medicine, has been done for the most part in the background, but both the Royal College of Physicians and the Royal College of Surgeons have recognized it publicly by admitting him to their Fellowship. The *Lancet* is fortunate in having Dr. Fox to succeed him, and we offer every good wish to the new Editor, who has already given long and valuable service to our contemporary.

### KING'S FUND HOSPITAL MAPS

King Edward's Hospital Fund for London has prepared two large maps, one covering the Metropolitan Police District, and the other (in two sections, eastern and western) the Home Counties. Both maps are printed on the Ordnance Survey and thus show all roads, railway stations, etc. Voluntary hospitals are shown in red and municipal hospitals in blue, and the various sizes and types of each are denoted by different-shaped signs. No large-scale hospital maps of this kind have ever appeared before, and their publication is timely in view of the present emphasis on hospital planning. During the autumn the King's Fund hopes to make available to the medical profession and others interested in these matters a limited number of copies of the maps. Requests have already been received for over 300. Those who desire a copy should notify the secretary of the Fund at 10, Old Jewry, E.C.2. To enable those concerned with hospital planning to gain a more detailed knowledge of existing accommodation the King's Fund is also issuing a booklet which gives the addresses and bed complements, both E.M.S. and normal, of every hospital shown in each map. These booklets embrace mental hospitals, sanatoria, and public assistance institutions as well as general and special hospitals. The prices are 7s. 6d. for the Metropolitan Police District map and booklet, and 10s. for the Home Counties.

We regret to announce the death, at the age of 72, of Mr. Ernest W. Hey Groves, M.S., F.R.C.S., emeritus professor of surgery in the University of Bristol, and for many years surgeon to the Bristol General Hospital. He held many high positions in the Royal College of Surgeons of England, had been president of the Association of Surgeons of Great Britain and Ireland and of the British Orthopaedic Association, and edited the *British Journal of Surgery* from the time of its foundation.

## STATEMENT ON DEMOBILIZATION BY THE CENTRAL MEDICAL WAR COMMITTEE

Some considerable time ago, at the request of the Ministry of Health, a special subcommittee of the Central Medical War Committee, known as the Demobilization Committee, was appointed to advise on the problems connected with the post-war release of medical practitioners serving with H.M. Forces. The Government had announced that the main considerations which would determine priority of release would be age and length of service, and the task of the committee was to consider what detailed procedures under this general plan would best combine justice to the serving doctors and satisfaction of the more urgent needs of the depleted civilian medical services. Most of the recommendations made by the committee were accepted by the Ministry of Health, though in some instances with modifications. The Government's proposals have now been published in a White Paper.<sup>1</sup> A brief account of the plan follows, with special reference to medical practitioners, whom the White Paper does not specifically mention.

### SUMMARY OF GOVERNMENT'S PLAN

1. General demobilization must await the total defeat of the Axis Powers. All that is contemplated at present is the re-allocation of man-power between the Forces and civilian employment when Germany has been defeated and while the war with Japan is still in progress.

2. As there can be no break in the war effort military requirements will override all other considerations. The requisite control of civilian labour will be maintained, and compulsory recruitment for the Forces will be continued. At the same time it will be possible to "bring relief to the men who have served for long periods" and, through continued recruitment, to "enable more of them to return to their homes." This re-allocation of man-power will be "on a substantial scale," but "the rate of re-allocation must differ as between the three Services."

3. The plan provides for two separate methods of selecting men for return from the Forces. The larger group, designated Class A, will be selected for release according to age and length of service. In addition there will be a limited provision for the transfer from the Forces of men who are qualified for "urgent reconstruction work." This smaller group, designated Class B, will be required mainly to supplement the labour force available for building houses, but will include "a limited number of individual specialists, for whose transfer application may be made through Government Departments in accordance with existing arrangements." So far as doctors are concerned, the description "specialist" is not used here in its professional sense but is applicable to all medical officers.

4. Although the Services will make every effort to release men in their turn in accordance with the plan in whatever theatre of war they may be serving, no man will be released or transferred if his retention is considered necessary on military grounds; nor will any man be released or transferred if he prefers to volunteer for a further period of service. In short, there will be no compulsory return to civilian employment, but there may be compulsory retention in the Services of men due for such return, either in Class A or in Class B.

#### Class A

5. Within Class A there will be special priority for men of 50 years of age and over, who will be released before other men if they so wish. Otherwise, men in Class A will be released by release groups determined by a combination of age and length of war service on the basis that two months of service are equivalent to one additional year of age. For example, a man of 22 with four years' service will be in the same release group as a man of 40 with one year's service. "In general, war service means whole-time service in the armed Forces since the 3rd September, 1939, which counts for Service pay."

6. The release of men in Class A will begin as soon as practicable after the defeat of Germany, but there will necessarily be a pause to enable the Services to identify the men who are to be released first and to arrange for the return to this country of those who are over-seas. The number of releases in Class A will depend on the reduction that is found to be possible in the strength of the Forces and also on the number of new recruits called up.

7. To assist in resettlement, men in Class A will receive on release eight weeks' leave with full pay and certain allowances, and additional leave and pay will be given in respect of foreign service. When the period of leave has expired these men will be placed to a special class of Reserve, from which they would be recalled only in an extreme emergency. They will be able, on release, to exercise their right of reinstatement in their former civilian employment, and, while receiving regular Service payments, they will not be regarded by the Employment Exchanges as "subject to any powers of direction which are otherwise generally operative." The benefits received by men in Class A will be available also to men discharged on medical grounds. The present arrangements for release on compassionate grounds will be continued.

#### Class B

8. Transfers in Class B will be small in number in proportion to releases in Class A and will not begin until a start has been made with the release. The actual numbers for transfer will be determined from time to time by the immediate requirements of the "reconstruction employments" and the extent to which these requirements will be met by releases in Class A and by transfer from other civilian work. So far as possible, the selection of the required number of men from a particular occupational class for transfer in Class B will be based on the principle of age and length of war service.

9. Men transferred in Class B, since they will leave the Forces out of their turn, will not be entitled to the same benefits as those released in Class A. They will be given only three weeks' leave before being placed to the Reserve, and payments due in respect of foreign service will be held in suspense until after the end of the war. Men in Class B will be under direction and will be liable to be recalled to the Forces if they discontinue the civilian work for which they were transferred. If this is not the work in which they were formerly engaged, their reinstatement rights will be preserved.

10. A man will not be transferred in Class B against his wish if he prefers to await his turn for release in Class A. "Once, however, a man has been transferred in Class B he will not subsequently be eligible to apply for inclusion in Class A."

11. Both Class A men and Class B men may, immediately on release or transfer, apply for a pension for disablement due to war service. A scheme of war gratuities by way of reward for service will be announced later.

12. The general arrangements described above will apply to women as well as to men, "with the addition that married women will have priority over all others if they so desire."

#### Special Position of Medical Officers

As has been stated above, medical officers are not specifically mentioned in the White Paper. The general arrangements proposed will, of course, apply to them as to other members of the Forces. So far as Class B is concerned, they are within the category of "specialists" who will be transferred, not in groups, but individually on application made through a Government Department. In practice, the recommendations for transfer will be made by the Central Medical War Committee after consideration of applications submitted through the Local Medical War Committees, or, in appropriate cases in the London area, through the Committees of Reference. In short, the machinery set up for the recruitment of medical practitioners will "go into reverse" for the purpose of the re-allocation procedure.

The total number of transfers in Class B will be limited, and it is not to be expected that any particular group of "specialists" will be allowed a disproportionate share of such transfers. It is probable, therefore, that the strengthening of the hard-pressed civilian medical services will depend mainly on releases in Class A, and the question arises whether the

<sup>1</sup> Re-allocation of Man-power between the Armed Forces and Civilian Employment during any Interim Period between the Defeat of Germany and the Defeat of Japan (Cmd. 6548.)

numbers of medical officers whom the Services will be able to release will be such as to meet the urgent civilian needs and to ensure equality of treatment in respect of release between medical officers and other members of the Forces.

It is clear that the requirements of the Services in respect of medical officers will continue to be heavy after the defeat of Germany, both because of the high incidence of sickness in the Far East and because the resources of the Emergency Medical Service will not be available here. Moreover, some considerable time may elapse after the fighting has ceased in Europe before medical officers can be made available in sufficient numbers for service in the Far Eastern theatre. It may well be, therefore, that the requirements of the Services at the end of the European war will be such as to make it impossible to allow the medical profession its proportionate share of releases in Class A under the general re-allocation scheme.

It appears that the number of releases of medical officers will be determined largely by the number of civilian practitioners available for recruitment, and this in turn will depend on the Government's decision as to the limit of age for continued recruitment after hostilities in Europe have ceased. On this matter the White Paper gives no definite information, but merely states that "in order to increase the releases in Class A and to compensate for the transfers in Class B, numbers of young men at present deferred, particularly in the munitions industries, will be called up for the Forces."

The Demobilization Committee recommended the continued recruitment of young medical practitioners who are within five years of qualification or are below the age of 28, and this recommendation was accepted by the Ministry of Health. But, in view of later information as to the probable needs of the Services, it now appears that the continued recruitment of doctors will be desirable up to a somewhat higher age, perhaps in the region of 35, even if this age should be above that fixed by the Government for recruitment generally. The Central Medical War Committee has decided to recommend accordingly through the Ministry of Health.

A special consideration which has influenced the committee is the impossibility of recruiting, from practitioners within five years of qualification, the specialists—the word is used here in its professional sense—who will be required to replace those who are due for release in Class A and those whose transfer in Class B will be recommended. Apart from this, it is clearly important that the practitioners available for recruitment should be sufficient in number to enable serving officers generally to be released in their turn under the Government's scheme in order that their future prospects in civilian practice may not be unfairly prejudiced.

The committee has in mind the fact that the needs of the medical schools and associated hospitals, both in respect of the teaching of undergraduates and in respect of the postgraduate instruction of medical officers returning from the Forces, will be likely to give rise to applications for Class B transfers. Every effort will be made to deal justly with such applications in the light of exact information to be obtained from the schools regarding their comparative needs, and with due regard to the fair distribution of the permitted number of Class B transfers among the various spheres of professional work.

Reference has been made to the postgraduate instruction of practitioners returning from the Forces. It may not be generally known that, some years ago, the British Medical Association saw this need and urged the Government to prepare arrangements. The matter is now in the hands of the Central Medical War Committee, and discussions are proceeding with the Ministry of Health. The aim is to ensure not only that refresher courses and clinical appointments are available but also that appropriate financial arrangements are made in order that no man who is in need of professional rehabilitation, and no suitable candidate who wishes to continue his interrupted education with a view to specialization, will be unable to find the opportunity he seeks through lack of means.

L. N. Pearlman and R. G. Bell (*Arch. Pediat.*, 1944, 61, 75) record a fatal case of *B. coli* meningitis in a male infant aged 1 month. The case was treated with sulphonamides but without spinal drainage.

## Correspondence

### Administration of Pitocin and Ergometrine during and after Labour

SIR.—Conflicting opinions are expressed by Drs. O'Meara and Gaskell (Sept. 9, p. 353; Oct. 14, p. 511) concerning the propriety of administering pituitary extract during labour. On this much-discussed subject a firmer stand can, I believe, now be taken (*J. Obstet. Gynaec. Brit. Emp.*, 1944, 51, 247).

Careful clinical experiments led Burn and Bourne (1927) to the conclusion that two units of posterior pituitary extract given by intramuscular injection provide a useful means of stimulating a sluggish uterus without appreciable risk of foetal asphyxia or uterine rupture. The pros and cons have been more recently discussed at a symposium organized by the American Medical Association. There is no doubt that pituitary extract (like ergometrine) is highly dangerous if incautiously used. Nothing useful is gained by speeding normal labour; and to stimulate an already active uterus is certainly a rash venture ("A stream-lined labour," said DeLee, "is as safe as a stream-lined parachute!"). On the other hand, if the uterus is sluggish, if the head is low on the perineum, and if there is no mechanical hindrance to easy delivery—e.g., occipito-posterior position of the head—there is, I believe, good reason to give two units of the extract by intramuscular injection. For the next 15 minutes careful watch should be kept in order that excessive contractions—should they occur, which is unlikely—may be controlled by inhalations of chloroform. I have had no reason to regret this practice, and, like others, have found that it sometimes avoids the need of a forceps operation.

Ergometrine, on the other hand, should never be given before the birth of the head: for the foetus it is still the "pulvis ad mortem" that the parent drug was termed. But when labour is over it is safe; and it has, I believe, virtually banished the hot intra-uterine douche and other clumsy methods of controlling post-partum haemorrhage. To be fully effective in these urgent cases it must be correctly administered. Intravenous injection of 0.25 mg. (1/2 ampoule) gives excellent results. Injection into the uterus via the abdominal wall is even simpler and more effective. For the latter method there are three requisites: (1) the bladder must be empty; (2) the syringe and needle must be sterilized by boiling, and the needle should be of stainless steel to lessen any risk of snapping; (3) the uterus must be easily felt and capable of being manipulated to lie against the abdominal wall. The injection is made through an area of sterilized skin 2 in. below the umbilicus; 0.5 mg. (1 ampoule) should be given.

The administration of oxytocic drugs before the birth of the placenta has been much disputed, and personally I dislike the routine use of such methods. If, however, after half an hour or more the placenta cannot be expressed by Credé's manoeuvre, and if the uterus is flabby, I have on many occasions injected 5 units of pitocin into the fundus as described above. In 45 seconds the fundus and body become firmly contracted; placental expression is then often successful, and the operation of manual removal thus avoided. If the placenta still refuses to come away, haemorrhage from the uterine cavity will at least be arrested; and half an hour later, when the effect of the pitocin is spent, manual removal may be more safely performed. Ergometrine may also be used; but because it is more persistent in action a later manual removal (if necessary) is likely to be a more difficult operation.

Recently, several American obstetricians have reported the routine use in more than 1,000 cases of an intravenous injection of 0.2 mg. of ergonovine (ergometrine) given simultaneously with the birth of the anterior shoulder of the foetus. The placenta quickly separates and follows almost at once after expulsion of the foetus. Post-partum haemorrhage is greatly lessened. By this method of administration it is claimed that the risk of incarceration of the placenta by uterine spasm is negligible. I can corroborate these statements, but believe that the method has inherent risks and should not be used outside hospital practice.—I am, etc.,

Radcliffe Infirmary, Oxford.

CHASSAR MOIR.

### Fracture of the Carpal Bones

SIR.—Your contributor H A Harris, in his article on fracture of the carpal bones (Sept 16, p 381) has raised a number of points concerning the paper which Wilkins and I wrote for *he Journal* of May 20, 1944.

He criticized our statement that more cases returned to full duty than were passed as having the fractured scaphoid united. We endeavoured to make it clear that although most cases of ununited fracture of the scaphoid develop osteoarthritis, in some the giving rise to symptoms may be long delayed. When one is dealing with large numbers of traumatic lesions it is by no means uncommon to come across an old fracture of the scaphoid of which the patient is unaware and which is giving rise to little or no disability. In these cases it is probable that there has been good fibrous union without distortion of the bone.

In giving the scope of the analysis we stated that the remaining fifty eight cases were Colles's fractures only. More over, a concluding section briefly described those cases in which multiple carpal injuries had occurred. Dr Harris's observations on the comparative and developmental anatomy of the scaphoid were very interesting. I feel certain that many of the so-called accessory and bipartite scaphoids that have been described by anatomists and radiologists are, in reality, overlooked ununited fractures. Their radiological appearances compare very strongly with those of known old lesions.

That plate fractures of the os magnum and cuneiform occur is undoubted. In my experience they require plaster immobilization just as much as the fractured scaphoid. This is largely for symptomatic reasons, although their presence implies considerable disruption of the ligamentary structure of the carpus—I am, etc.,

J M ROBERTSON

### Ariboflavinosis

SIR.—Dr Hugh S Stannus in the Lumleian Lectures on riboflavin and allied deficiencies (*Journal* July 22 and 29, 1944) failed to make any reference to my work, "Eye Disease due to Vitamin Deficiency in Trinidad." While he says that "full references will perforce be omitted," it is difficult to understand how he could have published the table on page 104 in the July 22 number and omit Trinidad and my name. He must have known of my work, previous references to it are as follows: (a) *Amer J Ophthalmol.* Nov., 1941, leading article; (b) *Lancet* April 11, 1942, annotation; (c) *Trop Dis Bull* June, 1942, p 403; (d) "The Ariboflavinosis Syndrome," *British Medical Journal*, July 24, 1943, leading article; (e) *Brit J Ophthalmol* July, 1943, (f) *ibid*, Sept., 1943.

With respect to the observations made in the leading article in the *Journal* of July 29 1944, that "it is a sad reflection on our colonial administration that these studies should have been made in one of our colonies in the days of prosperity before the last war..." it should be pointed out that we have the pellagrolologists to blame for a good deal of the administrative inactivity that followed, because of the fervid attempts made by them to keep a large number of vitamin deficiency diseases defined within the symptomatology of pellagra. In that way, and because of the terms "pellagra sine pellagra," "pellagra fruste" and "pre pellagra" the annual report of a colony could continue to repeat the formula, "the general health of the colony remained satisfactory," pellagra being regarded as nothing new. Fitzgerald Moore has pointed out that much of the research which has been undertaken in the Tropics has been of an individual nature, and the individual assertiveness that was needed to gain recognition has been the cause of harsh treatment being meted out to some medical officers. It was, however, with some dismay that I saw Fitzgerald Moore drawn into the camp of the pellagrolologists, for in 1939 he published "Retrolubular Neuritis and Pellagra in Nigeria" (*J trop Med Hyg* 1939 42, 109). I prefer the term "tropical nutritional myopia." He also stated in 1939 that "gan, a dry, parched, mucous food was associated with the incidence of pellagrinous retrolubular neuritis" and that belief showed the influence of the work of Alfred Clarke. In Trinidad the latter was called "Tanu" Clarke because he thought that the toxic principles which occurred in certain underground

foods, tania in particular, were responsible for nutritional disturbances which produced nephritis. A large amount of tania is still consumed in the British West Indies.

A recent article, "Malaria and Nephritis in the British West Indies" (P Granville Edge, *Caribb med J* 1944, 6, No 1, 32), provides interesting study by way of contrast. Edge begins by pointing out that "so far as health conditions in the Tropics are concerned perhaps the importance of diseases distinguished by exotic names has been unduly exaggerated, and the deadliness or disabling effects of some of the more familiar titles in the nomenclature underestimated. Plague, cholera, yellow fever, malaria and sleeping sickness are among some of the exotic models which appear to dominate the mortality pictures of life in remote places, for the menace to health and life created by the presence of these diseases has a permanent news and interest value."

With the establishment of U.S. naval and military bases in Trinidad the purchasing power of the people rose to great heights, a tremendous sum of money being spent on skilled and unskilled labour. One result of that is that vitamin deficiency conditions affecting the eye have largely disappeared, patients becoming fewer since 1942. Angular stomatitis is no longer seen, nor burning feet complained of at the eye clinics. There are, however, many problems remaining for research. For instance, there is the failure of drainage operations in many coloured persons, for the darker the patient the less likely is a corneo scleral trephine to succeed. Also, mild outbreaks of the nummular and macular type of superficial punctate keratitis occur repeatedly among Trinidad-born East Indian sugar estate labourers, while other members of the community in the same areas remain unaffected—I am, etc.,

Port-of-Spain Trinidad

VIVIAN M. METIVIER

### Prevention of Industrial Dermatitis

SIR.—The correspondence between Drs Bourne and Mummery on the value of various preventive measures in connexion with dermatitis has raised many interesting points, and would seem to show that there is a great deal to be learnt on this subject by all of us.

I myself have used the sulphonated castor oil which Dr Mummery advocates, and have found it extremely valuable. Apart from its preventive aspect it is ideal as a cleansing agent in established eczematoid rashes of all types, and popular with patients who try it owing to its re-fattening properties. Dr Bourne's personal experience with a barrier protective cream and melol dermatitis is just that sort of experience which is wanted to establish the value or otherwise of these substances. There has been far too much unscientific acceptance of these creams, which are often backed by an extremely ingenious advertising campaign from the vendors. This much has already been established to my mind that for a short exposure, such as developing a film or temporary handling of irritants (especially by intelligent users), these creams do protect to some extent. But it is quite another matter when their use is translated into everyday factory work among a mass of employees working for, say, an 8 hour shift. It is indeed difficult to decide their value because so many factors are involved: the experience of the operators, the nature of the oils, the quality of the foremanship, and many other factors. In an article in the *Lancet* in 1943 I pointed out that while some oils are innocuous others tend to produce much dermatitis. Working on these lines the factory doctor should be able to produce valuable results, and the old bogey of the workman neglecting to wash or use creams or take any other safety measure is relegated to its proper place.

American workers have produced many barrier substances of all types for all hazards, but Schwartz, in many of his publications, does not by any means give them pride of place in his category of preventive measures. I myself have seen factories where practically no barrier cream was used and yet very little dermatitis occurred, although cutting oils of every type were seen. Conversely, in factories where much barrier cream is used there may be many cases of dermatitis. Where supervision is bad in a factory no amount of barrier cream will retrieve the position. My own feeling is that good supervision by foremen who are welfare-minded is a very great factor in controlling dermatitis, and that in many cases

this factor is considerably enhanced if the medical and welfare staffs see that washing facilities are adequate. Dr. Bourne is probably right when he insists on protection of every possible kind (including barrier creams), but the relative value of these various protective measures is still a matter of opinion and may differ according to the hazard in question.

There is one other point. As the war progresses the experience of the workers increases, and this makes for less dermatitis in factories. This fact alone makes comparison of dermatitis figures from one year to the next fallacious. Finally, it seems to me strange that some dermatologists, instead of collecting rare and relatively unimportant skin diseases for exhibition at learned society meetings, have not long before taken more interest in workaday medicine and gone into the factories to learn something useful. The academic attitude of some English dermatologists has been a great blow to the value of dermatology to the nation, and the dermatitis of these war years has consequently fallen very heavily on the factory medical staffs, who have largely had to depend on their own initiative for their results.—I am, etc.,

Cowley, Oxford.

G. P. B. WHITWELL.

### Intravenous Anaesthesia

SIR,—I heartily agree with Dr. H. B. Alcock over most of the points she raises in her letter (Oct. 14, p. 511). A substantial drawback to using the simple technique that she describes is that unless constant attention is paid to the needle it becomes blocked with clotted blood. I should like to mention one small point of technique, which requires no more apparatus but considerably lessens the risk of a blocked needle. In practice I cannot claim that it rules this out completely, but I have found it very helpful and it may appeal as worthy of trial to those who are not enthusiasts for "cumbersome" apparatus.

If a short-bevel needle, or one which is not too hollow ground, is used, it can be so arranged that it rests against the inner wall of the vein and prevents blood entering the needle and clotting. To do this I place the needle, bevel facing upwards, on an eccentric nozzle syringe. When the needle has been introduced into the vein I fix the syringe to the arm in such a position that the tip of the needle presses gently skinwards against the superficial wall of the vein. This usually just allows the outline of the needle to be seen for its full length by a slight raise in the skin. Before injecting further doses of anaesthetic solution I generally depress the point of the needle to lie in the centre of the vein, letting it fall back to its original position before relaxing pressure on the plunger after injection.

I cannot claim that this method is perfect, for occasionally the needle does block, due presumably to movement or faulty placing, but intervals between injection have often exceeded half an hour. On one occasion a needle was left untouched during the latter two hours of an operation, and found to be patent at the termination. Whether this technique harms the vein I cannot say, but thrombosis seems to occur at a rate no higher than when 5% pentothal is used by other methods.

I disagree with Dr. Alcock over one point—namely, that I use a 17 short-bevel needle for preference.—I am, etc.,

Aslesbury, Bucks

J. MORLAND SMITH, D.A.

### Heredity and Tuberculosis

SIR—It may well be that in showing, as Stocks remarked, a tendency to ignore the evidence about heredity in tuberculosis the profession has also shown shrewd common sense. Although it is true as Barbara Burks pointed out, that there are certain directions in which this knowledge may be immediately applied, it does not alter the fact that environmental factors are the ones about which we as a profession can do something.

It is surely the fact that the husband or wife of the patient is five times as likely to develop clinical tuberculosis as an ordinary person that is important for the doctor and sociologist. The marital partner shares an overcrowded room with the patient; she shares his low wages and unsatisfactory diet. These are social problems which can be tackled now. Good houses can be built as labour and materials become available.

An application to peace of the lessons learnt in war can ensure that an adequate share of the nation's food is available to all. Even in the period of unstable economic equilibrium between the wars the tuberculosis figures improved slowly. During the war this trend has been reversed. It is plain, both to the profession and to the public, that a low tuberculosis rate is an index of prosperity, and vice versa. By comparison with these obvious facts the painstaking observations of Kallmann and Reisner are of little more than academic interest at present to the general practitioner and sociologist.

Advice such as that given by Barbara Burks as to choice of relative to nurse the sick patient may be sound, but how many working-class families are in a position to pick and choose in this matter? The problem is still the old one of the provision of adequate sanatorium beds.

In almost all disease there is a constitutional factor, great or small, but it is the environmental factor which is capable of modification. Prompt action now may avert a tragic increase in tuberculosis in the London area as a result of wanton Nazi destruction of homes and consequent overcrowding. Sensible planning of the nation's resources may reduce tuberculosis to a minimal level in one generation. How many generations would be needed to select a tuberculosis-resistant population?—I am, etc.,

St Mary Cray, Kent.

BRIAN H. KIRMAN.

### Atmospheric Pressure and Migraine

SIR,—Though emotional factors are important in the aetiology of migraine they should not be overstressed. The observations described here may be of interest.

For a period of six months three of my patients had their attacks of migraine secretly recorded by relations. At the end of this period I compared the records with the barometric chart for the same period. It was observed that many attacks occurred when the barometer was rising or falling steeply, and some such happened in the small hours of the night waking the patients from sleep.

I am not prepared to assert that atmospheric pressure is the whole explanation in these cases. But in a seemingly unrelated field—the rheumatic—we note that changes in weather may provoke symptoms. These do not seem to result merely from alterations in humidity or temperature, and pressure change may be part of the explanation. Some Continental workers have suggested that changes in the ionization of the atmosphere, associated with and essential to changes of weather, affect the sensitive subject. I have yet to meet a convincing explanation of the ache in an old wound in bad weather.

Physiologists have here, I think, an interesting field of inquiry. And could they tell us if thunder weather causes any characteristic variations in encephalograms?—I am, etc.,

G. C. PETHER.

### London Medicine

SIR,—Brevity, though in these times doubtless the supreme recommendation to an editor, sometimes defeats itself. It does so when it sacrifices full clarity, as in the case of Mr. Twistington Higgins's kind reply to my letter. I should like, on behalf not only of myself but also of your many readers who must be interested in the profoundly important issue of London postgraduate medicine, to ask Mr. Higgins to expand a little some of the things he said. Thus, speaking of the proposed Institute of Child Health, Mr. Higgins said: "The conception in the minds of its originators has always been just as comprehensive as Dr. Rowland Hill suggests it should be." What I suggested it should be (and this principle applies to any comparable institutes in other special subjects) is fundamentally a full, fair, and equal partnership from the word "go" between all voluntary children's hospitals in the London area, with Great Ormond Street asking for no special privilege or power on the ground of its greater size *vis-à-vis* the others. I ask Mr. Higgins very respectfully to tell us if this is what he and his colleagues want. If so, I and many others will feel much relieved.

Mr. Higgins tells us that the plan for an Institute of Child Health emanated from Great Ormond Street, and that "we are proud of the fact." It is good to know that it came from his hospital. Mr. Higgins, I feel sure, will agree that additional fruitful ideas may originate from time to time in any other



of the children's hospitals, great or small, and with not desire to claim that his own has any monopoly of enterprise or originality. The marriage idea, for example, resulting in the recent formation of the splendid and promising Queen Elizabeth Hospital, was also one of which the hospitals concerned may well "be proud." Perhaps in the end it may prove as fine and productive a one as the "institute" idea. Let us welcome all these ideas in a mood of mutual respect and appreciation; and, in keeping with the open tradition which is the glory of English medicine (or should be), let us place them unreservedly in the common pool for the good of humanity and without thought of notoriety or reward for any particular institution. I feel we may well leave pride out of these altruistic matters unless it is a general pride in the achievements of English medicine as a whole.

I am particularly apprehensive and puzzled when Mr. Higgins goes on to say the "present collaboration between the University of London, the L.C.C., the Postgraduate Medical School, and the Hospital for Sick Children would seem to assure an adequate breadth of vision, which certainly aims at embracing in the future every paediatric activity in and around London." (The italics are mine.) As these words stand (I hope I am wrong, and my deep apology is formulated ready for instant utterance if I am) they convey to me a disquieting meaning. Why is Great Ormond Street the only children's hospital mentioned by name as collaborating with those bodies of presumably growing importance under the altered medical regime which we all anticipate after the war—the University of London, the L.C.C., and others? If I were a paediatrician setting to work to build up a London Institute of Paediatrics, I would (from a sense of right and justice) first approach my colleagues in all the other children's hospitals. Only after a strong and friendly alliance had been made would I, on behalf of metropolitan paediatrics as a whole, approach public and official bodies like the University of London and the L.C.C. I hope this is what was done, and that Mr. Higgins will reassure me.

I shall be really grateful to him if he will banish the fears I feel over his phrase: "Aims at embracing . . . every paediatric activity." Does he mean that his institute, composed of the institutions he has named, will grow so strong and large that it will eat up all London paediatrics (with the aid of the Nuffield windfall), so that all the other children's hospitals will have little to do, will not count for much, and will only continue a nominal existence, if at all, on terms dictated to them? Or does he mean—and I truly hope he does—that they will all freely enter his institute as equal partners, with equal rights of suggestion and decision, and equal benefit from the windfall from the very start? I venture to prophesy that any institute not based on this last principle of sense and justice will have a deservedly distorted, disappointing, and stunted career.

Of the three initial institutes mentioned in the Goodenough report, I understand that that of ophthalmology promises most clearly, by steps already generously and spontaneously taken by the parties concerned, to base itself on the foundation of equal partnership and combination between all the London voluntary hospitals in the specialty, and in this spirit, good fortune to the enterprise! On the other hand, so far not the faintest zephyr of a whisper of this spirit has yet been felt in the exclusive aristocratic world of the specialty with which I am concerned; but perhaps this is only the calm before a supremely constructive storm. Let us hope so.

Finally, repeating my respects and apologies held ready in advance, let us hope that an atmosphere of growing confidence can be assisted by Mr. Higgins's further reassurance.—I am, etc.,

London, W.1.

T. ROWLAND HILL.

### Drugs and the Doctor

SIR.—Regarding the leading article "Drugs and the Doctor" in your issue of Oct. 21, I agree with almost everything you say except that the Pharmacy and Medicines Act, 1941, was a cartel agreement between the pharmaceutical profession and the proprietary medicine industry, which divided the retail market for drugs.

As my organization was primarily responsible for those negotiations with the proprietary medicine manufacturers, your

readers may be interested in the facts of the matter. We were informed that the Chancellor of the Exchequer proposed repealing the Medicine Stamp Duty. In reply to our protest against the freedom from control involved in the repeal the Chancellor said that if the manufacturers and retailers put forward any reasonable proposals to replace the Medicine Stamp Duty and obviate the evils we foresaw he would consider those proposals. The result was a fight between the pharmaceutical profession and the proprietary medicine industry; we never got complete agreement, and my organization fought the Bill in the House of Commons, receiving an unmerited castigation from the Minister of Health because he said he had the support of the Pharmaceutical Society. The Bill contained clauses on other matters which the society desired.

May I add that the pharmaceutical profession as a whole would welcome any reasonable controlling of the sale of medicines in the public interest?—I am, etc.,

G. A. MALLINSON,  
Secretary.

The National Pharmaceutical Union.

SIR.—Your leading article on drugs and the doctor (Oct. 21, p. 535) is very instructive and timely. (1) We are informed by you that the patent medicine industry spends £3 million on a year on advertisements, has a capital of £100 million, sells £20 million worth of drugs to a quarter of the population of the country "without medical advice and to the detriment of their health." (2) You are not sure whether a National Health Service is compatible with the advertisements of pharmacopoeial drugs. (3) You mention that sulphanilamide (to name only one drug) is being bought from a common source and sold under fifty-odd proprietary names at 300% profit. (4) You state that although the effects of patent medicines on personal and social health are harmful no Government has had the strength or courage to control it. (5) Your remedy for all this robbery, exploitation, and harm is that the individual doctor or patient must be supplied with unbiased information. (6) Lastly, you cite the example of the Americans, who "manage things much better than we do."

In this article you have no doubt made out a very strong case against the continued existence of the patent medicine industry, but you, like the Government, have not had the strength or courage to suggest the only remedy that can put an end to the nefarious practices of this industry—i.e., State control at a cost of £100 million of public money—and this sum is less than what we are spending in a week on war. When shall we learn to face the problem squarely, to hit the nail on the head, and to uproot the evil completely instead of applying palliative measures? No doubt the patent medicine industry will tell us all about the virtues of private enterprise and lack of initiative and individuality under State control, but if our municipal corporations and such huge enterprises as gas, water, and electrical industries can be run efficiently under State control, surely we can abolish the profit-grabbing patent medicine industry and hand over the pharmacological research to the Government at a cost of perhaps less than £3 million per annum, which is the sum that is being spent annually on advertisements of patent medicines. Sir, will you have the courage to advocate this policy?—I am, etc.,

Manchester.

M. R. SONI.

### "Dissident Doctors"

SIR.—Your annotation suggests two questions. Why are there any dissident doctors and into what groups do they fall? By whom, when, and why were the proposed National Health Services identified in politics?

The answer to the first question is conditioned to some extent by that to the latter. Except for a small minority, surely all practising doctors were agreed upon the "medical policy" of the B.M.A. from the Dawson report to the publication of the draft Interim Report of the Medical Planning Commission. All of the recommendations lacked "political" complexion. When, however, the White Paper was published—as if the Government was too impatient to wait for any final report of the M.P.C.—medical services came to be discussed in Parliament. Various opinions reflecting party differences were expressed and debated; in particular, questions of organization and control. How else could it be? Thus the Government



itself introduced medicine into politics. Now, the B.M.A. does not openly refer to party issues, and a majority of its members deplore their intrusion. On the other hand, the S.M.A. exists to spread a knowledge of Socialism within the profession. Since Socialism has identified itself with the Labour Party, the S.M.A. has thus introduced party politics into medicine. Is the B.M.A. wise any longer to ignore the activities of this group of dissidents?

There is yet a second group of dissidents identified in the recently formed M.P.A.—who foresaw the cloud, anticipated the dictum of Gordon Malet with which you end your annotation, and sought and still seeks to counter party politics. The "reactionary M.P.A." evolved, together with certain Divisions of the B.M.A., as a reaction to the revolutionary movement of a vociferous minority which so many regret and so few understand. Over all the B.M.A. tries to survey the scene with a statesman-like demeanour, but presently it must see the challenge of the politicians.

A movement with national organization as its objective and bureaucratic control its consequence threatens to engulf us while our soldiers (the better part of our population) are away fighting (at any rate in *their* opinion) against this same atavism which exists abroad. The ordinary man, especially the scientifically trained man, is at a bad disadvantage in this sort of conflict. First, of course, he is obliged by his necessities or his conscience (or, happily, both) to devote his energies mainly to earning a living, incidentally doing his share towards the national life and responsibilities. Secondly, by his training he finds betrayal of trust and distortion of truth to be distasteful to the point of prohibition, but they are disqualifications to which the professional politician is not immune. We must realize that in party politics we are in an unfamiliar field, and that issues here are not to be settled judicially by a consideration of pros and cons—but by passion and self-interest catalysed and directed by crafty mob-raisers at the behest of juntas.

When writing to the medical profession itself one can, with hope of success, present a case from a factual standpoint, and a good argument is a sound one. Facts or analogies have a chance of being weighed objectively, but this is emphatically not the case when one encounters the politician *in persona propria*, or his general audience. Here assertion, passion, reckless misstatement, humbug, overt promises repudiable at leisure and all directed to the lower instincts, are the successful tactics. One can have sympathy with the prelate who retired from a public controversy with a well-remembered politician with the remark: "I cannot go on. I realize a gentleman has no defence against a blackguard." Each of these tactics has been employed recently, and not without effect, in reference to the health services.

Should the intrusion of political propaganda into medicine be a danger, then a great danger exists. Yet it will be to the moral credit of the profession if so far it has been overlooked. The danger is that the medical practitioner may fail from this standpoint: that he may depend upon a statement of his case in terms of a scientific discussion of fact which will be brushed aside under a barrage of abuse and passion-raising phrases. As a precedent I instance the Ministerial reaction to the report of the Council of B.M.A. to the Representative Body.

In the political field one must use political methods. The whole business is distasteful, but since the B.M.A. already has a public relations officer it might best be solved by hiring a political officer to run the campaign for them—thus keeping our hands and minds clean. But if this can't be done, then the matter must be faced like an enema or a childbirth—a dirty business but justified of its results. A recent article in the *Daily Herald* referred to the monopolistic vested interest of the medical profession, which was accused of insolence and defiance of democracy by presuming to reject control of its members by the House of Commons. It is futile for any mere doctor to attempt to rebut this excellent example of poisonous political tactics. But if this be the voice of a misguided minority, is it expedient to meet it with silence? Silence is but a short remove from ineptitude.

Upon what authority did the *Times* recently state that owing to the favourable reception given to the White Paper the Ministry is now actively engaged in drafting legislation? I remember a Governmental promise that ample time would be

allowed for the professional organizations to discuss, perhaps even influence, proposed legislation. We shall not be able to guess what time will remain between the A.R.M. and the introduction of the Bill into Parliament until His Majesty makes his Speech next month. The B.M.A. will start with a nine-months handicap. At the A.R.M., and as between medical men, expressions of sincere conviction will be weighed objectively. But if there is to be any conflict between professional doctor and professional politician, let us remember that "bare hands and courage cannot counter tanks." Are those who suggest the urgent need for appropriate weapons to be castigated as dissidents, too?—I am, etc.,

Watton-at-Stone.

MAURICE WIGFIELD.

SIR,—Though deeply divided on side issues the Ministry of Health, the executive of the British Medical Association PEP, the Socialist Medical Association, Dr. Gordon Malet, and other organizations and individuals are united in a policy of centralized control of doctors and patients. It can be truly said of these that though they march separately they fight together.

Opposed to this uneasy alliance is the Medical Policy Association, uncompromisingly taking its stand on the preservation of the freedom of doctors as individuals and their inalienable right to act in response to the demands of their patients rather than to the directions of bureaucrats—medical or lay.

The relation to this vital issue of the medical profession as a whole and of the general public is still obscure. It is essential that the situation be clarified. This can easily be done, at least so far as the medical profession is concerned, by means of a *sensible* questionnaire. Why, then, is the profession not given the opportunity to declare its will in this matter?—I am, etc.,

Bexley, Kent.

E. U. MACWILLIAM.

### The Young Married Doctor

SIR,—I should like to endorse what your correspondent "Y.M.D." has to say regarding accommodation for married men in resident hospital appointments. As it appears probable that the municipal type of hospital employing an increasing number of senior resident medical officers will increase in the post-war period, it is of the greatest importance that accommodation for married men, preferably on the separate house or bungalow system, should be made available for holders of these appointments.

That committees are prejudiced against married men is only too true, and arises from their experience that the work of a married man with a home outside the hospital area frequently suffers from his divided interests. Under the present system many men are faced with the alternative of unduly delaying their marriage and the starting of a family or of giving up resident hospital work. The first alternative is not only a personal tragedy but also a national one; the second may well prove to be a serious handicap to the growth of a national hospital service. A wider outlook, a little thought in planning, and a comparatively small capital outlay are all that are required from voluntary and municipal hospital authorities to put this matter right.—I am, etc.,

E. A. HOARE,  
Medical Superintendent.

### Demobilization and the E.M.S.

SIR,—I have just read your issue of Oct. 7 sitting beside a "slit trench" in Holland. It is the sole connexion I have with modern advances and specialized medicine, and fulfils its function only too well. I beg, however, to criticize severely the letter on demobilization and the E.M.S. by Robert J. Rutherford (p. 482). I trust that when the war against Germany has ceased all medical officers in both the B.L.A. and the Far East who have served over three years will be replaced in the Forces gradually by E.M.S. practitioners who have had their experience uninterrupted by war and have lived in relative comfort and security.—I am, etc.,

H. HOLDEN.

## Obituary

Dr. HAROLD FRANKLYN, who died on Oct. 17, was well known as a radiologist in Yorkshire. Born in Manchester in 1894 son of Arthur Franklyn, he was educated at Malvern College, at Christ's College, Cambridge (where he took his B.A. in 1916), and at St. Bartholomew's Hospital. He qualified M.R.C.S., L.R.C.P. in 1921, and held house appointments at Bart's, at the Middlesex Sanatorium, Harefield, and at the David Lewis Northern Hospital, Liverpool. He then worked for a time in the electrical department of the Prince of Wales's Hospital, Tottenham, living at High Barnet, and took the D.M.R.E. in 1926. Dr. Franklyn's next and final move was to Bradford, where he acquired a large radiological practice, he became honorary physician in charge of the radiological department at the Royal Infirmary, regional radiologist for East and West Yorkshire in the Emergency Medical Service, radiologist to St. Luke's Municipal Hospital and to the Royal Eye and Ear Hospital, Bradford, and was consultant in his specialty to the Halifax Royal Infirmary and the Sipton Hospital.

Dr. HAROLD AXEL HAIG, who died in retirement at Pagham Beach, near Bognor Regis, on Oct. 21, spent almost the whole of his professional life in the laboratory. He was born in London on March 16, 1877, and studied at University College Hospital Medical School, where he won the Bucknill Science Scholarship. He graduated M.B., B.S. Lond. in 1905. After a year or two as R.M.O. at the Essex County Hospital he was appointed lecturer in histology and embryology at University College, Cardiff, in 1910, and three years later research fellow in cancer at the University of Aberdeen. He served during the last war, with the temporary rank of captain, R.A.M.C., as pathologist to the 15th, 17th, and 21st General Hospitals, Alexandria, and before returning to this country to take up the post of lecturer in pathology and bacteriology in the Welsh National Medical School at Cardiff was for a time research pathologist in the Department of Public Health at Cairo. Dr. Haig joined the B.M.A. in 1914 and was a member of the Pathological Society of Great Britain and Ireland and the Cardiff Medical Society. He published a number of papers on cellular pathology, and was the author of *The Plant Cell: Its Modification and Vital Processes* (1910), and of *An Introduction to the Histology of Tissues* (1924).

The untimely passing of Dr. SELWYN JONES of Ruthin, at the age of 36, after a short illness, has deprived North Wales of one of the ablest of its younger practitioners. He was educated at Epworth College and in 1928 entered King's College Hospital, where his athletic prowess secured him a place in the first rugby and tennis teams. After qualifying in 1933, he set out to prepare himself, as fully as possible, for the arduous duties of his chosen life's work—general practice. He was house-surgeon and house-accoucheur at his own hospital, resident medical officer at the Royal Waterloo Hospital, and then served as R.M.O. at the London Clinic for a year. Thus equipped, he began practice at Kensington, but the lure of his native haunts was too strong and in 1939 he settled down in Ruthin in partnership with his father, Dr. T. O. Jones. In an extensive country practice, all his training was utilized to the great advantage of the community, and in a short time he won its affectionate regard to a remarkable degree. In addition to the claims of practice, he gave freely of his time and energy as medical officer to the Home Guard and lecturer to the Red Cross and St. John Organization. The most noteworthy phase in his character was careful attention to the details of treatment. His case-notes accompanying patients to hospital were models of what such notes should be, and provided clear evidence of his mature clinical judgment. Selwyn Jones, however, was much more than a successful doctor—he was a man of wide culture, a lover of books, a generous host, and he took a deep interest in all country pursuits. The sincere sympathy of a host of friends goes out to his wife, also a medical graduate, to his two young children, and to his parents.—E. W. J.

With the death of Dr. JOHN FERGUSON at his home in Stockport Road, Chorlton-on-Medlock, Manchester, aged 88, the British Medical Association loses a member who joined as long ago as 1877. He was educated at Owens College, qualified M.R.C.S., L.R.C.P. in 1876, and had served as house-surgeon and house-physician at the Manchester Royal Infirmary. He took the M.D. of Durham University in 1896 and the B.Sc. of Manchester University in 1904. Dr. Ferguson was a past president of the Manchester Medico-Ethical Society and vice-president of the Manchester Medical Society.

## The Services

Capt. V. J. Downie, M.C., R.A.M.C., and Majors G. McC. Bastedo and C. E. Corrigan, R.C.A.M.C., have been awarded the D.S.O., and Capt. (Temp. Major) A. C. S. Hobson, Capt. L. Crome, J. A. Petre, and A. I. Pirie, R.A.M.C., Capt. M. K. Ray and Lieut. D. K. Ramadwar, I.A.M.C., have been awarded the Military Cross in recognition of gallant and distinguished services in Italy.

### CASUALTIES IN THE MEDICAL SERVICES

*Died*—Surg. Lieut.-Cmdr. Duncan MacKay Reid, R.N.V.R.  
*Killed in Normandy*—Capt. James Cowie Thom, R.A.M.C.  
*Previously reported missing, now presumed to have lost his life in action off Brittany*—Surg. Lieut.-Cmdr. Hugh De Lancey Noel Davis, R.N.V.R.  
*Missing in action, now presumed killed*—Surg. Lieut. Peter Slade Cuthbertson, R.N.V.R.  
*Missing, presumed killed*—Temp. Surg. Lieut. Charles John Sanders Green, R.N.V.R.  
*Missing at Arrhen*—Capt. S. R. Mawson, R.A.M.C.  
*Reported missing at Arrhen, believed prisoner of war*—Capt. A. W. Lipmann-Kessel, R.A.M.C.

## Universities and Colleges

### UNIVERSITY OF CAMBRIDGE

At a congregation of the Senate on Oct. 2 Dr. T. Shirley Hele, F.R.C.P., Master of Emmanuel College, resigned the Vice-Chancellorship and gave an address before his readmission to the office for the year 1944-5. In naming with reverence and honour those of the older generation who had died during the year Dr. Hele said that Sir Humphry Rolleston, formerly Regius Professor of Physic, was an outstanding figure in the field of medicine, who would be remembered not only for his literary and scientific work but for his unflinching courtesy and sympathetic understanding towards all who sought his advice. The University had done its utmost to guard the interests of those members of the staff away from Cambridge on national service, and for some long time had refused to make any permanent appointments, as these might be regarded as injurious to the absentees. A new policy had been adopted by the University in the course of the year in allowing a teaching officer, whether resident in Cambridge or absent on national service, to be appointed on a permanent basis when his appointment would not interfere with the interests of others. A committee was in being, representing the University and Addenbrooke's Hospital, to prepare the ground to implement the recommendations of the Report on Medical Schools issued by the Goodenough Committee, if and when the recommendations in the report were accepted and the necessary financial support was available. Preliminary steps had been taken to arrange for instruction in the hospitals of the Eastern Area, at the earliest possible moment after demobilization, for young medical officers whose normal training had been curtailed.

At a Congregation held on Oct. 20 the following medical degrees were conferred, all by proxy:

M.D.—F. H. Coleman  
M.B., B.Chir.—A. Comfort, G. I. C. Ingram, R. H. Boardman, P. Venables  
M.B.—E. B. Panson

In the list of titles of degrees conferred by diploma on members of Gorton and Newnham Colleges during the months of July, August, and September, appears the name of M. M. Tunstall-Behrens, as receiving the M.B., B.Chir.

### UNIVERSITY OF LONDON

At a meeting of the Senate held on Oct. 25 it was announced that the Faculty of Medicine had elected as its Dean for the period 1944-6 Mr. J. B. Hunter, M.C., M.Ch., F.R.C.S.

### ROYAL COLLEGE OF PHYSICIANS OF LONDON

At a quarterly Comitia held on Oct. 26, with the President, Lord Moran, in the chair, Air Vice-Marshal C. P. Symonds, Dr. T. L. Hardy, and Dr. J. A. Charles were elected Councillors.

The following were elected Representatives of the College: Sir Adolphe Abrahams on the Committee of Management of the Conjoint Board, Sir Comyns Berkeley on the Council of the Central Midwives Board, Sir Stanley Woodward on the Central Council for District Nursing, and Dr. J. Hay on the Court of Governors of the University of Liverpool.

Dr. H. E. Magee was appointed Milroy Lecturer for 1946. The Jenks Memorial Scholarship was awarded to Philip Hague Lovell, late of Epsom College. Prof. C. Bruce Perry will deliver the Bradshaw Lecture on "The Aetiology of Erythema Nodosum," on Thursday, Nov. 9, at 2.30 p.m., at the College.

The following, having satisfied the Censors' Board, were elected Members of the College:

\*Y. Abd el Ghaffar, M.B.; J. N. Agate, M.B.; A. D. Barlow, M.B.; A. J. V. Cameron, M.B.; \*Squad. Ldr. T. W. Edwards, R.A.F.; \*A. El Mofly, M.D.; \*Mahmoud N. el-D. Fahmy, M.D.; E. A. Fairburn, M.B.; \*M. A. R. Fayez, M.D.; J. L. Fluker, M.B.; Flying Officer J. H. Friend, R.A.F.; M. R. Geake, M.B.; Wing Cmdr. J. G. Howlett, R.C.A.F.; \*Capt. J. A. Inglis, R.A.M.C.; Squad. Ldr. R. W. Lass, R.A.F.V.R.; F. K. Lau, M.B.; J. M. Lipscomb, M.B.; \*Major F. L. A. Lydon, R.A.M.C.; R. I. McCallum, M.B.; \*D. R. Macdonald, M.B.; G. Marcel, M.D.; Major R. J. G. Morrison, R.A.M.C.; \*A. H. Mousa, M.D.; P. B. Newcomb, M.B.; \*A. Omar, M.B.; J. Overton, M.B.; \*Y. Rizkalla, M.D.; Dorothy H. Robertson, M.B.; Lieut. J. R. Trounce, R.A.M.C.; \*H. Whitaker, L.R.C.P.; Major J. V. Wilson, R.A.M.C.

\*Admitted in absentia.

Licences to practise were conferred upon the following 174 candidates (including 27 women) who had passed the Final Examination in Medicine, Surgery, and Midwifery of the Conjoint Board and have complied with the necessary by-laws of the College:

Doreen M. Aaröe, E. W. R. Alderman, P. Allebone, P. M. Anderson, J. D. Andrew, John Andrew, Joseph Armstrongs, Roy Astley, F. J. Aumonier, A. D. Bingham, R. H. O. Bannerman, J. C. Barclay, M. A. Barker, F. Batley, Katharine M. O'B. Beadon, M. F. Bethell, D. T. A. Brown, A. Bruce, Alice E. Buck, Joan Bullough, R. D. Calcott, G. R. H. Calleja, M. D. Caplan, H. S. Capore, D. C. Cappon, J. A. Carr, H. E. Claremont, C. B. Clarke, I. F. Collie, Pamela J. Coope, A. R. Corbett, J. H. Coulson, R. A. Cranna, G. E. Crce, R. Creese, R. H. Cuforth, Jyoti K. Datta, P. L. H. Davey, Edith M. Davies, Joan M. B. Davies, Rosemary Davies, A. M. Dawson, I. M. P. Dawson, S. J. Dickson, J. W. T. Dixon, M. H. N. Dixon, Aileen P. M. Dng, S. L. Duggal, M. Duggan, J. S. Ebsworth, V. B. J. Edwards, M. A. Epstein, S. Epstein, D. M. L. Evans, B. L. Finzel, L. G. Fison, T. W. Forster, Maud M. Frankland, P. H. Friedlander, A. E. Gibbs, Muriel M. Glover, J. S. R. Golding, G. E. L. Graham, J. C. Graham, Joyce F. Grant, B. A. J. C. Gregory, A. J. M. Griffiths, G. J. Grossmark, D. W. Hall, H. A. N. Hamersley, L. G. W. J. Hannah, R. M. Hardisty, R. O. F. Hardwick, L. I. Hatherley, Katharine P. Haworth, Alison B. Hay-Bolton, F. G. J. Hayhoe, P. R. Headley, Josephine M. R. Heber, E. W. Heining, E. P. W. Helps, A. Hill, F. A. Holden, C. J. S. Holdsworth, R. G. Howell, Margaret E. Hughes, C. F. Hutton, D. G. James, N. H. James, Arthur Jones, S. K. Kalgutkar, J. G. Kendall, Ethel E. A. Knowles, Barbara Law, David Lawrence, B. C. Lee, R. E. D. Leish, D. W. L. Leslie, M. Levene, W. B. Lingard, G. H. Lloyd, E. S. Lower, J. Meyrick, C. M. Monro, Rhiannon Morgan, P. D. Mort, J. P. D. Mounsey, B. G. P. Oakenfull, T. D. S. Oswald, K. G. Paddle, K. W. E. Paine, H. E. Parry, P. F. Pearson, B. H. Pentney, J. C. E. Peshall, R. G. Pitman, B. R. Pollard, G. W. Poole, Diana Powell-Cotton, J. P. Pracy, P. Pracy, P. D. G. Pugh, R. J. P. Pugh, N. E. Rankin, K. E. E. Read, Moira K. E. Reaney, A. Q. Ritchie, D. C. Roberts, W. G. Robinson, Elizabeth V. Rohr, C. Rose, C. D. Routh, M. E. Samiah, G. H. Seale, R. A. Setchell, S. Shgare, R. H. Shephard, J. Shikbo, R. F. Shove, R. L. Shrivastava, Patricia D. Shurly, K. E. D. Shuttleworth, R. L. Sikes, B. P. Skinner, D. McG. Smart, Catharine E. Smith, G. B. Smith, I. B. Smith, J. S. Smith, Agnes A. V. Smyth, B. S. H. Storr, S. P. W. Street, J. E. H. Stretton, G. L. Stumbles, B. S. Sweetman, R. E. N. Tattersall, J. D. G. Turner, A. B. Vasecollina, T. R. Waddell, A. McR. Walker, R. C. Walsh, H. D. Walters, B. C. H. Ward, E. N. Watson, C. H. A. Wedeles, J. E. M. Whitehead, M. R. Williams, R. F. Williams, R. J. Williams, R. A. Womersley, T. M. Wood-Robinson, Sophie E. J. Wright, V. J. K. Wright, M. Zoob.

Diplomas in Ophthalmic Medicine and Surgery (sixteen) and Medical Radiology (five) were granted, jointly with the Royal College of Surgeons of England, to the candidates whose names appear in the report of the meeting of the Royal College of Surgeons of England in the *Journal* of Aug. 19 (p. 260).

## Medical Notes in Parliament

### Standardized Hearing Aids

In the House of Lords on Oct. 24 the DUKE OF MONTROSE asked, in view of demobilization, what progress had been made by the Government in their negotiations with the hearing-aid manufacturers to produce national standardized hearing aids.

Lord TEMPLEMORE replied that the Medical Research Council had appointed a committee to investigate the electro-acoustic problems connected with the manufacture of hearing aids. It was hoped that this committee would be able to recommend specifications for standard models which could be sold at a reasonable price. The committee had already held several meetings, and a number of physicists had been invited to collaborate with otologists and physiologists in experimental work on their behalf. Such discussions as had taken place between Government Departments and the hearing-aid manufacturers had been very informal. He understood that the Association of Hearing Aid Manufacturers had prepared a tentative specification for a standard hearing aid, and had submitted some information about it to the committee. It was too early yet to give any indication of the price at which any standard hearing aids would be sold, but they were supplied free of charge to ex-Service men suffering from deafness due to war service.

### New National Loaf

Dr. SUMMERSKILL asked on Oct. 25 whether the Minister of Food was satisfied that the vitamin content of the new loaf was as high as in the old. Col. LLEWELLYN said that before he altered the extraction rate of flour he was assured that he could

do so without there being any appreciable loss of vitamin content in the national loaf. Now that the new flour was produced on a large commercial scale he had samples continuously taken so that he could be sure that this was so.

### Research under an N.H.S.

Asked by Mr. Salt on Oct. 26 to what extent questions of medical research would be dealt with in the national health scheme, Mr. WILLINK said encouragement and assistance of research would continue to be primarily the function of the Medical Research Council, which was set up by Royal Charter for the purpose. The Government intended that research and opportunities for research should be continually developed with the help of the Council.

**Supply of Doctors in Defence Areas.**—Mr. JEWSON inquired on Oct. 19 whether steps had been taken to provide an adequate increase in the number of medical men in defence areas from which the ban had been lifted, causing the return of the population. Mr. WILLINK said the Local Medical War Committees were keeping the situation under review. No special difficulty in these areas had so far been brought to notice. If and when the need arose the committees would no doubt make recommendations to the Central Medical War Committee in the normal way.

**Rubber Gloves.**—On Oct. 24 Mr. HOGG asked the President of the Board of Trade whether, in view of the increased supplies of rubber, he would increase the allotment for the provision of surgical gloves. Mr. GARRO-JONES, who replied, said that surgical gloves had to be made partly of natural rubber, supplies of which had not increased. The Minister of Supply, who was responsible for the production of these gloves, was not aware of any substantial volume of complaint that supplies were insufficient to meet essential civil needs.

**Food Shortage in Holland.**—On Oct. 24 Mr. FOOT informed Mr. Harvey that he had received information from the Dutch authorities that the shortage of food in Holland was acute. His Majesty's Government and the United States Government, in consultation with the Netherlands Government, were endeavouring to make arrangements for bringing relief to the civilian population.

**Pneumoconiosis Compensation Cases.**—Mr. HERBERT MORRISON on Oct. 29 told Mr. DAGGAR that the number of applications to the Silicosis Medical Board for certificates under the Pneumoconiosis Compensation Scheme for coal-miners in South Wales and Monmouthshire had for some time past considerably exceeded the capacity of the medical board to deal with them. In recent weeks additional doctors had been appointed to the board in South Wales with a view to expediting the examinations, but some time must elapse before the arrears were overtaken.

### Notes in Brief

Penicillin is produced in India only on a laboratory scale. No difficulty is foreseen in meeting from elsewhere all military requirements.

The combined United Kingdom and U.S.A. authorities, in collaboration with the Greek Government, have made plans for introducing medical supplies into the liberated areas of Greece. UNRRA will act as agents.

No scientific attachés have yet been appointed to British missions in foreign countries, but in Washington a British mission exists to exchange scientific information with the United States Government. In Chungking Dr. Joseph Needham, F.R.S., directs an office to promote scientific contacts with China.

## Medical News

The Pharmaceutical Society of Great Britain announces a lecture on "Properties and Uses of Penicillin in Relation to Pharmacy," to be given by Mr. A. L. Bacharach at 17, Bloomsbury Square, London, W.C., on Thursday, Nov. 9, at 7 p.m., with lantern-slide illustrations. This is the first of a series of meetings arranged for the winter session, to be held on the second Thursday in the months of November, December, January, February, and March.

The U.S. Office of War Information states that the problems involved in the international control of venereal diseases will be discussed by representatives of England, Norway, Mexico, Canada, and the U.S. at the post-war venereal disease control conference to be held from Nov. 9 to 11 at St. Louis. The conference will consider methods of broadening the application of recent advances in treatment and will bring together experts in all phases of venereal disease control.

Lord Moran and Prof. G. W. Pickering are to address the London Branch of the Science Masters Association on Saturday, Nov. 11, at 2.30 p.m., on "Pre-medical Education." The meeting will be held at Mercers' School, Holborn (opposite Gamage's), and admission is free. Any doctors interested are invited to attend.

The annual general meeting of the British Medical Students Association will be held at B.M.A. House, 1, Tavistock Square, London, W.C., on Nov. 10, 11, and 12. The Minister of Health is attending the session beginning at 4.30 p.m. on Friday, Nov. 10, and the chair will be taken on that occasion by Mr. H. S. Soutter. The programme of that particular session will be: (1) Chairman's opening remarks, (2) Presentation of results of questionnaires on a National Health Service to the Minister by a member of the student body who will make a short speech, (3) Address by the Minister, (4) Questions, (5) Votes of thanks.

A meeting of the Middlesex County Medical Society will be held at Redhill County Hospital, Edgware, on Saturday, Nov. 11, at 2.45 p.m., when a clinical demonstration will be followed by three short papers on the treatment of strychnine, by Dr. M. Rose; the choice of the anaesthetic, Dr. S. W. Collin; and the problem of the treatment of varicose veins, Mr. Frank Forty.

A joint meeting between the Section of Psychiatry, Royal Society of Medicine, and the Association of Industrial Medical Officers will be held on Tuesday, Nov. 14, at 1, Wimpole Street, W.1, at 4 p.m. The subject of the discussion is "Psychiatric Advice in Industry." Speakers: Dr. Aubrey Lewis, clinical director, Maudsley Hospital; Dr. Elizabeth Bumbay, investigator, Industrial Health Research Board; Dr. Ernest Capel, medical officer, Joseph Lucas Ltd.; Dr. Russell Fraser, investigator, Industrial Health Research Board.

At a meeting of the Medical Society of London to be held at 11, Chandos Street, W., on Monday, Nov. 13, at 5 p.m., Mr. John Everidge will open a discussion on "Clinical Aspects of Renal Ectopy and Fusion."

At a general meeting of the Tuberculosis Association at 26, Portland Place, London, W., on Nov. 17 at 3.45 p.m. there will be a discussion on "The Place of Work as a Therapeutic Measure in Tuberculosis—a Re-assessment." The opening speakers will be: Drs. F. R. G. Heaf, P. W. Edwards, W. L. Yell, and J. H. Crawford.

Sir Joseph Barcroft, F.R.S., will lecture to the Food Education Society on "Food and Processing—the Nutritive Value of Processed Food," at the London School of Hygiene and Tropical Medicine, Keppel Street, W.C., on Monday, Nov. 20, at 2.30 p.m.

The Ministry of Health emphasizes that whole-time public health medical officers who are of military age must, before applying for any other post, first obtain the prior permission of the Minister. This requirement was set out in Circulars 2818 and 2881. If the permission is not obtained before making application the Minister will not approve their appointment. A number of candidates have recently found that they have been disappointed because the Minister has felt obliged to insist upon strict adherence to this requirement.

## EPIDEMIOLOGICAL NOTES

### Discussion of Table

In England and Wales during the week notifications of infectious diseases rose by the following numbers of cases: measles 596, scarlet fever 220, diphtheria 58, whooping-cough 37, acute pneumonia 27.

In Durham there were 139 more cases of measles, in Lancashire 108, and in Staffordshire 75. The recent rise in the incidence of scarlet fever has been greater in Lancashire, where during the week reviewed 124 more cases than last week, and almost one-quarter of the total for the country, were notified. Diphtheria is particularly prevalent in the north, and the counties of Lancashire, Yorkshire, and Durham together had 42% of the total.

The notifications of dysentery fell by 32 to 358. The only new local outbreak of any size was in Oxfordshire, Bullington R.D. 20. The other large centres of infection were London 54, Lancashire 47, Glamorganshire 42, Suffolk 28, Hertfordshire 26, Essex 13, Norfolk 12.

In Scotland the incidence of diphtheria rose by 35, and of measles by 76; the cases of dysentery fell by 28. Measles notifications in Dundee were 40 more than last week. The number of cases of dysentery in Edinburgh and Glasgow were 17 and 51, compared with 32 and 64 of the preceding week. The 3 recent cases of typhoid in the town of Greenock are thought to be due to shellfish gathered from the Firth of Clyde.

In Eire notifications of scarlet fever rose by 17, and those of whooping-cough fell by 26.

In Northern Ireland scarlet fever rose from 55 to 105, almost half the notifications being recorded in Belfast C.B. The incidence of measles also increased in this city, from 56 to 91.

### Week Ending October 21

The returns of infectious diseases during the week in England and Wales included: scarlet fever 2,176, whooping-cough 970, diphtheria 580, measles 3,779, acute pneumonia 640, cerebro-spinal fever 36, dysentery 391, paratyphoid 6, typhoid 9, acute poliomyelitis 14.

## INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended Oct. 14.

Figures of Infectious Diseases for the week and the corresponding week last year for: (a) England and Wales (London included), (b) London (administrative county), (c) Scotland, (d) Eire, (e) Northern Ireland.

Figures of Births and Deaths for the week and the corresponding week last year for: (a) The 120 great towns in England and Wales, (b) London (administrative county), (c) The 10 principal towns in Northern Ireland.

A dash — denotes no cases, a blank space denotes disease not notifiable or no return available.

Disease	1944					1913 (Corresponding Week)				
	(a)	(b)	(c)	(d)	(e)	(a)	(b)	(c)	(d)	(e)
Cerebro-spinal fever Deaths	13	2	20	1	3	17	1	17	2	2
Diphtheria Deaths	567	9	173	110	21	707	11	108	92	17
Dysentery Deaths	358	54	106	—	—	251	40	62	—	1
Enteric fever (typhoid and paratyphoid) Deaths	1	—	2	—	—	—	—	—	—	—
Typhoid Deaths	—	—	51	—	2	—	—	52	8	4
Infective enteritis of diarrhoea under 2 years Deaths	18	10	22	12	3	54	10	8	23	7
Measles* Deaths	3,088	28	213	57	91	675	42	55	18	—
Ophtalmia neonatorum Deaths	61	2	18	—	1	81	5	19	2	—
Paratyphoid fever Deaths	7	—	—	—	—	—	—	4	—	—
Pneumonia, bilious (not from influenza) Deaths	655	22	1	1	—	569	33	—	—	5
Pneumonia, primary Deaths	—	—	190	11	8	—	28	200	9	9
Folio enteric habits, acute Deaths	—	—	—	—	—	—	—	—	—	—
Poliomyelitis, acute Deaths	21	1	6	5	1	19	—	—	—	—
Paratyphoid fever Deaths	—	—	17	—	—	—	—	1	11	—
Puerperal pyrexia† Deaths	174	8	20	3	1	151	1	12	—	1
Relapsing fever Deaths	—	—	—	—	—	—	—	—	—	—
Scarlet fever Deaths	2,132	32	326	11	105	3,321	321	110	—	118
Smallpox Deaths	—	—	—	—	—	—	—	—	—	—
Typhoid fever Deaths	9	1	4	15	9	—	—	—	—	2
Erythema infectiosum Deaths	—	—	—	—	—	—	—	—	—	—
Whooping-cough* Deaths	897	53	70	12	11	1,155	121	157	13	15
Deaths (0-1 year)	310	32	65	5	2	—	—	—	—	23
Infant mortality rate (per 1,000 live births)	—	—	—	—	—	—	—	—	—	—
Deaths (excluding still births)	1,194	51	619	146	110	—	—	—	—	—
Annual death rate (per 1,000 persons living)	—	—	11.2	13.2	3	—	—	11.0	—	1
Live births	6,640	451	1,007	360	231	6,115	511	372	22	24
Annual rate per 1,000 persons living	—	—	20.5	21.4	3	—	—	17.5	25.6	1
Stillbirths	215	11	22	—	—	232	12	31	—	—
Rate per 1,000 total births (including stillbirths)	—	—	2.4	—	—	—	—	3.1	—	—

\* Measles and whooping-cough are not notifiable in Scotland, and the returns are therefore an approximation only.

† Includes primary fever for England and Wales, London (administrative county) and Northern Ireland.

‡ Includes puerperal fever for England and Wales and Eire.

§ Due to evacuation schemes and other movements of population, birth and death rates for Northern Ireland are no longer available.

## Letters, Notes, and Answers

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### ANY QUESTIONS?

#### Diagnosing Mild Graves's Disease

**Q.**—A young lady fainted five minutes after the insertion of a tabloid of homatropine and cocaine hydrochloride  $\bar{a}\bar{a}$  gr. 1/50 into each conjunctival sac. On recovering consciousness she had no perceptible radial pulse for a short time, but in half an hour recovered completely. She has slight exophthalmos, and the thyroid gland is moderately enlarged. Her pulse rate was about 86. She is 5 ft. 5 in. in height, and 5 st. 4 lb. in weight, having gained 4 lb. during one week of holiday. She is not unduly nervous, but becomes breathless on exertion. She has not been treated for Graves's disease, but appears to have presented the symptoms for several years. What further investigations are necessary in order to give a prognosis and indications for treatment? Does hyperthyroidism cause increased susceptibility to either of the drugs mentioned?

**A.**—The diagnosis of mild Graves's disease is often very difficult to make with certainty, largely because we have no test for thyroid function. The signs and symptoms are those of increased oxygen consumption, which may occur in other disorders, of the associated psychological and autonomic imbalance, which is not necessarily associated with thyroid disease, and of the toxic action of excessive thyroid secretion on the heart, which occurs as a rule only in obvious cases. Exophthalmos, the cause of which is not known with certainty, is a notoriously unreliable sign. The further investigations suggested are the B.M.R., which is normally raised, and the blood cholesterol, which is normally lowered; but in all probability the most useful investigation is a period of rest in bed under the eye of a physician experienced in such cases and capable of weighing all the pros and cons. In the patient in question the pros are the exophthalmos, the thyroid enlargement, the low weight (slightly offset by the recent gain), and the breathlessness on exertion. An important con is the lack of apparent nervousness, but she may be very self-controlled. The single pulse reading does not help one way or the other. Thyrotoxic patients almost to a woman have hot feet and dislike hot weather. Hyperthyroidism does not cause an increased susceptibility to either homatropine or cocaine in doses so small as the ones this patient received. In all probability she had an ordinary "vaso-vagal attack." Patients with hyperthyroidism are often unduly excitable, and therefore liable to faint.

#### Diuretin for Fluid Retention

**Q.**—A woman patient aged 48 years has hyperpiesia and fluid retention with excessive weight, probably indicating pituitary dysfunction. Great relief is obtained by the taking of diuretin. Is this drug best taken in small doses regularly, or in larger doses with an interval every few weeks or months? The patient's salt intake is kept at a minimum.

**A.**—A certain degree of tolerance is acquired if the caffeine tablets are taken regularly, and this probably applies to diuretin, which is theobromine with sodium salicylate. If large doses are given for some time the stomach is likely to be upset. For both these reasons it is preferable to give short courses of treatment with full doses at intervals rather than continuous treatment with small doses.

#### Use of Proflavine

**Q.**—I understand that proflavine powder, though an admirable antiseptic, causes tissue damage when applied to a wound. For this reason it is generally diluted with sulphathiazole. In what strength can proflavine be safely used? Under what circumstances is it especially recommended?

**A.**—Pure proflavine powder, as originally reported by G. A. G. Mitchell and G. A. H. Buttle (*Lancet*, 1942, 2, 429), can safely be applied in an amount not usually exceeding 0.5 g. to chronic suppurating wounds. The tissues in fresh wounds are more easily damaged, and for application to these it should be diluted with a sulphonamide powder: the usual mixture is one part of proflavine and 99 parts of sulphathiazole. Several recent papers have reported

favourably on the use of this powder for the prevention or treatment of sepsis in wounds of various kinds. J. S. Jeffrey and Scott Thomson (*B.M.J.*, July 1, 1944, p. 1) refer to its use as an alternative to penicillin for preparing an infected gunshot wound for suturing. P. B. Aseroft (*Lancet*, 1944, 1, 594) applied it prophylactically to operation wounds. G. Y. Feggetter (*ibid.*, p. 593) used it in war wounds both as a preventive of infection and for the treatment of established sepsis, and J. McIntosh and F. R. Selbie and their colleagues (*ibid.*, p. 591) describe its use for a variety of purposes in civilian practice.

#### Barotrauma

**Q.**—I have a medical friend who lost his hearing in a short journey by air. What are the dangers and the remedies thereof?

**A.**—The information given is very meagre. Before giving a reliable answer it would be necessary to know far more of the clinical features; the time elapsed since the trip; how much of the hearing has been lost; the presence of pain on descent; the drum appearances; and the result of auto-inflation by Valsalva's method. However, the most likely cause is barotrauma, with or without a pre-existing cold in the head, leading to partial obstruction of the Eustachian tubes. Perforation of the drum with otitis media and sequelae is very rare and a theoretical danger. More likely is the production of a middle-ear effusion and deafness from a severe barotrauma. If the tubes have remained closed and the drum tension unrelieved for some time then there is a risk of permanent middle-ear damage and deafness. Careful examination of the drum (or drums) is necessary to determine what has happened. If there is no movement on auto-inflation then gently politize; if unsuccessful then Eustachian catheterization must be carried out by an expert. Treat a persistent cold with inhalations, etc. Should deafness persist after the tubes are patent then seek the advice of an E.N.T. surgeon with barotraumatic experience. Early lip-reading is a wonderful help, but this is taking the gloomiest view of the condition, particularly as the trip is described as short, and so the barotrauma may not have been severe.

#### "Red Vision" after Cataract Operation

**Q.**—A lady now aged 70 had an operation for cataract some four or five years ago. She has been persistently, almost continuously, troubled by "red vision." Everything is coloured red, more or less. Nothing has done any good. Can any suggestions be made as to cause, cure, or alleviation?

**A.**—Such disturbance of vision is uncommon, and though there are several explanations for it none is satisfactory. Apart from the unlikely possibility in such a case of an intra-ocular haemorrhage, it seems reasonable to suppose that the lens of the patient offered an unusual obstruction to the red end of the spectrum. When the lens was removed, that part of the spectrum was able to reach the retina in an unaccustomed degree, giving a warmer hue to objects. It is also a fact that, owing to the chromatic aberration of the eye, overcorrection with a convex lens tends to favour the red as against the green end of the spectrum. Alleviation may be obtained by checking the correcting lens, failing which a tint in the lens reducing the brightness of red colours might help. As a rule, however, the red coloration is not seen on all occasions so that a tinted glass should be used with discretion.

#### Hormone Treatment of Enlarged Prostate

**Q.**—A man aged 54 suffered from frequency of micturition, especially at night. He was seen by a surgeon who found a slight prostatic enlargement, but not enough to justify operation. He was advised to try stilboestrol, and after taking 1 mg. three times a day for three weeks, he noticed a swelling of the breasts with some scabbiness (? dried discharge) of the nipples. Although it is now nearly two months since he stopped taking the stilboestrol, the breasts are still prominent and tender. Can anything be done to relieve the condition? There has been no improvement in the frequency.

**A.**—This condition of the breasts sometimes occurs in men who take oestrogens, but it is unusual for the condition to persist two months after the cessation of such therapy. Testosterone should be tried, and may ameliorate the condition. It can be given in the form of injections, 25 mg. three times a week, or methyl testosterone, 5 mg. t.d.s., allowed to dissolve under the tongue. If the condition does not improve within two weeks, this therapy is unlikely to be helpful. As to the original condition of urinary symptoms due to an enlarged prostate, favourable reports on the effect of stilboestrol have been recorded, but on the whole the results are disappointing, in contrast to the favourable results (usually temporary) with stilboestrol in carcinoma of the prostate. A few years ago testosterone or methyl testosterone were strongly advocated for benign enlargement of the prostate, but a controlled series of cases undertaken by the Medical Research Council did not confirm these claims. Nevertheless, in practice several clinicians still prescribe testosterone, and claim objective improvement. If enlargement of the prostate is associated with the male climacteric and gradual decrease of testicular function, testosterone would be logical therapy.



## Satisfactory Contraception

**Q.**—What is considered to be the most satisfactory contraceptive for a woman, married in the early thirties, to have 1 to 2 children? What are the disadvantages or objections to intercourse during menstruation apart from the aesthetic aspect and risk of infection to the woman?

**A.**—The choice of contraceptive depends to some extent on the woman concerned, her intelligence and outlook on these matters, the shape of the vagina, direction of the cervix, etc. A Dutch vaginal pessary or a cervical cap would probably be the most satisfactory appliance, but should be used in conjunction with a chemical contraceptive—e.g., phenylmercuric acetate—incorporated in a jelly or soluble pessary, at a high degree of safety is to be achieved.

Objections to coitus during menstruation are to some extent based on old religious views and superstitions to the effect that at such time a woman is 'unclean' and that the menstrual discharge contains noxious factors. Such ideas are deep-rooted and even to-day probably play an important, even though subconscious part in the increased modesty of women during menstruation. In any case coitus during menstruation would sound a messy procedure and, on that account, repugnant to most people. Yet coitus is probably more frequently practised during menstruation than is generally realized. Indeed, in some individuals—and it applies to either partner—sexual desire appears to be increased at that time. When both husband and wife are healthy, there can be little objection on purely medical grounds. The alleged risks of vaginal tears and menorrhagia are largely theoretical, although tenderness of the vagina which some women experience during menstruation would be a contraindication. If active or latent infection is present in either male or female genital tract then the position is altered. The resistance of the female to infection is lowered during menstruation. Moreover, if a woman has chronic and dormant infection in the cervix or tubes then there would be an increased chance of an exacerbation and extension of the trouble. As the questioner points out, the real objection to coitus during menstruation is the obvious aesthetic one, and it operates particularly when the flow is at its height. When, however, the discharge is scanty or intermittent, and the couple are mutually desirous of intercourse, there does not appear to be any valid reason for advising against it.

## Carbon Monoxide Poisoning

**Q.**—What is the treatment of chronic carbon monoxide poisoning? A patient of mine, a blacksmith, has symptoms corresponding to those described by H. S. Stannus in the *JOURNAL* of July 22, 1943, which, he says, are also found in chronic carbon monoxide poisoning. As my patient is a blacksmith, chronic carbon monoxide poisoning is the more probable diagnosis. Blacksmiths are usually good beer drinkers. My patient is not. Has the taking of alcohol anything to do with preventing chronic carbon monoxide poisoning in these people?

**A.**—Carbon monoxide is not a cumulative poison. There is therefore no such condition as the expression "chronic carbon monoxide" would imply. Regulation of working hours should be such that a man lives in an atmosphere not contaminated with carbon monoxide for at least twice as long, in the 24 hours, as he does in one that is contaminated. In pure air and with a normal volume of breathing, small amounts of carbon monoxide are readily ventilated out of the blood. Repeated exposures, as in the case of the blacksmith, may temporarily, but only temporarily, affect health, more often a compensatory polycythaemia develops to compensate for the lack of oxygen. Symptoms such as loss of appetite, digestive disturbances, headaches, diminished vigour, poor colour, and apathy disappear upon removal of the patient from the exposure. Stannus, in his paper in the *Journal* on July 29 (p. 144), suggests "that riboflavin deficiency interferes with the normal functioning of the capillary with the production of a tissue anoxia," and draws a parallel between such a condition and that which arises if the tissues are fed with CO haemoglobin. He points out that carbon monoxide is believed to inactivate cytochrome oxidase and thereby inhibit oxygen consumption by preventing electron transfer by uniting with the iron in the ferrous form. There is no association between riboflavin deficiency and carbon monoxide poisoning. Alcohol has no effect in preventing "chronic" carbon monoxide poisoning.

## Prevention of Mould

**Q.**—How are the following prepared to prevent mould formation: (a) 1/2% solution ephedrine for nasal spraying and (b) natacaun acid boric liq. adrenalin 1/1000 eye drops?

**A.**—The method of preparing solutions etc. will not alone prevent the formation of moulds in susceptible preparations, but the use of sterile materials and the employment of aseptic conditions when making will help to retard it. It is now quite common for fungicides to be incorporated in addition to the therapeutic ingredients, and a number of proprietary articles, mostly essiers of parahydroxybenzoic acid, are on the market. They have the

advantages of being stable, non irritant, and non toxic, and are effective in very low concentrations. Parachlorometacresol (chlorometacresol of the B.P. Third Addendum) and phenylmercuric nitrate also have these virtues and are in frequent use. In the strength required to be bactericidal (0.25%) parachlorometacresol sometimes causes irritation in the eye but it is effective as a fungicide in a concentration as low as 1 in 10,000 and in this concentration is non irritant. A 1 in 100,000 of phenylmercuric nitrate is an effective fungicide and may be used for most preparations, including the two in question, but it is not soluble in oil whereas parachlorometacresol is, and may therefore be used for the oily as well as the aqueous ephedrine spray.

## Mortality from Heart Diseases

**Q.**—What are the figures for the mortality from (a) angina pectoris (b) coronary artery thrombosis (c) heart failure due to high blood pressure for (1) the first year for which figures are available, and (2) the most recent year for which records are available?

**A.**—In 1940 the deaths of 1,671 males and 706 females were attributed to angina pectoris without mention of coronary disease, in 1939 the corresponding figures were 1,677 and 684. Deaths from coronary artery thrombosis are included with diseases of the coronary arteries, in 1939 and 1940 10,242 and 10,648 males and 5,241 and 5,605 females respectively were said to die from such disease. Before this the deaths from both these conditions were included with diseases of the coronary arteries. It is not possible to reconstruct the two subheadings for earlier years, but for the combined group there has been a progressive increase in mortality in the past twenty years. During 1911-21 the crude death rate was fairly constant around 36 per million for males and 16 for females; the rate then began to rise and was 216 for males and 87 for females in 1931, and, in 1940, 675 for males and 292 for females.

Deaths from heart failure due to high blood pressure were not tabulated separately until 1939, in 1940 1,072 males and 945 females were certified as having died from this cause. The reconstruction of this cause for the preceding ten years was made in the *Statistical Review* of 1940, which showed a steady rise in mortality from 7 per million in 1931 to 59 in 1940 for males, and from 8 to 44 for females. In the years preceding 1939 these deaths had been included in the group of abnormalities of blood pressure, which were tabulated for the first time in 1924, when 21 males and 26 female deaths were classified as due to abnormality of blood pressure.

## Piercing the Ears

**Q.**—It has been the custom for ladies to resort to the piercing of the lobule of the ear prior to wearing earrings. Jewellers in most cases have ceased to carry out this little operation and consequently application is made to the doctor. What is the technique which should be followed, and what sort of earring should be inserted in the pierced ear while healing is taking place?

**A.**—Perforation of the lobule of the ear should be carried out with careful aseptic precautions. There is hardly need for anaesthesia since the lobule is very insensitive to pain. The puncture may be made by a sterilized, large, round bodied needle or perhaps better still by a small trocar. A small piece of sterile gauze may be placed against the opposite side of the lobule to exert pressure while the puncture is made. Jewellers usually carry out the operation with a small split metal ring (which should also be sterilized) which can be left in for several days and moved round the circumference until the ear-ring itself may be inserted.

## B. newport Enteritis

**Q.**—Can you suggest any cure for B. newport enteritis of several years' standing? I have tried (a) stovaine and (b) sulphaguanidine with no effect. The condition has been similar for 10 years. The patient is a lady aged 75.

**A.**—An attack of bacterial food poisoning due to a *Salmonella* organism like the *Newport* bacillus is usually characterized by severe vomiting and diarrhoea of 1 to 2 days' duration. The organism producing the intestinal upset by reason of its 'enterotoxin' may remain in the gut for some days or weeks after the acute attack, but persistent carriers of the food poisoning group of organisms are very rare. Sometimes however the *Salmonella* organism, instead of causing an acute local irritation in the bowel, gets into the body tissues and produces a continual fever with little intestinal upset. In such a case or even after a typical attack of food poisoning, the organism may gain access to the gall bladder and remain there, particularly if the patient is suffering from gall stones. Something of the kind may have happened with this patient who with a 10-years history must be regarded as a chronic *Salmonella* carrier. Recurrent attacks of diarrhoea and intestinal catarrh are a feature in some chronic typhoid carriers—a kind of auto-intoxication—and this may be the explanation of the enteritis in this patient. If so, the only hope of permanent cure is to remove the focus of infection, most likely the gall bladder, but cholecystectomy in a woman of 75 is not lightly to be recommended or undertaken. Unfortunately the intestinal sulphonamides—sulphaguanidine and succinyl sulphathiazole—



thiazole—are not effective against the *Salmonella* family, and recourse must be had to palliative treatment—e.g., a chalk or bismuth mixture. Of course, the enteritis may be due to some other cause than the Newport bacillus, and if the patient's health is deteriorating a thorough overhaul in hospital may be indicated.

### Chronic Diarrhoea in Childhood

**Q.**—What is the treatment of a child of 2 who is suffering from a mild chronic diarrhoea, with much mucus with the stool? The pathological report on the faeces shows an almost pure growth of the haemolytic streptococcus. In other respects the child seems perfectly well. There seems very little in the literature on this subject.

**A.**—Mild chronic diarrhoea with much mucus in the stool is relatively common in children of from 1 to 3 years, an observation all too familiar to nursery-school nurses. The almost pure growth of a haemolytic streptococcus is probably the result of the diarrhoea and not the cause. The condition may be due to an unsuitable diet or a particular difficulty with the digestion of fat, vegetable matter, or starch; to an infection with one of the dysentery bacilli or the tubercle bacillus; or to infestation with a parasite such as *Giardia intestinalis* (lamblia). Three stools at least should be examined microscopically for ova, parasites, or cysts, and for food residues. Unfortunately, in the majority of cases no cause will be found, and then if the child is well and is gaining weight properly, no treatment is needed. In any case treatment by low-residue diet, oil, rice, in minim doses, or pulv. ipecac. co. is disappointing. A good account of chronic diarrhoea in childhood has yet to be written.

### Pregnancy and Phthisis

**Q.**—We know that pregnancy increases resistance to phthisis, but parturition diminishes that resistance. Would you tell me whether anyone has tried to treat tuberculosis with (among other things) extracts of corpus luteum with calcium and vitamin D intramuscularly? This should be possible in females at least.

**A.**—The supposed beneficial effect of pregnancy on pulmonary tuberculosis was noted by Hippocrates, but, in spite of a strong clinical impression, there is little if any scientific evidence that pregnancy has any effect on the course of the disease. Many authorities think that improvement during pregnancy and relapse during the puerperium may be explained by the mechanical effect of the abdominal tumour, which raises the diaphragm and thus restricts the movements of the lungs. It has been suggested that a pneumoperitoneum should be induced after delivery in tuberculous women to compensate for the shrinkage of the uterus. Nevertheless, there is some experimental work which suggests that the gonadotropic hormone found in the urine of pregnant women exerts a favourable influence on the progress of experimental tuberculosis in animals (Steinbach, M. M., and Klein, S. J., *J. exp. Med.*, 1937, 65, 205). The questioner is referred to an article by W. D. W. Brooks (*J. roy. Inst. Hyg. publ. Hlth.*, 1940, 3, 67) for a recent summary of the whole position.

### Mixing T.A.B. and Tetanus Toxoid

**Q.**—Is there any contraindication to mixing the annual booster dose of 0.5 c.c.m. of T.A.B. vaccine and 1 c.c.m. of tetanus toxoid? The preparations we use (R.A.S.C.) are mixed typhoid and paratyphoid vaccine by the Army Medical College and Wellcome tetanus toxoid—i.e., into a 10-c.m. syringe take 6 c.c.m. of T.T. and 3 c.c.m. of T.A.B. and give 1.5 c.c.m. of the mixture to each soldier.

**A.**—Probably no lessening of immunizing power would result from mixing, but this is an assumption; and before to-day assumptions have led to disconcerting results when various antigens containing different antiseptics have been mixed. I should therefore not adopt this practice as a routine or convenience until someone has fully tested the procedure in controlled experiment. I should mix these prophylactics in an emergency if limitations of time, space, or syringes made that advisable. I should then be careful to mix thoroughly by movement of the piston and should rigorously discard any material not made up at one sitting.

## INCOME TAX

### Re-starting in Private Practice: Purchase of Car

**C. B.** is at present working full time in the E.M.S., using his car for his honorary posts and receiving no income-tax allowance for travelling expenses. He will shortly start a consulting practice—from scratch, as his pre-war practice has been dispersed. Will it be to his advantage to put off buying a new car until after he recommences private practice?

**A.**—In the circumstances we are of opinion that **C. B.** will be unable to resist the contention that the cost of purchasing the new car will be capital outlay and not deductible as an expense of carrying on the new practice. He will, however, be entitled to claim the usual depreciation allowance, calculated on a percentage of the capital value as at the commencement of the new practice.

The only difference, therefore, which an immediate purchase of a new car would create would be that he would lose the depreciation allowance on any reduction in value of the car due to the period from the date of purchase to the date of restarting private work. We gather that this would be negligible.

## LETTERS, NOTES, ETC.

### Fracture-dislocation of Talus

**Col. R. JACKSON, M.B., C.M.** (St. Helen's, Lancashire) writes: On Sept. 16 you published an article by Squad. Ldr. Theodore James, describing a fracture-dislocation of the astragalus, with x-ray illustrations. Two prints of an almost identical condition, which were taken by me in 1899, were published, with an account of the case, in the *Quarterly Medical Journal* (Yorkshire) in February, 1900. This was a very interesting case, as the man refused any treatment for over twelve months, and in the end made a perfect recovery and went back to his work down the mine.

### Simple Splint for Fracture of the Clavicle

**Mr. FRANK COLEMAN** (London, W.1) writes: I was interested in Mr. Whitchurch Howell's "splint" (*B.M.J.*, Oct. 7, 1944). Mr. McAdam Eccles, when in charge of an aid post at which I was a medical officer, showed us how to use two rubber rings such as those used in deck tennis, and it appeared to be a highly satisfactory way of dealing with this common form of fracture. Mr. Howell does not state the material he had his rings made of, but as rubber is scarce it might be that "light plastic" could be used in the future.

### Rhubarb

**Mr. D. C. L. FITZWILLIAMS, F.R.C.S.** (London, W.1) writes: Under the heading "Rhubarb and Breast Milk" (Oct. 14, p. 518) the answer stated, "the cathartic principles . . . are present . . . only in the fruit"—by this I suppose the stalk is meant. The answerer then proceeds to say that the "root . . . is used as a source." Let him try next season to put a little of the young yellow leaf at the top of the young stalk in a salad; it is excellent, but be very careful that it is only a little, as he will find that the active principles are not at all confined to what he calls the "fruit."

\* During the last war severe poisoning from oxalic acid occurred in persons eating rhubarb leaves.—Ed., *B.M.J.*

### Syringe for Self-administration of Insulin

**Dr. F. M. HILLIARD, F.R.C.P.J.**, writes from Blackpool: I enclose a cutting from the *B.M.J.* of Oct. 23, 1925, p. 632, in which you published a modification of the Record syringe which I devised for the automatic control of insulin dosage. It was made by Messrs. Allen and Hanburys, and had an advantage over that described by Dr. C. T. Andrews (Oct. 21, 1944, p. 534) in that the dose could be more accurately adjusted by means of two locking nuts on a threaded piston shaft. Since then I have used it frequently for diabetic patients with failing eyesight. As a result of my original notice, I received many letters of appreciation from patients who found the idea helpful. Nowadays the hospital engineer can thread the shaft and fit two nuts on any standard Record syringe.

### Tetanus

**Dr. JOHN FODDEN** (Huddersfield) writes: It has been my experience in a short postgraduate career to witness four cases of severe clinical tetanus. These cases were supported by bacteriology. May I quote two, as they were all very similar. The first was that of a young cotton-worker in a crowded industrial district, who pierced her thumb with a large clean needle while at work in a factory. After two days slight sepsis developed over the small puncture wound. Six days later she developed all the signs and symptoms of acute tetanus toxæmia. To this she succumbed. The second case was that of an adult male, who was at work in an iron foundry. A large piece of pig-iron fell near his foot. A protruding jagged cone of metal pierced his boot and entered his great toe. The depth of penetration was very slight, though a small laceration was obvious some time later. The man was not away from work. There was no crushing of the toe whatsoever. The wound did not heal well, and the surrounding area of skin was somewhat discoloured. Eleven days later the clinical onset of tetanus made its appearance. After a severe fight for existence this man lived. Isolated bacteriologically in all the cases were pathogenic acrobates, as well as the tetanus bacillus. In none of these cases was there any trauma worth mentioning, and certainly no loss of blood supply. Thus, with reference to your correspondent's reply (Sept. 16, p. 391) regarding tetanus prophylaxis, I feel that sufficient emphasis was not placed upon small wounds of this type—i.e., small puncture wounds. Further, surely more importance must be attached to these wounds occurring in an agricultural area than to those which happened in an area peculiar to industry. I am afraid that I now look upon the much-perpetuated facts of gross muscle damage, trauma, and loss of blood supply as only part of the life-story of tetanus infection and its symptoms.

## ACUTE PERFORATED PEPTIC ULCER FREQUENCY AND INCIDENCE IN THE WEST OF SCOTLAND\*

BY

C. F. W. ILLINGWORTH, F.R.C.S. L. D. W. SCOTT, M.R.C.P.

AND

R. A. JAMIESON, F.R.C.S.

During the past half-century several hundred reports have been published on the frequency and incidence of perforated peptic ulcer. Nearly all of them, however, have been based upon the experience of individual surgeons or single hospitals, and have thus been limited in scope. It seemed to us, therefore, that there was a need for a survey based upon a wide region and dealing with a large series of cases. We are fortunate in having in the West of Scotland such a region with a population for which the Census provides accurate data as to size and composition; and since perforated ulcer is exceptionally common in this region our series is a large one—far exceeding any previously reported—and eminently suitable for statistical analysis.

The region comprises the city of Glasgow and the counties of Argyll, Dumfries, Lanark, and Renfrew. This area was selected because it forms the natural (and, as regards emergency work, exclusive) catchment area for a comparatively small number of hospitals, mainly situated in Glasgow. It can be stated with confidence that practically all perforations within this area are treated in the hospitals listed, and, moreover, that these hospitals treat practically no perforations from beyond this area.

According to the Registrar-General's estimate for 1938 (the last figures available) the population of this area was 2,169,959. Over 80% of the population lies in the congested city of Glasgow, the towns of lower Clydeside, and the industrial districts of Lanarkshire. The remainder includes the sparsely populated highland county of Argyll. The 1931 Census shows that 92.2% of the population is urban, 7.8% rural. The population is thus predominantly town-dwelling and industrial. The industries are mainly of the heavy type, particularly mining and quarrying, engineering, shipbuilding, and allied trades.

In this region we have obtained records of all perforations treated in hospitals of over 15 beds and in private practice during the year 1943. For earlier years, since the records of the smaller hospitals are not available, we have restricted our survey to the three main Glasgow voluntary hospitals (Royal, Western, and Victoria Infirmarys). These hospitals in 1943 treated 80% of perforations in the region; this proportion is known to be correct also for 1938, and our knowledge of local conditions convinces us that it is reasonably accurate for earlier years; we therefore feel confident that the records of these hospitals may be used as a basis for assessments in regard to the whole population. In these three hospitals we have obtained records of all perforations treated during the 20-year period 1924-43, and this series, which comprises over 7,000 cases, provides the material for the greater part of this report.

### Frequency of Perforated Peptic Ulcer in the West of Scotland, 1943

Information regarding perforations treated during 1943 was sought from all hospitals of over 15 beds and from all surgeons in private practice in the area. Full records were obtained

from all the hospitals except three small cottage hospitals and from 25 of the 28 surgeons circularized. Our figures (Table I) may therefore be regarded as substantially complete.

TABLE I—Perforated Peptic Ulcer: West of Scotland, 1943

	No. of Cases
Seven cottage hospitals	376
Private cases	45
	31
	10
	9
Total	471

It will be noted that of the total of 471 cases 376 (79.8%) were treated in the three voluntary teaching hospitals. The records of these hospitals form the basis for the remainder of this report. The number of cases treated in municipal hospitals was small, as was to be expected in view of the fact that these hospitals in Scotland do not commonly admit emergency cases. It will be seen also that only 9 cases are classified as "private cases." This low figure may be due to the fact that in Scotland members of all the social classes seek hospital admission for urgent surgical treatment. The incidence of perforation in different social classes merits investigation.

### Annual Incidence during 20-Year Period, 1924-43

To ascertain the incidence of perforated ulcer in the 20-year period 1924-43 we have obtained records from the three main Glasgow voluntary hospitals, the Royal, Western, and Victoria Infirmarys.

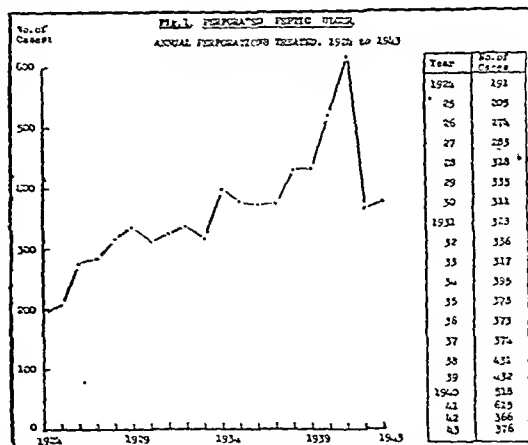


Fig. 1 shows that the number of perforations treated annually increased rapidly in the period under review. To the pre-war 4375

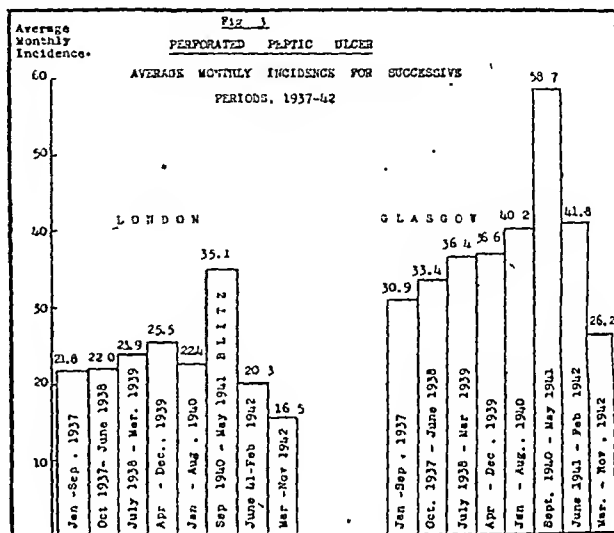
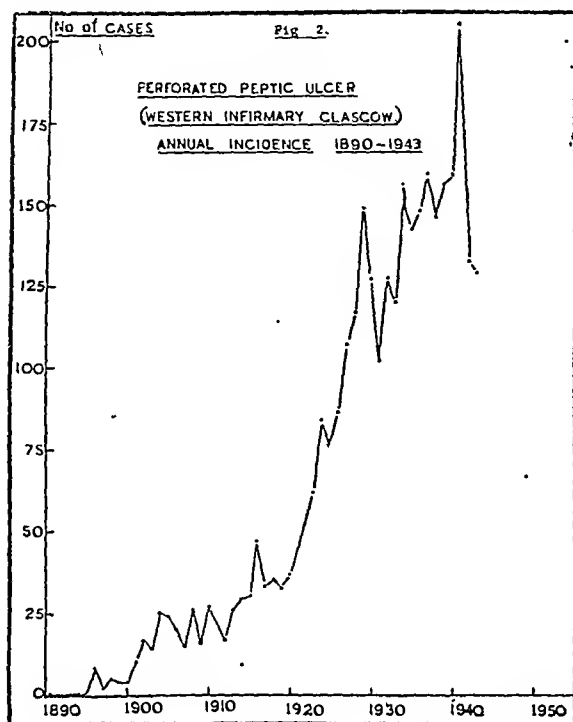
\* A survey made under the auspices of the Nuffield Provincial Hospitals Trust.

years there was a fairly uniform increase from rather less than 200 in 1924 to rather more than 400 in 1938. During the war the number of perforations was higher in 1940-1 and lower in 1942-3 than would have been expected on the

Estimating the total cases in this way, and using the Registrar-General's estimates of population (which are available only up to 1938), the incidence of perforation per 100,000 from 1924 to 1938 is:

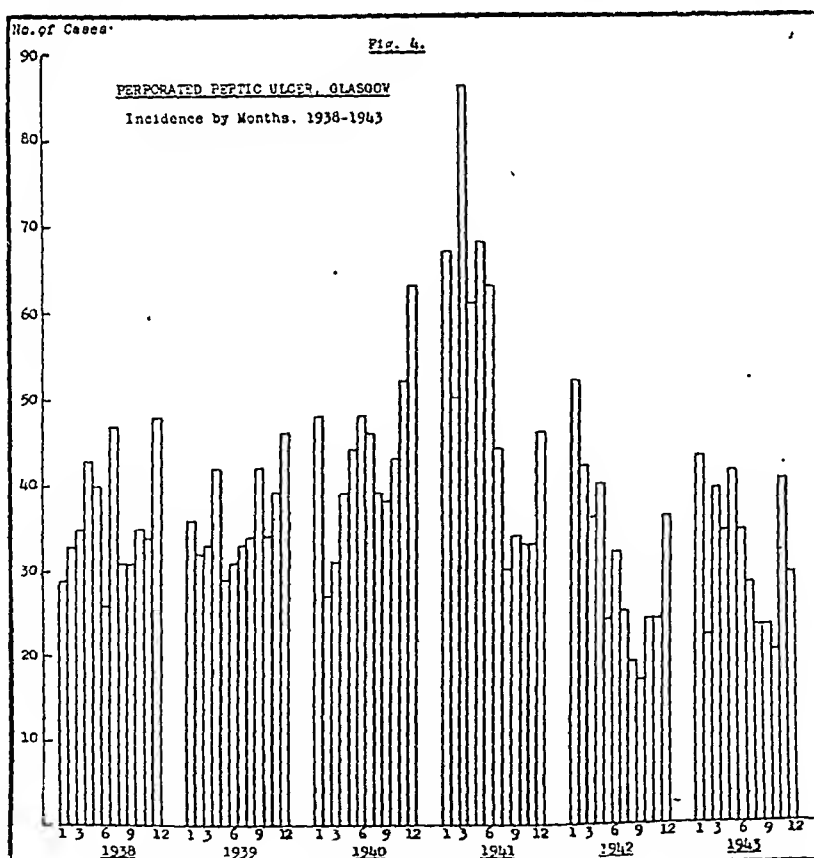
Year:	1924	'25	'26	'27	'28	'29	'30	'31	'32	'33	'34	'35	'36	'37	'38
Incidence per 100,000	11	12	16	17	19	20	19	20	20	19	23	22	22	22	25

The significance of this increase in incidence during the 20-year period is best appreciated in the light of earlier observations. Perforated ulcer is said to have been rare in



basis of the trend in the previous 16 years; both the excess and the deficiency are statistically significant. It should be added that these changes are not due to war-time changes in the population.

The figures given provide a basis for estimating the changing incidence of perforation in a known population. We have already shown that the records of the three main hospitals represent 80% of the total hospital admissions. We believe, further, that the total hospital cases approximate very closely to the total number of cases occurring in the population. Doubtless there has been some improvement in the diagnosis of perforation in the period under review, but since the pain following perforation is so commanding, the clinical features so characteristic, and the urgent need for operation so clear, it seems reasonable to suppose that even 20 years ago very few patients failed to reach hospital.



the 18th and the early part of the 19th century, and it was only in the closing years of the 19th century that a notable increase in incidence appeared. This is illustrated by the experience of the Western Infirmary, Glasgow, where the records go back to 1870. The first perforation was admitted in 1896 (Fig. 2), and from then until 1941 with few exceptions each year has seen an increase. Admittedly no great reliance can be placed on these early figures, for the value of surgical treatment for perforated ulcer gained wide recognition only about the turn of the century, and during the succeeding two decades undoubtedly the admission rate was influenced

by improving diagnosis, increasing population, and better transport facilities; but even when due allowance is made for these factors it would seem that a remarkable increase in frequency has in fact occurred.

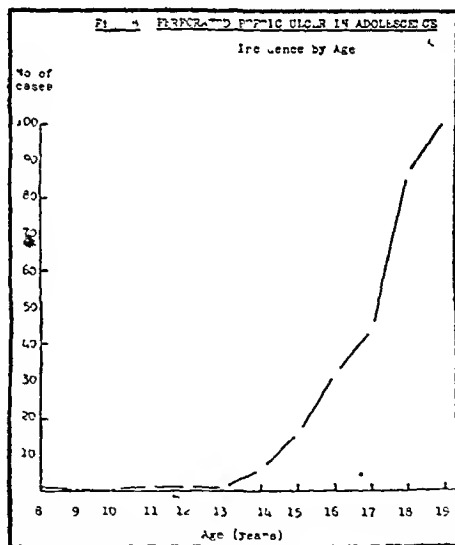
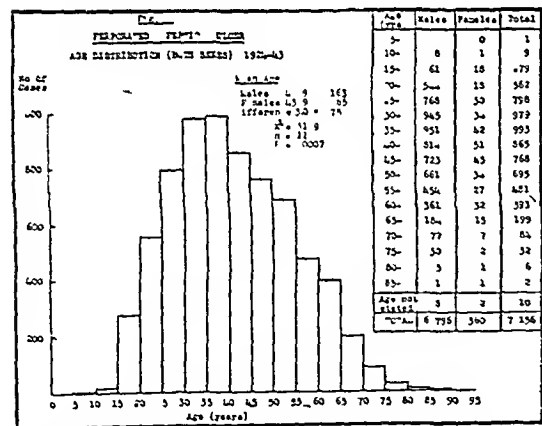
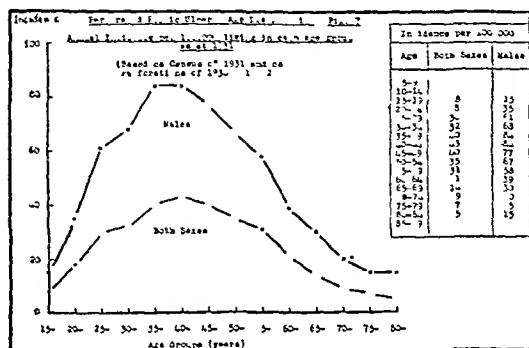
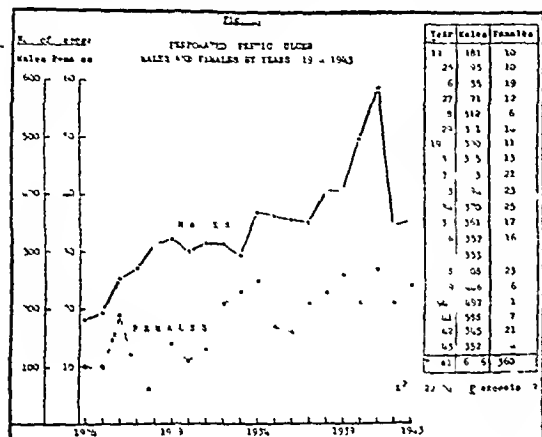
# Incidence of Perforations during the Present War, with Special Reference to Air Raids

We have drawn attention (Fig 1) to the marked rise in incidence of perforations in Glasgow in 1940-1. A similar rise has been noted by workers in other parts of the country (Stewart and Winsor (1942) in London, Rendle Short (1942) in Bristol, Wilson (1942) in Liverpool and Riley (1942) in Newcastle).

In Fig 3 our records are shown alongside those published by Spicer, Stewart, and Winsor (1944) for comparison. Admittedly these graphs which show average incidences for different parts of the various years are deceptive for they take no account of seasonal fluctuations but it may be seen that the general trend in the two cities was closely

the high incidence of perforations in March cannot be attributed to them, for of the 86 perforations recorded in March no fewer than 41 occurred before the air raids began.

From these observations it is clear that in Glasgow the local air raids cannot be held responsible for the 1940-1 increase of perforations, and other factors require to be considered. During the period in question the whole country was in a state of nervous strain as a result of the war situation. From the summer of 1940 onwards, also, there was a great increase in the amount of overtime work, and there were additional duties in connexion with the Civilian Defence Services and the Home Guard: the resulting weariness, lack of sleep, and irregularity of meal hours might well be tolerated for a few months but might later precipitate perforation. Finally, it is possible that the food shortage



similar. In London the rising incidence was noted shortly after serious air raids began (in Sept. 1940), and a similar correlation was noted in Bristol and Liverpool. So far as Glasgow is concerned, however, a close study of the figures leads us to the conclusion that such a correlation did not exist.

In Fig 4, which shows the incidence by months from 1938 to 1943, it will be seen that in Glasgow the incidence rate began to rise in the autumn of 1940, reached a high peak in March, 1941, and remained abnormally high until the end of June, 1941. But in Glasgow the rise in incidence did not follow air raids, on the contrary, it anticipated them. In Glasgow there was nothing comparable to the prolonged bombardment to which London was subjected. Apart from a few desultory raids, which excited greater interest than apprehension, the first attacks to be sustained were the two heavy raids in March 1941. These raids occurred on March 13-14 and 14-15 but

which was beginning to be evident at that time may have exerted an influence.

The fall of incidence after June, 1941, and in 1942-3 is equally interesting and even more difficult to explain. It could be suggested that ulcer patients who might have perforated in 1942-3 had already done so in 1941, but this explanation will not hold water, for one perforation does not protect against subsequent ones. There is indeed no ready explanation of this fall in incidence.

## Sex Distribution (3 Main Glasgow Hospitals; 20-year Period)

The sex distribution is shown in Fig 5. The great preponderance of males is clear, and the overall ratio of males to females is 6796 to 360, or 19 to 1. It will be seen that the incidence rate of perforations increased in both sexes

throughout the 20-year period, and the ratio of 19 to 1 was substantially maintained, though there were wide fluctuations from year to year. The rise in 1940-1 and the fall in 1942-3 are seen to be confined to males. In females the general trend of the pre-war years was maintained. This finding is somewhat surprising in view of the great changes which have taken place, especially since 1939, in the habits and working conditions of women.

#### Age Distribution (3 Main Hospitals; 20-year Period)

The general characteristics of the age distribution are at once apparent from Fig. 6, which shows the 7,156 cases of our series arranged in 5-year groups. To obtain the true incidence at different ages a correction must be applied, to allow for the diminishing numbers in each age group in the population as age advances. The results are given in Fig. 7, which shows (for both sexes and for males) the incidence rate per 100,000 living in each age group. It will be seen that the incidence reaches its maximum between 35 and 45 years and falls only slowly thereafter.

An interesting feature is the sudden increase in the frequency of perforation at adolescence. Perforation in childhood is rare: in our series (exclusive of the few cases which may have been treated in the Royal Hospital for Sick Children) there was one perforation at 8, one at 11, and one at 12 years. From age 13 to age 19 there is a truly remarkable increase, the numbers observed at successive single years of age being 1, 6, 16, 32, 44, 86, 101 (see Fig. 8).

The age distribution did not remain stable throughout the period. Between 1924 and 1943 the mean age rose by some  $3\frac{1}{2}$  years, the rate of increase being fairly uniform. The rise is doubtless due in part to the increasing mean age of the population in the area served: this does not, however, appear to be the whole explanation, and the question is being studied further.

In males and females the age distribution is dissimilar. It will be seen from Fig. 6 that the mean age of males is 3 years less than the mean age of females. Analysis shows that it is extremely improbable that a difference of this magnitude has arisen by chance. Nor is the difference to be explained by a discrepancy in the population served, for the mean ages of adult males and females in the population are almost equal. We believe, in consequence, that there is a small but nevertheless a real difference in age incidence in the two sexes.

(To be concluded in next week's issue)

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## EPISIOTOMY

BY

J. D. S. FLEW, M.D., M.R.C.O.G.

During the training of the medical student and pupil midwife in the labour ward much stress is laid upon the prevention of perineal tears, and to a great extent their skill at delivery is judged on the results obtained by them in this direction. Whilst agreeing that, in general, an intact perineum is better than a torn one, this statement needs qualification and consideration before it can pass unchallenged. Lubin (1932) has stated: "It is presupposed that a patient without a lacerated perineum fares better than her more unfortunate sister in so far as puerperal morbidity, comfort, future pathology, and disability are concerned." The damage incurred by the patient in order to maintain the integrity of her perineum must be considered.

#### Disadvantages of a Torn Perineum

What are the possible disadvantages of a torn perineum? The greatest is a complete tear through the sphincter and mucous membrane of the rectum, so that the patient is left with a recto-vaginal cloaca, incontinent of flatus and faeces. This is a disaster, and the repair of a complete tear a major surgical operation, upon which depend that patient's future comfort and happiness, for without complete rectal control she will be forced to segregate herself. Even if the operation is "almost successful," so that she has sphincter control restored but is left with a recto-vaginal fistula, she will be miserable and

remain a social outcast until at a subsequent operation that fistula is repaired.

A patient whom I saw in 1937 illustrated this condition. She had a complete perineal tear at the birth of her first baby, four years previously. This had been sutured, but she was left with a recto-vaginal fistula, which had defied three attempts at repair, after which her advisers had told her that nothing further could be done for her, but that in time the fistula might close spontaneously.

For four years that woman had been afraid to associate with others. She has never been to a neighbour's to tea or asked anyone to her house. If she became constipated, flatus escaped through the fistula; at other times the vagina was always contaminated by faecal matter. No coitus had occurred since her confinement, and as the result of all these facts her mental condition had deteriorated, and at times she had considered suicide.

I admitted her to University College Hospital, and, using silver wire sutures, as first advocated by Marion Sims for vesico-vaginal fistula, successfully closed the fistula and a most miserable period in that patient's life.

There can be no argument against the statement that a perineal tear involving the rectum must be avoided at all costs. Tears which do not reach the rectum are less serious, but they involve the risk of sepsis, they need to be repaired, the sutures are uncomfortable during the 7-10 days in which they are *in situ*, and if good apposition is not obtained (by no means always easy) the patient may be left with a painful scar, which at times results in dyspareunia.

These facts are good evidence in favour of guarding the perineum from injury, but do they justify the enthusiasm of many labour-ward sisters and other teachers of midwifery, as a result of which their pupils come to regard their task as one in which the three essentials are to leave a live baby and a living mother in whom the perineum is intact?

In order to prevent perineal laceration the second stage of labour is often grossly lengthened. The mother is subjected to unnecessary pain and the foetus to prolonged pressure. The perineum is stretched so that it becomes of tissue-paper thickness, but it remains intact. True, the baby may be in white asphyxia or even dead, the mother distressed, the uterus exhausted so that post-partum haemorrhage is more probable since it has been working hard to overcome the resistance of the perineum, augmented by the strong hand of the anxious accoucheur. Nevertheless, we repeat with pride: "The perineum is intact."

#### Aetiology of Prolapse

What is discovered if cases subjected to such treatment are followed up? In any gynaecological clinic approximately 25% of the multiparous patients attend on account of symptoms referable to prolapse, and of the same group admitted for operation the figure is nearer 50%. Do these cases occur because of perineal tears? No. Many cases of unrepaired complete tear of years' standing have no prolapse at all, whereas by prevention of perineal rupture, especially in primigravidae, many cases of prolapse are unwittingly caused.

Koster (1935) states that the uterus cannot be supported by any structures at the base of the broad ligament, nor by any structures attached to it. He maintains that the muscles closing the pelvic aperture are the true uterine supports, and that once these are damaged the intra-abdominal pressure, especially when raised as in straining, coughing, etc., causes descent of the uterus. This would indicate that the uterus is pushed downwards from above rather than pulled downwards from below.

Mengert (1936), however, states that it is doubtful if the pelvic floor affords any support to the uterus, and bases his opinion on experiments performed on eight cadavers. A weight of 1 kg. was attached to the cervix in each case and various structures were divided. No uterine descent occurred until the lower third of the broad ligaments and upper two-thirds of the paravaginal tissues were divided. Then there was an average uterine descent of 10.5 cm., in spite of the fact that the pelvic floor was intact in all cases.

Here are two diametrically opposite opinions—and does not the truth lie between the two? Surely the uterus is supported from below by the pelvic floor and suspended from above by such structures as the cardinal and utero-sacral ligaments? Of these, the support from below is the more important, and whether the uterus can descend or not depends

primarily upon the integrity of the pelvic floor. Mengert's theory would explain those cases of vault prolapse which may occur in nulliparous patients and which account for only a small proportion of the total number of cases. Koster's theory must be criticized because of the statement that the uterus is pushed downwards by coughing, straining, etc. Certainly this may aggravate the condition, but is it the primary factor?

One has but to see a few cases of prolapse to realize that a cystocele and rectocele occur low down in the vaginal wall within an inch of the introitus, not high up about the vaginal fornices. This sagging of the vaginal wall tends to pull the uterus downwards, since they are attached to the latter about the level of the internal os. Furthermore the distance to the vaginal supports allows the bladder in front and rectum behind to protrude into the lumen of the vagina, covered only by the lining of the latter. The protruding viscera then keep apart and further separate the damaged vaginal supports and the condition is a true hernia of bladder and possibly urethra in front, and rectum and anal canal behind.

The symptoms of which patients complain are in the main referable to these herniae rather than to the actual position of the uterus and the term 'prolapse of the uterus' is a misnomer which in most cases should be discarded for the term 'vaginal hernia' or should the term 'prolapse' be retained, it should be regarded primarily as prolapse of the vaginal wall rather than of the uterus.

During the puerperium not only does the uterus involute but the vaginal and uterine supports undergo the same process. Sepsis is said to be an important factor in causing subinvolution of all these structures and overstretching and tearing of deep-seated fibres is equally important in preventing the utero vaginal supports from regaining their previous tone and returning to approximately their previous length. Already it has been mentioned that sepsis may gain entrance to the pelvic cavity via the torn perineum, more commonly it does so via the placental site or torn cervix. In the majority of first labours when the presenting part meets the pelvic floor a trickle of fresh blood can be observed, indicating damage to soft parts. If, after delivery, the labia are separated and the vagina inspected in a good light a ragged torn area can often be seen on the commencement of the posterior vaginal wall, even when the perineum is intact. Should the perineum be torn then this area would doubtless be incorporated in the repair, if it is not how often will this wound alone be repaired? Here is another site for the entrance of infection—an important factor in the aetiology of prolapse.

These facts should make us pause to consider whether our management of the second stage of labour needs revision, and if our enthusiasm for maintaining the integrity of the perineum is always justified. Salmond and Derrnlev (1935) considering this question, gave it as their opinion that episiotomy may be an important factor in the prevention of prolapse. That this opinion has not received more serious consideration is possibly due to the fact that even in those cases in which episiotomy has been performed, it has been carried out too late in labour for the patient to reap its main advantages.

#### Management of the Second Stage of Labour

Every primigravida incurs some degree of permanent damage to her pelvic floor during her delivery per vaginam and while gynaecologists have spent much time and thought in perfecting operations to cure the resulting symptoms comparatively little has been done by obstetricians in devising methods by means of which the damage would be reduced to a minimum. There is much truth in the statement that gynaecologists live by obstetricians' errors.

In 1742 Sir Fielding Ould, in his *Treatise on Midwifery*, suggested the possible advantage of perineal incision but the first favourable notice came in 1799 from Michaelis who advised incision in the median line. The name 'episiotomy' came later from Carl Braun, who, however did not consider the operation necessary or desirable. In 1892 Kustner, and in 1896 von Ott, advocated median episiotomy, and Stahl of Chicago in 1895 practised and published the same advice, stating that 'it aids as no instrument can in preserving that life and

body of both foetus and mother'. DeLee (1913) advocated a medio lateral perineal incision as a tension release, to hasten termination of the second stage of labour, in the interest of the child and find more than usual emphasis on its advantage to the mother in the conservation of pelvic integrity.

The necessity for some kind of treatment in many cases has therefore been recognized for 200 years, yet in modern textbooks of obstetrics although episiotomy is mentioned, but little practical advice is given concerning the exact way in which it should be carried out and the cases in which it should be performed.

In 1918 Pomeroy went so far as to advocate cutting and reconstruction, the perineum for every primigravida. This would seem to be going to the extreme, for its practical result would be that an incision would be necessary in the majority of multiparous patients as well, since the old scar would usually rupture. This might well be the lesser evil.

The indications for episiotomy must now be considered. Broadly speaking in any case in which the perineum seriously delays the birth of the presenting part, or in which there is the need for intravaginal manipulation or forceps delivery in all primigravidae and some multiparae, an episiotomy should be performed. These cases must now be reviewed in detail.

What should be regarded as serious delay in the birth of the presenting part? Actual time is of but little value in assessing this without also taking into consideration the strength and frequency of the pains. In the majority of cases in which the presenting part has been on the perineum for half an hour episiotomy is indicated, and earlier if there is foetal distress or undue maternal distress, or in spite of good frequent pains the presenting part is making but little advance. Should the perineal skin start to split superficially before the head is crowned, then a tear is inevitable unless prevented by a timely incision.

A word concerning foetal distress: forceps are frequently considered necessary on account of this. How often are the delay in preparation for forceps delivery, the anaesthetic and trauma to the foetus however slight, the final blow in extinguishing the last spark of life? An episiotomy and fundal pressure are quicker and less injurious to the foetus. Often when the head is on the perineum these methods will suffice and should be practised more frequently. Berliand (1932) advocates episiotomy strongly in all cases in which the foetus is known to be premature in order to prevent cerebral haemorrhage.

I well remember my pride as an obstetric house surgeon conducting 15 consecutive forceps deliveries in primigravidae without a single perineal tear or episiotomy. Now I shudder to think of the danger to which those babies were subjected and of the damage, then hidden and unseen, which those patients suffered. Delivery of a primigravida by forceps is an absolute indication for episiotomy. A breech delivery in a primigravida is another absolute indication, both for the delivery of the after-coming head and for any intravaginal manipulation such as the bringing down of an extended leg. How difficult this manoeuvre can be! With the lower uterine segment gripping the manipulating hand, the latter soon becomes cramped and the perineum forgotten. How gallant, when at last the foot is successfully produced outside the vulva to find the perineum gaping torn perhaps into the rectum! The spontaneous delivery of a persistent occipito posterior face to pubes, a face presentation, and any case in which there is a narrow pubic arch should be placed in the same category. If a patient who has previously had a colpoperineorrhaphy performed be delivered per vaginam then episiotomy is essential.

The difficult operation of suturing a torn cervix will sometimes be facilitated by an episiotomy, but the manual removal of the placenta and bimanual compression seldom of themselves call for episiotomy: the already stretched birth canal will easily admit the cone-shaped hand.

These cases comprise the commonest in which gross damage is likely to occur to the genital tract, and therefore those in which episiotomy is most indicated—a formidable list, capable of extension.

The actual moment at which the episiotomy is to be performed is often difficult to decide but it must be remembered



that this operation is being done in order to minimize the damage to the unseen utero-vaginal supports, in addition to preventing a visible perineal laceration, and, as stated by Gusman (1932), it is useless to wait until the perineum is of but tissue-paper thickness, for by then the former damage has already been incurred. There is no doubt that the majority of episiotomies are performed too late in labour to benefit the patient to the fullest extent. In a suitable case the episiotomy should be carried out as soon as perineal bulging is marked. Far better perform this too early than too late; for the disadvantages of the former are slight, of the latter gross.

Now that the rules of the Central Midwives Board have been altered so that a pupil midwife has to undergo a year's training and obtain two certificates before she can practise as a midwife, should she not receive instruction in performing episiotomy during the latter six months of her training; and, when qualified, be permitted to perform it, if and when she considers it necessary? Must her patient's genital tract be permanently damaged because "medical aid" cannot be obtained immediately? The suturing of the wound should certainly be left to a medical officer; thus the case would become notified, and any midwife who abused this operation would soon be detected.

Before describing the actual operation, certain points concerning the anatomy of the perineal region must be considered.

#### Points concerned in the Anatomy of the Perineal Region

A complete description of the anatomy of the perineal region need not be given here, but there are certain anatomical relations which need emphasis because of their practical importance (Fig. 1).

The first concerns the blood supply. The superficial and transverse perineal arteries which supply this area arise from the pudendal artery in the anterior portion of the ischio-rectal fossa and, becoming superficial to the superficial perineal muscle, pass medially to anastomose with the corresponding vessels of the opposite side. Thus, apart from a few twigs from the inferior rectal artery, the perineal blood supply arises at its lateral borders and passes medially. During pregnancy the blood supply to this area is increased, and the amount of erectile tissue around the vagina is augmented; thus any tear or incision in this region may bleed profusely.

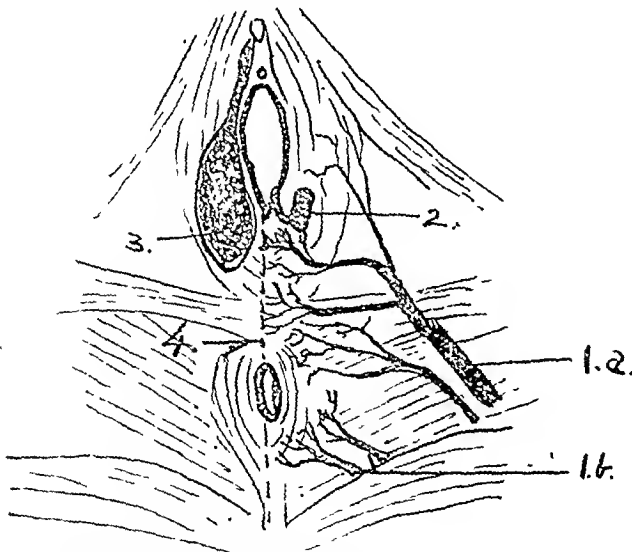


FIG. 1.—1a, Internal pudendal artery 1b, Inferior haemorrhoidal artery. 2, Bartholin's gland and duct, the latter looping downwards. 3, Spongy tissue, greatly augmented during pregnancy. 4, Median raphe.

The second concerns the muscles. These are attached to a median raphe, and the fibres run medially and backwards. When these muscles are incised the medial portion will therefore retract backwards, and when repairing such an incision care must be taken to pull the medial portion upwards before inserting the sutures, otherwise correct apposition will not be

obtained. In addition, the external anal sphincter extends approximately one inch from the anal margin, and therefore any incision lateral to this will not involve this muscle.

Finally, a word concerning Bartholin's duct. This is about 2 cm. in length, opening into the groove between the labium minorum and the hymen. Its course is U-shaped, with the

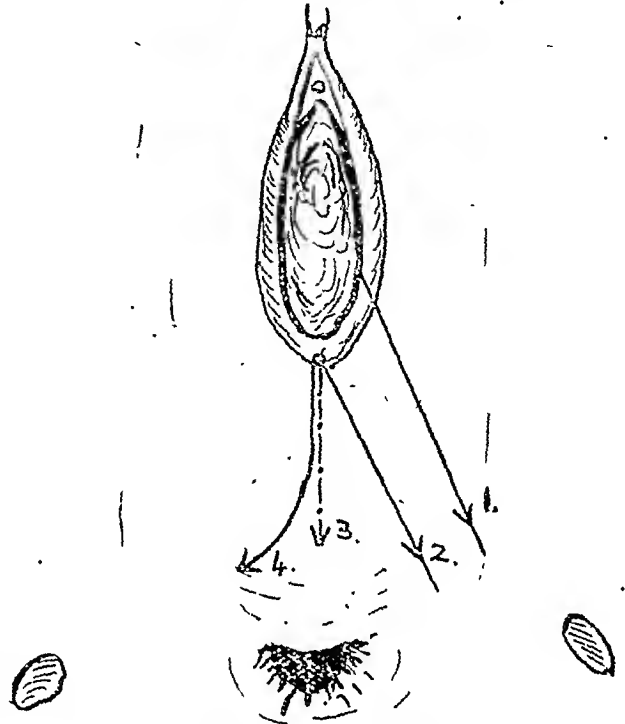


FIG. 11.—1, Lateral (incorrect). 2, Medio-lateral (correct). 3, Median. 4, Author's method.

loop downwards, so that an incision of the perineum which does not start strictly in the midline runs the risk of dividing this duct.

The above anatomical points should be remembered when performing an episiotomy.

#### Technique of Episiotomy (Fig. 11)

Since this is such a slight operation, easily performed, it is generally described in the textbooks in a few lines, augmented by a diagram, often inaccurate. Four types of episiotomy have been used: the median or perineotomy, in which the incision is confined strictly to the midline; the medio-lateral, in which it starts at the fourchette and extends laterally; the lateral, where it starts on the lateral vaginal wall and extends towards the ischial tuberosity; and, lastly, multiple small incisions around the vaginal orifice. To-day only two of these are in general use—the median and the medio-lateral, the latter now being termed "lateral episiotomy." It is here that the diagrams in many textbooks are at fault, for the incision is often shown starting to one or other side of the midline.

The old lateral episiotomy has been abandoned on account of the danger of haemorrhage. Finkelstein (1939) describes such a case, in which episiotomy had been performed prior to forceps delivery, and in which the haemorrhage from the incision was so great that delivery had to be postponed. Doubtless the erectile tissue around the vagina had been opened up in this case. Had the incision begun truly in the midline, perhaps this massive haemorrhage would not have occurred. Incision commencing away from the midline places Bartholin's duct in danger. Should this be cut, a Bartholin's cyst may subsequently develop, thus providing more work for the gynaecologist; and the loss of one of the ejaculatory systems is a serious matter, for an abnormally dry introitus may cause difficulty at subsequent coitus.

In all cases, therefore, it is essential that the incision starts strictly in the midline; and from the anatomical facts already mentioned it would seem advisable to continue in this direction. By so doing the blood is but little disturbed, there is no risk of

damaging Bartholin's duct, and good apposition is most easily obtained. The obvious danger of this method is that, should the opening still be insufficient, the resulting tear will be directed through the sphincter towards the rectum thus bringing about the major disaster that must be avoided and who can always be certain that the central incision will be adequate? Gillis (1930), describing 200 consecutive cases of midline episiotomy performed by him stated that extension into the rectum occurred in 8 cases (16%). Thus even in skilled hands there is a definite danger of this happening which danger will increase markedly with a less experienced operator. It is in order to avoid this danger that the lateral episiotomy of today is so widely used. Starting in the midline it extends laterally towards a point midway between the anus and the ischial tuberosity. A large incision can be made and even if extension occurs there is no risk of rectal involvement.

Personally, I attempt to combine the advantages of both median and lateral episiotomy. A blunt pointed curved pair of scissors are used and the incision made in the midline, until it reaches a point 1 in from the anterior margin of the anus. The scissors are then directed towards the ischial tuberosity and the incision completed with the curved portion. In this way the sphincter is avoided and should the incision extend there is no rectal involvement.

In rare cases in which even a large lateral incision seems inadequate Taylor (1937) and others advocated bilateral episiotomy. This should never be done for in this way almost the whole of the blood supply to the perineum is cut since it comes from the lateral borders and personally I have seen two cases of severe perineal sloughing result from this operation. Both these were clean cases performed in hospital and are the only serious complications I have seen resulting from episiotomy itself.

Already it has been stated that episiotomy should be performed more frequently and earlier in the second stage, than it usually is. Whenever it is done it should be performed at the height of a pain for then the tissues are stretched and it is easier to see exactly where the incision is being placed. Furthermore, sensation in the part is then dulled even if no anaesthetic is being used—a rare occurrence—the operation does not seem to be unduly painful and the Junker or "gas and air" apparatus can make the patient oblivious of the fact that the tissues are being incised, or the incision can be made very satisfactorily under local analgesia. Whatever incision is being adopted in manipulative cases, it is advisable to "iron out" the vagina with the well lubricated hand before making the incision, and in all cases essential to divide the whole depth of tissue in the wound and not merely to incise the skin.

### Results

In 135 consecutive primigravida private patients delivered per vaginam I find the following results

Normal delivery without episiotomy, 63 cases	46.7%
Episiotomy performed in 72 cases	53.3%
Of the episiotomy cases 52 had a normal delivery and therefore the total normal delivery rate (115 cases in 135) is	85.1%
Among the remainder 11 of which had episiotomy performed there were 17 forceps deliveries	12.6%
The remainder 3 cases comprised 2 extended breech and 1 perforation of a hydrocephalic head	

The relatively low forceps rate for primigravidae in private practice I attribute almost entirely to the episiotomy rate of over 50%.

Apart from the case of hydrocephalus all the babies were alive and well with the exception of one delivered by forceps, which died on the sixth day from pneumonia. Post mortem examination showed no cerebral haemorrhage. Of the 72 episiotomy cases 2 (2.8%) had symptoms referable to vaginal laceration 6 months later, but these were slight, and improved with palliative treatment, whereas of the 63 cases of normal delivery without episiotomy, 5 (8%), one of whom had colporrhaphy performed, had the same symptoms.

Apart from these figures the average "tone" of the vaginal walls was much better in the former group than in the latter.

A patient always thanks her doctor if she has no stitches in her perineum. Instead, should she not thank him because he has?

### Summary

The disadvantages of a torn perineum are discussed and compared with the disadvantages of unseen damage that may occur as a result of keeping the perineum intact.

In order to minimize all these disadvantages early episiotomy is advocated and the cases in which episiotomy should be performed are stated.

The relation of injury sustained during labour to prolapse and vaginal hernia is discussed.

Certain perineal anatomical points of practical importance in performing episiotomy are mentioned.

The methods of performing episiotomy are described.

Figures are given which indicate that patients on whom early episiotomy is carried out are less prone to pelvic damage than those in whom the perineum remains intact.

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## RAPID REPLACEMENT OF FLUID IN HAEMORRHAGE AND SHOCK

BY

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Although numerous papers on the effects of transfusion on the human subject with blood and blood substitutes have appeared in the last five years very few refer to the hazards of overloading of the circulation with fluid. Black (1937) states that 20 minutes should be taken in introducing 600 ccm of blood otherwise an acute dilatation of the right side of the heart may be encountered while Brennan (1940) suggests that 500 ccm of plasma in 20 minutes may be considered rapid. Marriott and Kekwick (1940) state that 368 ccm of blood in 30 minutes is usual, and distinguish between this rate of infusion and that desirable in debilitated patients (1 ccm per lb wt per hour) in whom, according to Murphy, Grill and Correll (1940) injection of relatively small amounts of fluids by vein causes increase in the venous pressure and slowing of the circulation. De Gown and Hardin (1940) gravity-fed from 5 to 40 ccm of fluid a minute to their cases with success. Dealing with battle casualties, Whitby (1942) states that failure to restore blood volume is a much greater danger than pulmonary oedema from necessary massive transfusion (experience of 120 cases) while Kilduffe and DeBakey (1942) quoted by Drummond (1943) have given 600 ccm in 3 minutes, and the latter says he may have to give 368 ccm in 15 minutes without ill effects. Sharpey Schafer and Wallace (1942) deal specially with the question of possible overloading of the circulation from rapid infusion of fluid in man. Of 10 subjects with normal cardiovascular apparatus given up to 2,000 ccm of serum at a rate of 34-100 ccm/min 5 developed headache or constriction of the chest, 3 had slight changes in the T-wave of the electrocardiogram, their pulse rates increased slightly, and the haemoglobin fell by 3.3 to 23.3%. If the haemoglobin fell markedly there was a rise of venous pressure with an increase in the diastolic size of the right heart, but no pulmonary oedema. In 9 cases which had a venesection of 740-1,100 ccm (approximating to battle casualties) followed by infusion of 1,500-1,800 ccm of 0.9% saline at a rate of 88-138 ccm/min or an infusion of 700-2,000 ccm of serum at a rate of 6-140 ccm/min, the most striking effect was vasodilatation with reddening of the face and engorgement of superficial veins. Unless enough time had elapsed for the haemoglobin to fall considerably, no rise in venous pressure followed infusion until at least 1,000 ccm of fluid had been given.

Brewer, Maizels, Oliver, and Vaughan (1940) state that there is no apparent association between either the amount of blood given and the risk of reactions or the rate of administration and the risk of reactions: Edwards, Kay, and Davie (1942) state that it is rare for a patient to lose more than 3 pints of blood, as the fall of blood pressure in such cases is so great that the haemorrhage ceases; while Keith (1919) declares that a systolic pressure of 70–80 mm. Hg indicates a loss of 30% of the blood volume, and a pressure below 60 mm. Hg a loss of over 35%—i.e., 2,100 c.cm.

It was decided to increase the quantity and the rate of fluid infused into a series of battle casualties dealt with in a mobile A.D.S. in the Mediterranean theatre of war, and to observe the cases closely for ill effects on the heart and circulation in the lungs. Cases were received at very variable periods after wounding 1/2–22 hours in the selection reported; all had been fit men, young, highly trained, and well fed; all were suffering from physical fatigue, a degree of anxiety neurosis, dehydration, and the effects of severe trauma and blood loss; all received 3,000 units A.T.S. intramuscularly and 2.5 g. sulphamylamide by mouth in addition to other treatment. Resuscitation measures consisted chiefly of control of haemorrhage, dressing and immobilization of wounds with the minimum of disturbance, morphine, sweet tea, and warm venous infusions, supplemented by the application of hot-water bottles and blankets. Infusion fluids were administered under pressure created by attaching a Higginson syringe to the air inlet of the standard giving set. The cases were German and Italian P.O.W. and British troops.

### Case Histories

**Case 1.**—Aged 22. Shell splinter, amputation of R. foot just above ankle, with severe blood loss, about 15.30 hours. Given morphine 1/2 gr. s.c. at 17.10 hours; received 18.40 hours; T. 97.2° F., P. 110, R. 14, B.P. 80/? , Hb 90%. Mentally confused; hands clammy; no urine passed. Heated with bottles; limb dressed and fixed in wire box-splint. By this time he was semicomatose. Transfused with four 600-c.cm. bottles of reconstituted plasma in 20 mins., when the blood pressure rose—85/45, 100/50, 105/55, 105/50—and the pulse rate was 130, 130, 120, 124, thready at first, then stronger. Heart sounds became drumming and lungs remained clear. Five minutes after the last bottle his state was: T. 98.4° F., P. 124, R. 10, B.P. 110/50, Hb 58%. Had a good night; lungs and heart normal. At 08.30 hours, B.P. 95/50, T. 102° F., P. 180, R. 32. Blood volume, 4,350 c.cm.; estimated loss, 1,650 c.cm.; infused 50% of volume on reception.

**Case 2.**—Aged 27. Bomb wound, compound fracture L. femur, with severe flesh and blood loss, at 10.15 hours. Given morphine 1/4 gr. sublingual 10.20 hours, 1/4 gr. s.c. 10.45 hours. When received T. 97.4° F., P. 92, R. 14 (sighing), B.P. 90/10, Hb 104%; mentally clear and apprehensive; hands cold and dry; no urine passed. Given tea and morphine; local dressing of wound with Tobruk plaster (Thomas splint), by which time he was collapsed. Transfused with four 600-c.cm. bottles of reconstituted plasma in 18½ mins., when the B.P. rose from 100/45, 110/60, 120/65, to 140/60, and the pulse rate was 90, 110, 116, 120. During infusion of the first 600 c.cm. the patient complained of tingling of face and hands, and towards the end of the fourth bottle he developed a pain in the wound and across the chest at the nipple level. The heart sounds remained normal throughout. After 5 mins. his state was: T. 99.2° F., P. 98, R. 20, B.P. 140/60, Hb 68%. The patient arrived M.D.S. at 13.05 hours: condition good; T. 100° F., P. 110, R. 20, B.P. 120/68; no pulmonary oedema. Blood volume on reception, 4,533 c.cm.; loss, 1,467 c.cm.; infused 50% of volume after wound.

**Case 3.**—Aged 20. L.M.G. bullet wound penetrating arch of L. foot, with fracture and haematoma, considerable blood loss, at 13.00 hours. Picked up 14.20 hours; received 14.30 hours and given morphine 1/2 gr. s.c. T. 97.2° F., P. 110, R. 16, B.P. 70/? , Hb 96%; comatose; hands cold and clammy; no urine passed. Given morphine, heat, tourniquet (10 mins.), and tight dressing to control ooze. Transfused with five 500-c.cm. bottles of reconstituted plasma in 32½ mins., when the B.P. rose from 90/40, 105/50, 128/40, 140/60, to 140/75, and the pulse rate was 132, 128, 110, 116, 120. At first thready, the pulse became strong and the patient was restless during the infusion of bottle 3. During the infusion of bottle 5 the neck veins became engorged, the face flushed, and the heart sounds drumming. Final state (5 mins.) was: T. 99° F., P. 120, B.P. 132/75, Hb 64%; congestion less; lungs clear; heart sounds normal. Arrived M.D.S. 18.25 hours: T. 99.6° F., P. 100, R. 18, B.P. 128/70; no congestion. Blood volume on reception, 5 l.; estimated loss, 1 l.; infused 50% of volume after wound.

**Case 4.**—Aged 33. Shell wounds both legs, no fractures, but severe blood loss, at 12.15 hours; given morphine 1/4 gr. i.v., 1/4 gr.

i.m., at 17.00 hours. Received 18.30 hours; T. 97.4° F., pulseless, R. 12, B.P. 85/40, Hb 90%; comatose; hands cold; passed 120 c.cm. urine at 02.00 hours. Dressing not changed; given heat; no improvement. Transfused with four 600-c.cm. bottles of serum in 21 mins., during which the B.P. rose from 90/50, 110/50, 150/95, to 155/110, and the pulse rate was 120, 104, 120. Towards the end of the last bottle the neck veins were engorged and slight irregularity of the heart sounds like coupling appeared, which died away after 10 mins. Final state: T. 98.4° F., P. 112, R. 12, B.P. 160/110, Hb 62%. Kept overnight; next day, at 06.30 hours, T. 99.8° F., P. 100, R. 14, B.P. 110/50; lungs clear. Arrived M.D.S. 08.08 hours: T. 100° F., P. 110, R. 12, B.P. 115/70; no congestion. Blood volume on reception, 5,311 c.cm.; estimated loss, 689 c.cm.; infused 47% of volume on reception.

**Case 5.**—Aged 27. Shell wounds legs, extensive loss of flesh and blood from thighs, at 07.30 hours; given morphine 1/2 gr. by mouth at 07.35 hours, and 1/4 gr. s.c. at 12.00 hours. When received, T. 100.4° F., P. 80, R. 14 (sighing), B.P. 105/60, Hb 95%; mentally apprehensive; cold and clammy. Given tea, when he had nausea; felt the worse for treatment. Transfusion of three 600-c.cm. bottles of serum in 19 mins., when B.P. rose from 105/70, 110/80, to 140/60, and pulse rate from 80, 104, to 108. During infusion of the first bottle there was a short rigor for 30 seconds, repeated during bottle 3, when a tight pain across the chest developed towards the end. Final state (5 mins.): T. 99.6° F., P. 96, R. 24, B.P. 140/65, Hb 67%; lungs clear. Arrived M.D.S. 14.30 hours: T. 102.6° F., P. 120, R. 24, B.P. 140/65; lungs clear. Blood volume on reception, 4,307 c.cm.; estimated loss, 1,693 c.cm.; infused 39% of volume.

**Case 6.**—Aged 25. L.M.G. bullet compound fracture tibia and fibula, moderately severe blood loss, at 16.30 hours; given morphine 1/2 gr. at 17.00 hours on admission. T. 97.4° F., P. 90, R. 14, B.P. 145/85, Hb 110%; hands cold and damp; mentally clear. Tight dressing and box splint applied; kept overnight at A.D.S. At 01.00 hours, oozing having occurred, T. 96.5° F., P. 130, R. 12 (sighing), B.P. 75/? , Hb 94%. Transfusion four 500-c.cm. bottles of reconstituted plasma, when B.P. rose from 95/40, 105/55, 110/60, to 125/65, and pulse from 130, 128, 124, to 124. Final state (5 mins.): T. 99.8° F., P. 120, R. 18, B.P. 120/65, Hb 70%. No pulmonary oedema; heart sounds normal. Evacuated in good shape; arrived M.D.S. 08.30 hours: T. 100° F., P. 124, R. 16, B.P. 110/60. Blood volume before transfusion, 4,859 c.cm.; loss, 1,141 c.cm.; infused 37% of volume.

**Case 7.**—Aged 25. Shell wound L. buttock, penetrating abdomen, with moderate blood loss, at 11.30 hours. Given 3/8 gr. morphine 12.05 hours; admitted 14.30 hours. T. 96.8° F., P. 120, R. 18, B.P. 95/50, Hb 98%; hands cold, dry; anxious mentally. Simple dressing with abdominal binder. Transfused two 500-c.cm. bottles of serum in 12 mins., when B.P. rose from 110/55 to 115/55 and pulse steadied from 125 to 110, with relief of abdominal pain. Final state (5 mins.): T. 97.8° F., P. 110, R. 16, B.P. 115/58, Hb 80%. Arrived M.D.S. 17.20 hours: T. 98.4° F., P. 110, R. 16, B.P. 96/60; pale but no air hunger. At operation about 2 pints of blood in abdomen. Blood volume on reception, 4,444 c.cm.; loss, 1,556 c.cm.; infused 22.7% of volume.

**Case 8.**—Aged 27. Mine splinter penetrating L. iliac fossa, with internal haemorrhage, about 16.30 hours. Picked up next day at 11.30 hours; given 3/8 gr. morphine s.c. at 14.00 hours. On reception, T. 97.8° F., P. 130, R. 26, B.P. 45/? , Hb 90%; hands warm; urine nil; delirious. Given heat, morphine, simple dressing, when restlessness subsided and flexed L. leg relaxed. Transfused six 400-c.cm. bottles of reconstituted plasma in 23 mins., when B.P. reacted as follows: 105/62, 105/70, 95/65, 108/70, 95/70, and 90/70, and pulse fell from 160, 158, 146, 140, 140; to 128. No cyanosis, engorgement, or pulmonary oedema occurred, but pulse and heart sounds were of better quality after bottle 2 than after bottle 6. Received at M.D.S. 17.00 hours: T. 102° F., P. 160, R. 40, B.P. 95/40; cyanosis of lips; rales at both bases. Blood volume on reception, 4,800 c.cm.; loss, 1,200 c.cm.; infused 50% of volume.

**Case 9.**—Aged 37. Crush wound of abdomen (? rupture spleen) at 07.30 hours. Admitted 07.55 hours; given morphine 1/4 gr. s.c.; at 07.55 hours; T. 98.2° F., P. 120, R. 20, B.P. 90/40, Hb 110%; drowsy; hands warm. Given heat, tea, elastoplast to lower L. ribs; became paler, respiration sighing. Transfused after 1/2 hour with three 600-c.cm. bottles of reconstituted plasma in 15 mins. B.P. rose from 98/50, 100/60, to 100/60, and pulse from 106, 103, to 110; lungs clear; heart sounds normal. Final state (5 mins.): T. 98.6° F., P. 112, R. 22, B.P. 70/? , Hb 72%. Arrived M.D.S. 11.35 hours: T. 97.4° F., P. 140, R. 14, B.P. 70/? . Given drip transfusion whole blood and sent on; died before arrival. Blood volume on reception, 3,410 c.cm.; loss, 2,590 c.cm.; infusion of 55% of volume.

**Case 10.**—Aged 21. Shell wound of chest with haemopneumothorax and compound fracture of humerus, ? penetrating wound of abdomen, at 07.30 hours. Received 09.00 hours: given 3/16 gr. morphine; T. 96.2° F., P. 128, R. 22, B.P. 75/10, Hb 80%; hands clammy; drowsy. Transfused two 600-c.cm. bottles of serum in

20 mins. During bottle 1 the pulse became stronger, BP 90/20, R 40, P 132, but during bottle 2 he developed a severe pain in the chest and abdomen and felt bubbling and splashing in the chest. Final state (5 mins) T 97° F, P 120, R 40, BP 95/20, Hb 60%. Received MDS 14 30 hours T 101.6° F, P 130, R 40, BP 80/40, condition poor. Sent on with whole blood drip. Died that night. Blood volume on reception, 3,600 c.c.m., estimated loss 2,400 c.c.m., infused 33% of volume.

### Discussion

The 10 cases reported in detail are considered typical of a larger number treated. The majority of battle casualties suffering from shock are not so exsanguinated, and do well with 1,000 c.c.m. of blood substitute transfused in 20 to 30 minutes, preferably being evacuated with a continuous drip running, but where the blood loss is estimated to be severe (about 2 litres) replacement cannot be too speedy. Analysis of the cases on the basis of the formula of Bushby *et al.* (1940) indicates that they lost 1.54 litres of blood on an average and this was replaced as quickly as possible with some excess to allow for oozing and loss of serum from damaged surfaces, to the extent of 33% of the intact volume or 43.4% of the blood volume after wounding. The incidence of reactions with rapid transfusion seemed less than that found when small quantities of fluid were given slowly (1/2 hour to 1 pint). Where sufficient time had elapsed for the haemoglobin to fall considerably there appeared to be no more signs of overloading of the circulation than in fresh cases, but what was most marked, and is clearly brought out in the case histories reviewed, was that cases of embarrassment of the cardiovascular system from toxæmia (Case 8), damage to the thoracic contents (Case 10), or continuing internal haemorrhage (Case 9) do badly with rapid transfusion. The ideal case for this technique is one of trauma to the limbs with gross haemorrhage. Perhaps cases of internal haemorrhage not involving gross toxæmia would do equally well if haemostasis were secured by operative means shortly after wounding.

It is widely held (Moon, 1938) that even in profound shock the heart is capable of functioning strongly, and if supplied with enough fluid can produce a normal or higher than normal blood pressure. Shock is defined as a state of circulatory deficiency, neither cardiac nor vasomotor in origin, characterized by decreased blood volume, decreased cardiac output, and increased concentration of the blood. Shock may be produced by trauma, etc. (when haemoconcentration takes place), or by haemorrhage (which is followed by haemodilution, fall in Hb and in r.b.c. count), or by a combination of these factors.

According to Moon *et al.* (1941) the effects of haemorrhage and of shock should be clearly distinguished. The initial similarity between shock and the effects of haemorrhage results in part from the fact that each evokes the same mechanism of compensation and in part from the deficiency of circulation which each produces. Points of contrast between shock and the effects of haemorrhage are so numerous that the assumed identity of these conditions is no longer tenable. In traumatized dogs Cullen *et al.* (1941) found that haemoconcentration was not a significant factor and that the earliest sign of shock was a marked reduction in the peripheral blood flow, there being an approximate correlation between the product of the change in blood pressure and the haemoglobin percentage with the circulation time (Olson *et al.*, 1941). Werle *et al.* (1942) indicate that a continuing state of post-haemorrhagic hypotension is not necessarily equivalent to shock, because (in dogs suffering from the effects of bleeding only) arterial pressures and pulse rates were restored to normal for many hours by reinfusion of the withdrawn blood even when such animals were on the verge of cardiac or respiratory failure and the viscera showed no pathological changes at necropsy, whereas the converse was found in dogs suffering from traumatic shock without blood loss. If, however, the intensity and duration of post-haemorrhagic hypotension were great enough then haemorrhagic shock "developed, marked by failure of transfusion to restore the circulation, and oedema, etc., of gut and lung.

Consideration of the above case histories shows that these casualties suffered mainly from post-haemorrhagic hypotension combined with a certain degree of shock, except Cases 8 and 10, in which the latter predominated. Case 9 illustrates the effect of continued hypotension leading to "haemorrhagic

shock." They show that, if shock is not too profound, (a) the heart is capable of dealing adequately with large volumes of infused fluid, and (b) the vascular bed is capable of retaining this added fluid for utilization by the circulation. It is evident that if the standard blood volume of the intact subject be taken as 6 l. the hypotension develops after the loss of 25% of the blood volume (average blood loss after wounding calculated from the formula given by Bushby *et al.* (1940), and can be speedily and successfully combated by the rapid infusion of 33% of the initial blood volume. The subjects considered cannot have suffered from any great degree of traumatic shock affecting vascular "tone" or of anoxic depression of the myocardium since the heart could successfully deal with 43% addition to the available fluid volume.

### Summary and Conclusions

Details are given of 10 battle casualties suffering from shock due to trauma and blood loss, and the effect of rapid replacement of the estimated loss of fluid on the temperature, pulse, respirations, blood pressure, haemoglobin, and general condition.

Rates of infusion in the nature of 143 c.c.m. a minute in no way embarrassed the cardiac mechanism.

Cases of toxæmia (peritonitis) and lung wounds developed pulmonary oedema after massive transfusion, cases of peripheral trauma and haemorrhage without sepsis did not.

The statement of Edwards *et al.* (1940) is not considered exact, while that of Keith (1919), though frequently correct, is misleading. Blood pressure readings alone are not sufficient to estimate blood loss or to differentiate serious states of shock from temporary hypotension.

Reactions other than transient rise of temperature were few.

It is strongly recommended, therefore, that an estimate of blood volume lost be made in all battle casualties thought to need transfusion, from the history and the findings modified by experience, and that this be checked subsequently from haemoglobin readings taken before and after infusion of plasma, which must remain the mainstay of the infusion technique in the field unless refrigeration facilities increase greatly. The estimated fluid loss should be replaced at speed with the aid of pressure, thus ensuring adequate volume replacement and preventing simple post-haemorrhagic hypotension from developing into true shock.

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In a Chadwick Lecture entitled "Some Observations on the Management of Hospitals in Peace and War" given on Oct. 31, Mr. Somerville Hastings, F.R.C.S., said that no single hospital could provide economically and efficiently for every type of case. Hospitals must therefore be grouped under the direction of a central co-ordinating body. Nevertheless, local interest must be maintained by a committee of management for each individual hospital. The staff of a hospital must be able to make suggestions for the improvement of its administration, and medical, nursing, and lay staff committees were desirable. Each department of a hospital, general or special, should be organized on the clinical unit system, with a doctor of consultant status in charge. The superintendent of a general hospital should not be a skilled clinician, but a doctor with administrative experience. The medical staff of a hospital should be full-time officers who should live in or near by. They should have complete professional, intellectual, and political freedom and there should be abundant clerical assistance at their disposal. Change of hospital was desirable, at any rate till middle age. Shortlisting for promotion should be undertaken mainly by doctors engaged in the same branch of practice. The presence of students added to the prestige of a hospital and improved both the status and the efficiency of the staff.

## UNDERWATER BLAST INJURIES OF THE ABDOMEN\*

BY

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In modern sea warfare abdominal injuries caused by underwater blast are common, and increasing numbers of cases are now being reported. As the mechanism underlying the injuries is still uncertain, and the mortality in cases with intestinal perforations coming to operation in the series reported by Pincock and Wood (1943), Goligher, King, and Simmons (1943), Gill and Hay (1943), and Cameron, Short, and Wakeley (1943) has varied from 100% to 50%, it is important to study all cases available. I should like, therefore, to give my experiences of the condition, and the opinions which I have formed about it, based on the personal treatment of 18 patients, nine of whom were subjected to operation, and the interrogation and examination of 22 others who were under my care after operation elsewhere, two of whom required late operations for intraperitoneal abscesses—one subphrenic and one in the right iliac fossa.

The wave of positive pressure may be caused by depth charges, already primed, which go off when a sinking vessel submerges to the required depth; or by bomb, mine, or torpedo blast directed at other ships in the vicinity; or by depth charges dropped by neighbouring ships at an offending submarine. The blast in water differs from that in air, physically in that there is no after-wave of negative pressure, and clinically in that the abdomen is more affected than the thoracic cavity. Probably the fact that the chest is usually partly out of the water and protected by a life-jacket of the "Mae West" type accounts for the latter difference. It is interesting to hear described the actual sensations experienced by the victims. All feel the shock of the explosion on the abdomen. Many describe it as "like a severe kick," others as "a vice-like tightening around the abdomen," others as "if the abdominal contents were being forced up through the body into the head," and others as "if a giant hand were squeezing me from the waist downwards." Many have the sensation of their legs being shot away, and several have actual temporary paraplegia. None of my patients has described pain in the testes noted by other writers. The abdominal pain usually abates, and most patients manage to swim. Frequently no abdominal pain is noticed until they are picked up by another vessel, when they find that they cannot straighten themselves or walk because of it. One of my patients actually had a shower and a meal before he felt any abdominal pain. It is not uncommon after rescue for an urgent desire to defaecate to occur and a blood-containing stool to be passed. Only one of my patients complained of any difficulty in micturition. Vomiting is a very common symptom, and is often erroneously attributed to the swallowing of oil-contaminated sea-water. Three of my patients complained of chest pain, but none had haemoptysis. In no case was there any injury to the parietes.

### Clinical Condition

These cases have been subjected to a generalized severe disruptive abdominal blow, which affects all the abdominal contents, including blood vessels and nerves. Many die at once, or in a very short time, from shock and haemorrhage. The clinical picture in those that survive to be picked up varies according to the time interval after the injury at which they are seen and the extent of the internal injuries. Although they can be very ill without perforations having occurred, in general the more severe the injuries, particularly if intestinal perforations are present, the more severe the abdominal pain and vomiting and the more severe the shock. When seen in the later stages the shock has disappeared and the condition is one of spreading peritonitis. The first essential of diagnosis, no matter at what stage the patient is seen, is to decide if intestinal per-

foration has occurred or not. Many have written on the excellence of the general condition in some of these cases although perforations have been present, and they have been misled into postponing operation so late that death has followed.

While all aspects of the case, both general and local, must be taken into account in coming to a decision, I believe that it is the local signs to which the greatest attention must be paid. Abdominal tenderness, rigidity, and the absence of peristaltic sounds, and diminution in liver dullness, must all be taken into account. The most important are tenderness and rigidity. In the early cases the latter is of the typical board-like variety. In the later cases—and the cases are usually late owing to the distances they have to be transported to hospital—the rigidity is more muscle resistance associated with some abdominal distension. Skill in abdominal diagnosis is bred of long experience, and each must learn to assess the relative value of clinical findings and come to a definite decision. In these cases it is essential for the safety of the patient to decide early whether an intestinal perforation is present or not. It may be simulated by intraperitoneal haemorrhage and by injury to the lungs. One sign can no more make a diagnosis than one swallow can make a summer. There is one sign, however, on which I personally place the greatest reliance. Abdominal examination is carried out extremely gently with the flat hand. The abdomen is generally examined for rigidity both in inspiration and in expiration. If the rigidity is caused by peritonitis due to perforation it does not relax during expiration. I have never known this sign to fail. Some of these cases have blast injury to the lungs, which may have accentuated the abdominal pain and rigidity. The actual local signs of this injury are extremely slight, and consist of an increased respiratory rate, diminution of the percussion note, diminished air entry, and rales in the affected part of the lungs. When no perforation has occurred the abdominal pain disappears in a day or two without any further symptoms. However, sometimes intestinal haemorrhages arise, and are manifested by haematemesis or melaena. Cases have also been reported in which perforations of the intestine have occurred after seven days—no doubt due to infection of an intestinal haematoma, with late perforation.

### Pathological Lesions

**Haemorrhages.**—A common finding in these cases is subperitoneal haemorrhages. In my experience these are of three types—viz.: (1) Scattered pin-point haemorrhages beneath the peritoneum covering the bowel, usually parts of the terminal ileum, and pelvic colon. (2) Peculiar linear subperitoneal haemorrhages arranged in transverse rings around parts of the terminal ileum. (3) More massive subperitoneal haemorrhages of irregular shape on various parts of the bowel, but particularly over the ascending colon and in the subperitoneal tissues lateral to it. I have also seen small petechial haemorrhages in the mesentery of the terminal ileum.

**Perforations.**—Perforations have been found in my cases in a loop of the terminal ileum 6 in. to 12 in. long, and about 2 ft. to 3 ft. from the ileo-caecal valve—in the apex of the loop of the pelvic colon—and in the ascending colon just below the hepatic flexure. In size the perforations have varied from a pin-point to 3 cm. in diameter. They may occur on the antemesenteric border of the bowel or on one of the lateral walls. Some have been situated just at the attachment of the mesentery to the bowel. In some cases the perforation has been an oblique slit in the bowel wall near the mesenteric attachment, and has been found only on careful examination. Frequently only one perforation is present, but one of my patients had three perforations in the ileum and two in the pelvic colon.

**Personal Cases: Post-mortem Findings.**—In addition to findings noted at operation, at necropsy submucous haemorrhages have also been found, particularly in the lower ileum. In one case there were two curious herniations of the mucosa of the colon through the circular muscle just below the splenic flexure and in the pelvic colon. In both sites there was marked haemorrhage in the wall of the bowel. Some interstitial haemorrhage into the free anterior margin of the liver was found in one case. In one fatal case almost the whole of the right lung was the site of massive interstitial haemorrhage, and to the naked eye looked very much like liver. Micro-

\* A paper read before the Inter-Allied Medical Congress, Algiers, Feb. 1944.



scopical examination of the intestine has shown submucous haemorrhages with rupture of the muscular coat in parts. Examination of the affected part of the lung has shown the typical appearances of blast-lung.

**Additional Pathological Findings Reported by Others.**—Perforations of the duodenum, caecum, and transverse colon have occurred. Sometimes tears of the mucosa of parts of the bowel have been observed. Some writers have noted haemorrhages below the tunica albuginea of the testes in fatal cases. Similar lesions have also been produced experimentally in animals.

#### Mechanism of the Lesion

It is interesting to note that it is only gas-containing abdominal viscera which are markedly affected, and it has been suggested that it is the liberation of kinetic energy by the pressure wave at surfaces where two different media join which is the cause of the injury. There is some experimental evidence to suggest that the wearing of an absorbent protective over the abdomen will lessen the injury. From my cases the effective distance from the explosion appears to be anything up to 200 yards. Patients facing the explosion are usually more severely injured than those with their backs to it. Although the best safeguard against injury is distance, the safest position appears to be floating on the back. I have never seen a person who was floating on his back at the time of explosion who has sustained any severe intra-abdominal injury. Two patients whom I have treated were in the water together; one was floating on his back, but the other was unable to do so because of some difficulty with his life-jacket. The former was uninjured, and the latter sustained a perforation of the ileum.

#### Treatment

Treatment is carried out on orthodox lines. Rest, warmth, and morphine are essential. If much shock is present intravenous infusions may be used, but they are better avoided because of the possibility of associated lung damage. If they are essential, blood or plasma is the safest. Where marked chest lesions are present oxygen should be administered by the B.L.B. mask. When perforation is not thought to be present the case is carefully observed until recovery is complete. It is most important, because of the danger of late perforation, to keep the patient under observation for at least ten days. If a perforation is diagnosed operation must be undertaken as soon as the patient is fit for surgery. In late cases, although the shock has been recovered from, I always use a continuous intravenous drip of saline and glucose given at a slow rate, so that fluid by mouth can be very limited after operation, and a solution of sulphapyridine can be conveniently given by it. The anaesthetic is of importance. Owing to associated chest lesions ether is contraindicated. Spinal analgesia, skillfully used, is suitable for these cases if shock has been overcome. I have also found intravenous pentothal, combined with local block to give relaxation, very useful in these cases. The abdomen is opened by a right paramedian or midline incision. The intestine is carefully examined for perforations, and those found are carefully sutured and oversewn. All blood and intestinal contents, and inflammatory exudates, are sucked out of the peritoneal cavity. In the absence of sulphadiazine, or other more suitable sulphonamide preparation, I have usually gently swabbed the peritoneal cavity with a weak solution—about 1%—of sodium sulphapyridine. The wound is closed, with drainage of the peritoneal cavity. When the colon is involved I have performed suture in the ordinary way with success. On one occasion when there was a large irregular sloughy perforation in the ascending colon I performed exteriorization. Though it was successful I have the feeling that it was unnecessary and that it would probably have been safe to perform simple suture. In late cases such as I have treated it is essential, after operation, to have continued gastric aspiration through an indwelling Ryle's tube and fluid intravenously by drip. This method, the greatest advance in surgical treatment in the last thirty years, is a great life-saver. It is amazing how long patients can go with this artificial existence, with large quantities of fluid being withdrawn from the bowel daily, and make an excellent recovery. Combined with the intravenous glucose-saline, I always give 4 to 5 g. of soluble sulphapyridine daily for 4 to 5 days.

#### Personal Cases

Eighteen cases have been treated, of which 5 were admitted to hospital 20 hours after the injury and the remainder 16 hours after. Two estimated that they were respectively 500 to 700 yards away from the explosion, and one that he was 200 yards away; two were 100 yards distant, and the remainder from 5 to 50 yards. Neither of the first two had any symptoms, and one who was 100 yards away but floating on his back escaped injury entirely. The other 15 all had symptoms of varying degrees of severity. The one who was 200 yards away had melaena only for a few days. Five patients had some abdominal pain and vomiting on admission, but recovered with conservative treatment. One of these collapsed suddenly on the night of admission, and was thought to have had an internal haemorrhage. He recovered with conservative treatment, and passed a melaenic stool two days later and had melaena for a few days. No later complications occurred among these cases, and all made a complete recovery. Nine cases were submitted to operation. Eight of these were thought pre-operatively to have perforations. The other was believed to have a perforation with local peritonitis, or a large sub-peritoneal haematoma. It was thought safer to operate. At operation perforations were found in all eight cases. Four had solitary ileal perforations only, one had three ileal perforations, one had two ileal perforations and a perforation of the pelvic colon, one had two ileal perforations and two in the pelvic colon, and one had a perforation of the ascending colon just below the hepatic flexure. Suture was performed, in all cases with drainage of the peritoneal cavity, except in those with a single ileal perforation, when the wound alone was drained. In the case of rupture of the ascending colon the bowel was exteriorized; as the transverse colon was full of hard faeces it was thought that there might be abnormal tension on the sutured bowel. In the ninth case a large sub-peritoneal echymosis was found covering most of the ascending colon and the peritoneum lateral to it. Appendicectomy was performed and the wound closed.

**Anaesthetic.**—Spinal analgesia with heavy percaine was used on three occasions and light percaine on one occasion. Pentothal, local nerve-block, nitrous oxide and oxygen, in combination, were used on each of the other five cases.

**Results.**—Two deaths occurred. One of these cases had two perforations of the ileum and a large 2-cm. perforation of the pelvic colon with diffuse peritonitis. At necropsy a severe degree of blast-lung was found. The other death occurred, just as operation was about to be started, in a short-necked emphysematous patient. A spinal analgesic had unfortunately been administered by the Etheringtoo-Wilsoo technique. It was undoubtedly the cause of death. At necropsy he was found to have a large perforation in the ileum and a minor degree of blast-lung. In my series there is thus a mortality of 22% among operative cases.

**Post-operative Complications.**—Apart from peritonitis, from which all the patients were suffering, three were much troubled by a widespread purulent bronchitis, but made satisfactory recoveries. The patients with the perforation of the ascending colon developed acute small-bowel intestinal obstruction two months after operation. At the second operation a fibrous band beneath which a loop of the jejunum was tightly constricted was divided. To make subsequent closure of the colostomy safer a transverse ileo-colostomy was performed at the same time. No other complications have occurred in my cases. Two cases previously treated elsewhere for perforations of the bowel were operated upon successfully by me: one two months later for an intraperitoneal abscess in the right iliac fossa, and the other three months later for a right posterior subphrenic abscess.

I wish to thank Col. T. Menzies, O.B.E., officer commanding the hospital at which these cases were treated, for permission to publish these results.

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# TOXIC REACTIONS AFTER ADMINISTRATION OF PARALDEHYDE

BY

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The sedative drug most widely used in mental hospitals is paraldehyde. Scanty references in the literature to ill effects attest to its high safety margin and its wide range of permissible dosage. However, the danger of decomposition on storage of B.P. paraldehyde has been emphasized by pharmacists (Toal, 1937). The present report furnishes clinical evidence of such an occurrence.

## Clinical Observations

Six out of nine patients were concerned. To each of them 120 min. of B.P. paraldehyde was given during the night as a hypnotic draught. These patients later showed a variety of symptoms, ranging from drowsiness and headache to a comatose condition, which persisted for more than 24 hours. All were chronic mental patients, well accustomed to the drug; neither before this nor since has any one of them shown a similar reaction. Dispensing on this occasion was according to the normal practice at the Bristol Mental Hospital. This is as follows. Paraldehyde, for night use, is dispensed each day in separate bottles containing 120 min. of the drug with mucilage and water to 1 fl. oz. A supply of these draughts is given to the night sister, to be administered according to indications. There are usually a number of spares in excess of estimated requirements. These draughts supplement diurnal sedatives, which may or may not contain paraldehyde. On Saturday a double supply of night draughts is issued for the week-end.

All the toxic reactions were reported on Monday morning and were confined to a group of female patients, every one of whom had received paraldehyde on the previous night. The week-end draughts were therefore suspect. The issue of paraldehyde was stopped pending investigation, but this step was taken too late to allow examination of the draughts as issued on Saturday. Arriving on duty on Monday morning, the dispenser drew the residue of one carboy, about 6 fl. oz., into a glass measure and filled up to 20 oz. from one newly opened; hence the dilution of the residue was 1 part in 3 or 4. (Paraldehyde is supplied in 40-lb. carboys, which cover the requirements of the hospital for about 7 days.) From this new mixture he prepared draughts for use that night. These freshly prepared draughts he packed, as was customary, in dispensing boxes for male and female wards. Together with these latter draughts he included those that were unused from Saturday. It was impossible, thereafter, to separate suspect (Saturday's) from non-suspect (Monday's) draughts. The remainder of the mixture of old stock and fresh paraldehyde, in the 20-oz. measure, was reserved for subsequent analysis.

The following combination of circumstances explains why all the toxic effects occurred only in a small group of female patients and on one night. The week-end draughts were dispensed late on Saturday afternoon, when the carboy of stock paraldehyde was nearly empty. Paraldehyde, believed to be pure, was drawn from the bottom of the container on this, as on previous occasions. The draughts for the male wards were dispensed first. Subsequently the double supply for the female side was made up from the last paraldehyde used that week, drawn from the almost empty carboy; about 6 oz. remained. Paraldehyde is widely employed as a sedative at this hospital, either alone or combined with other drugs. For use during the day it is dispensed in bottles containing 1½ to 3 fl. oz., which, according to indications, will last each patient 3 to 6 days. In the dispensing of these mixtures a large quantity of paraldehyde is used. If these mixtures had not all been dispensed before the carboy was nearly or entirely empty a new

carboy would have been tapped and there would have been no residue to be dispensed in single-dose (night) draughts. It was therefore a rare coincidence that the suspect toxic residue was administered to so many different individuals. That all the reactions occurred after Sunday may be explained by the manner of packing the bottles in the night sister's box. It is reasonable to suppose that bottles made up first from higher levels of paraldehyde, above the "concentrated residue," were placed in one end of the box in rotation and were administered on Saturday and Sunday night in the same order. There is therefore sufficient evidence to attribute all the toxic reactions to administration of paraldehyde from the residue of the carboy.

Emergency draughts on Sunday night were administered to 9 female patients. Seven showed toxic reactions; two senile patients were unaffected. These patients belong to five different wards and, although some had received sedative medicine during the day, the only source of supply common to all was the stock of night draughts. Factors such as diet can be excluded. All patients were in reasonably good health. The symptoms may be briefly summarized as follows:

*Case 1.*—Aged 52, chronic schizophrenia. Slept after paraldehyde at about 10 p.m. Could not be roused next morning, but about 10 a.m. was drowsy, ataxic, with drunken speech; looked ill and was unable to stand; tendon reflexes almost absent; pupils small, practically inactive; cloud of albumin in urine; pulse weak and thin; blood pressure 100/80 mm. Hg. Remained drowsy all day; could stand next day but did not recover for another 24 hours.

*Case 2.* aged 57, chronic schizophrenia, and *Case 3.* aged 39, also chronic schizophrenia. Almost identical to Case 1, but no albuminuria. Normal in 48 hours.

*Case 4.*—Aged 53, chronic mania. Awakened, got up, collapsed before breakfast; returned to bed and was drowsy for about 10 hours; normal thereafter.

*Case 5.*—Aged 75, senile dementia. Draught at about 1 a.m.; very confused, drowsy, looked ill; coated tongue, tendon reflexes almost absent, pupils fixed, no reaction to light; could scarcely be roused all-day; mumbled in incoherent fashion; slept off and on for the next 24 hours. Recovered slowly in the course of the next 48 hours.

*Case 6.*—Aged 55, mild depression. Draught at midnight; at 10 a.m. still asleep; roused an hour later; conversed with difficulty in a drunken voice; complained of severe headache and nausea. She slept most of the time for the next 24 hours, and was not free from subjective symptoms for a further 24 hours.

*Case 7.*—Aged 54, chronic neurosis. Had been in the habit of demanding and receiving two draughts each night almost continuously for years, in addition to any sedative medicine prescribed by day. Her regular nightly requirements were therefore not less than 240 min. of paraldehyde. She was an exceptionally well built woman, with a highly developed tolerance for sedatives of all sorts. She received one draught at 10 p.m., woke up at midnight, was restless, and asked for another. It was administered at 1 a.m. She slept and could not be roused for about 10 hours. She then spoke in a slurred, drunken voice, and complained of violent headache, giddiness, and nausea. For the next 24 hours she remained very much the same, and was not free from symptoms for a further 24 hours.

All these patients were treated similarly with copious fluids, glucose, vitamin B complex, strong coffee, and nikethamide (coramine) 4-hourly for the first 24 hours. Although there was no fatality, great anxiety was felt about Case 1 and to a less extent Cases 2, 3, and 5. The clinical picture was that of intoxication with a drug which exercised a severe depressant effect on higher cortical function and which evidently was slowly eliminated from the body. Patient No. 7, who was well acquainted with the effects of alcohol, described the after-effects as resembling an extreme "hangover," but more prolonged and much worse than anything she had ever experienced. There were no residual mental reactions and no signs of permanent damage to any part of the central nervous system.

## Toxicity Tests

These were conducted as follows: The minimal lethal doses of (a) the suspect paraldehyde and (b) a fresh sample of paraldehyde, which complied with the requirements of the *British Pharmacopoeia*, were determined. Suitable doses of 5% solutions (in physiological saline) of the two preparations were injected subcutaneously into mice. The results are recorded in the accompanying Table.

Table showing Results of Toxicity Tests

Dose in ml. of a 5% Solution per 100 g. Mice used (Substances in injections)	Proportion of Mice Killed	
	Suspect Paraldehyde	Control Paraldehyde
1.00	3 out of 5	0 out of 5
0.15	3 " " 5	0 " " 5
0.30	4 " " 5	1 " " 5
1.45	12 " " 5	0 " " 5
3.60	4 " " 5	4 " " 5
3.75	4 " " 5	1 " " 5
3.90	3 " " 5	3 " " 5
4.05	5 " " 5	4 " " 5
4.25	5 " " 5	5 " " 5

Mice injected with equal amounts of the suspect and of the control solution were tested on the same day. The test animals were all of the same batch of mice, and had been fed on a standard diet for several weeks before use. LD50 was determined by Karber's method (Burn, 1937). The following figures were obtained: LD50 for the suspect material = 3.69 ml/100 g mouse, LD50 for the control paraldehyde = 3.99 ml/100 g mouse (both figures in terms of a 5% solution). In other words, a somewhat smaller average dose of the suspect material was needed to kill 50% of the mice tested. It will be remembered that the suspect sample was a 1 to 3 or perhaps 1 to 4 dilution of the clinically toxic material with fresh innocuous paraldehyde. Therefore only a small difference between the LD50 of the suspect and the control was to be expected. It would be reasonable to assume that had the suspect material not been diluted the difference would have been more pronounced, the abnormal clinical symptoms and signs can therefore be fairly attributed to a contaminating toxic substance in the suspect paraldehyde and not, for example, to errors of dispensing. This conclusion was supported by the results of tests for chemical purity prescribed by the B.P. 1932. These tests, which Mr E. Lloyd, of the Bristol Royal Infirmary, was kind enough to perform gave the following results:

Boiling point, acetaldehyde, peroxidized compounds, acidity were all within limits. Melting point, 10.5° C (B.P. melting point is not less than 11° C). Distillate from boiling point determination discoloured.

Mr Lloyd added the following remarks:

"Impurities which may be removed by washing are within limits. The slightly low melting point indicates the presence of some other impurity."

### Discussion

It is clear from the circumstances under which the present cases of "paraldehyde poisoning" occurred that the toxic effects were due to decomposition products (or contaminating constituents) of the paraldehyde preparation. In a series of 7 hospitalized patients no physical disability obscured the clinical picture. The multiplicity of cases and the system of dispensing rendered a dispensing error unlikely. The same dose of paraldehyde drawn from less- or non-deteriorated samples had previously been administered to these patients on many occasions. The response to the standard dose of paraldehyde was therefore known, and the abnormal symptoms described cannot be attributed to idiosyncrasy. The patients have since received the same dose of a paraldehyde preparation which complied with pharmacopoeial requirements without exhibiting any abnormal reaction. Toxicity tests on mice, when compared with the effect of a "normal" preparation of paraldehyde, showed a smaller mean lethal dose (LD50) of the suspect sample.

Toal who investigated 7 commercial samples of paraldehyde in 1937, found that only one satisfied pharmacopoeial requirements. Formation of peroxidized compounds and an increase of acidity were the main changes which had taken place. One case of "paraldehyde poisoning" traced to excessive formation of acid compounds in the deteriorated sample has been recorded (Hutchison, 1930). An additional change noted by Toal was the increase in the specific gravity of the deteriorated samples. This was not associated with the development of acid or peroxidized compounds, but, in his opinion, was due to decomposition and polymerization combined. Our sample did not contain excessive amounts of acid or peroxidized compounds. Its toxicity, as manifested clinically and in a toxicity test on

mice, will therefore have to be ascribed to chemically undefined products of deterioration, possibly to polymerization products of acetaldehyde other than paraldehyde. It is remarkable that toxic effects of paraldehyde in therapeutic doses have not been noted more often, if decomposition of paraldehyde occurs as frequently as Toal's findings suggest, and, to our knowledge, no series comparable to ours appears in the literature. However, several reasons for this may be advanced: (1) in isolated cases it may have been difficult to exclude the possibility that an overdose had been administered by accident, (2) when used as a basal anaesthetic a toxic effect of paraldehyde may have been masked by the subsequent use of a volatile anaesthetic or may have been attributed to the latter, (3) if the deteriorated sample appeared to furnish the pharmacological picture of an enhanced action of pure paraldehyde the toxic effect may have passed unnoticed, especially if the drug had been given to a single case for the first time. A more intense and prolonged effect of paraldehyde may have been attributed to idiosyncrasy (Brown, 1935; Kotz, Roth, and Ryon, 1938).

The clinical picture presented no specific features. Severe cases showed ataxic drunken speech and corresponding gait. There were no significant reflex or ocular abnormalities, but all patients complained of intense headache, a feeling of nausea, and prolonged drowsiness. They compared the subjective symptoms to those of the after-effects of a severe intoxication with alcohol. (It is of interest that the U.S.P. XI requires that paraldehyde should comply with purity tests for impurities derived from fusel oil and amyl alcohol.) The effect, though largely due to a cortical disturbance, was evidently unlike the response to overdose of pure paraldehyde. The long duration of the "hangover" and the slow recovery were remarkable, especially in one of the patients (No. 7), who, as a drug addict, showed herself, both before and since the event, to be highly resistant to hypnotic drugs.

The present report cannot detract from the value of paraldehyde as a clinically satisfactory and, normally, very safe hypnotic. It may, however, be regarded as a toxicological supplement to the observation (Toal, 1937, and others) that the drug, though stable when stored according to the prescriptions of the B.P. 1932, will deteriorate "under the practical conditions of every day use." It reinforces the plea for an official sanction for the addition of a suitable preservative to the pharmacopoeial preparation of paraldehyde. Its storage in use should be carefully supervised and the residue of any that has been in hand some time should be regarded with suspicion. In mental hospitals only enough emergency draughts for one session should be kept and, for purposes of check up, the date of issue should be stamped on the label. In general hospitals, where paraldehyde is used as a basal anaesthetic, a large quantity should not be stored and only fresh supplies should be administered.

### Summary

Severe and alarming toxic reactions after the administration by mouth of 120 min doses of paraldehyde were observed in a series of 7 out of 9 mental patients.

A toxicity test on mice showed that the suspect sample had a higher toxicity than that of a standard preparation.

The suspect sample did not conform entirely to B.P. requirements.

The toxic reaction was due not to acid or peroxidized substances but to some unknown product(s) of decomposition.

The clinical picture was similar to a severe intoxication with ethyl alcohol, but the 'hangover' was more prolonged.

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S. Zelman (*Amer J med Sci*, 1944, 207, 461) determined the blood diastase in a series of 89 cases of mumps on admission to hospital and on discharge. 73% were above normal on admission and 9% on discharge, 3% were subnormal on admission and 20% on discharge. Of this series 15% showed evidence of pancreatitis some time during the course of the illness. In the pancreatitis cases there was an especially high percentage of increased diastase values on admission.

## Medical Memoranda

### Cranial Nerve Paralysis following Cerebrospinal Fever

The chief interest in the case described lies in the picking out of two different cranial nerves on opposite sides and the escape of closely adjacent nerves

#### CASE RECORD

A coolie aged 20 was admitted to hospital at 5.30 p.m. on Dec. 19, 1943. He was semiconscious, extremely restless, and resistant to examination. A history of headache and fever of one day's duration was obtained from his companions. On examination the temperature was 102.6 F., there was marked nuchal rigidity, but Kernig's sign was absent. The pupils were equal and circular and reacted sluggishly to light; there was no strabismus. Heart and lungs and abdomen, nil abnormal. Urine, nil abnormal. Lumbar puncture was performed and very turbid CSF under low pressure obtained. Microscopically many pus cells and Gram-negative intracellular diplococci were seen. On culture a pure growth of *N. meningitidis* was obtained.

The patient was treated with sulphapyridine, 2 g. of "daganan soluble" being given intravenously at once, and 1 g. sulphapyridine orally every 4 hours thereafter. A total of 31 g. was administered. On Dec. 20 ptosis of the right eyelid was noticed, and on closer examination a complete third-nerve paralysis on the right was discovered. The right eye was deviated laterally and the patient could not move it upwards or nasally. Slight downward movement accompanied by a clockwise rotation of the globe was possible, showing that the fourth nerve was unaffected. The pupil was dilated and fixed and there was slight oedema of the bulbar conjunctiva.

The general condition steadily improved but the third-nerve paralysis remained. It was not until Jan. 2, 1944, that it was noticed the patient was unable to close the left eye completely and that he had difficulty in keeping saliva in his mouth. On examination a bilateral facial paralysis was found. By Jan. 8 the seventh-nerve paralysis on the right side had cleared up, but it remained on the left. There was now inability to open the right eye fully or to close the left eye. The right side of the brow could be wrinkled and the right corner of the mouth elevated. An attempt was made to determine if there was any loss of taste sensation on the left, but owing to language difficulties and lack of co-operation by the patient no definite conclusion was arrived at. Similarly it was not found possible to determine if the eighth nerve on the left side was affected. There appeared to be no sensory loss in the distribution of the fifth nerve. The third, fourth, and sixth nerves on the left were unaffected. The Kahn test was negative.

After 3 months—on March 7—the condition had almost completely cleared up, there was slight external strabismus of the right eye when at rest, but full external ocular movements were possible. There was still slight weakness of the left side of the face.

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### Diphtheria in an Infant

It is appreciated that nasal diphtheria may occur even in the newborn, and the following report of such a case includes a record of the state of the mother in relation to diphtheria.

#### CASE HISTORY

A male child was born on March 24, 1944, the first child of its parents. At birth it weighed 7 lb. On March 31 it developed a purulent nasal discharge, and on April 9 was admitted to hospital, a nasal swab being positive. It was a normally nourished child but had a profuse watery nasal discharge. There was no clinical sign of faucial diphtheria. Routine swabs from nose and throat on admission gave growths of the intermedius type of Klebs-Loeffler bacillus. It was given 4,000 units of diphtheria antitoxin intramuscularly. The mother denied any symptoms to suggest diphtheria, and was found to be swab-negative and strongly Schick-positive. The nasal discharge continued and swabs were persistently positive until July 12. During the interval a virulence test was twice performed. On each occasion the result was positive. Throat swabs became negative after May 15. The child's Schick test at July 10 was negative. The only other item of interest during its stay in hospital was an intimate exposure to a case of measles developing in the next cot. Protection against this infection was apparently given by the intramuscular injection of 10 c.c.m. of fresh convalescent measles serum.

The patient's general condition throughout was satisfactory, and on discharge from hospital on July 24, after three successive negative swabs from nose and throat, his weight was 11 lb. 8 oz.

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## Reviews

### ALLERGY AND ANAPHYLAXIS

*Allergy, Anaphylaxis and Immuno-therapy. Basic Principles and Practice.* By Bret Ratner, M.D. (Pp. 834; illustrated 58.50 or 47s.). Baltimore: The Williams and Wilkins Company, London: Baillière, Tindall and Co.

Allergy is a medical topic much less talked and written about in Britain than in America, where, indeed, it seems to be more prevalent phenomenon than it is here. It is not a popular subject with the medical student, and most practitioners have rather hazy notions about what it is or is not. This volume of over 750 closely written pages (and 56 pages of references) will lighten his darkness, for all aspects of allergy, anaphylaxis, from the experimental and theoretical to the clinical and practical, are fully described and often graphically explained. It tells about the nature of the proteins, antitoxins and the like, which are mostly responsible for allergic reactions, the clinical manifestations and laboratory findings in such sickness, and the methods for recognizing the hypersensitive individual and for preventing serum accidents. Transfusion risks are discussed, and the chapter on sulphonamide sensitivity is particularly valuable and topical; numerous examples are given of the accelerated type of allergic reaction to the drug, especially in patients who had shown sulphonamide sensitivity during an earlier course. The practitioner will find the section on immuno- and chemo-therapy of bacterial infections, listed alphabetically, very useful, though the expert may question some of the views and recommendations expressed there. Unfortunately there are no chapters devoted specifically to such allergic diseases as asthma, hay-fever, eczema, and food allergy. For the immunologist there are good descriptions of the mechanism and rationale of allergic and anaphylactic phenomena, including physiological pathology, blood chemistry and cytology.

The book, which is well produced and freely illustrated, should prove useful alike to the fever expert, the general practitioner, and the laboratory worker.

### GYNAECOLOGICAL DISORDERS

*The Symptomatic Diagnosis and Treatment of Gynaecological Disorders.* By Margaret Moore White, M.D., F.R.C.S., M.R.C.O.G. With foreword by F. J. Browne, M.D., F.R.C.S., F.R.C.O.G. The General Practitioner Series (Pp. 229; illustrated 16s.). London: H. K. Lewis and Co. 1944.

This little book of just over 200 pages has been written for general practitioners. As the title indicates, the subject is discussed from the point of view of symptoms and symptomatic treatment. Each of the first 17 chapters opens with a tabulated summary of the contents which recalls memories of "synopsis" type of textbook. A brief description of each condition with notes on appropriate treatment follows. The last two chapters, on contraception and radiation therapy, are by Dr. Mary Redding and Mr. I. G. Williams respectively.

In spite of the excellent detail it contains there is something unsatisfactory about this book. Criticism may be epitomized by a consideration of Chapter 17, which is devoted to pre- and post-operative treatment and complications. This is surely the province of the specialist and not the practitioner. If the latter is sharing the control of a case with the former he should be given his instructions according to the specific needs of the case and the practice of the surgeon. In other words, there must be a close relation between the practitioner and the specialist. There are things the general practitioner should take responsibility for and things he should not, but there is little in this book to guide him through the difficult no-man's-land of borderline cases. Accurate diagnosis must obviously precede intelligent treatment. The practitioner may well expect to investigate and treat pruritus vulvae or vaginal discharge but if the tragedies of gynaecological practice are to be avoided he must know the dangers and be able to realize when the time has come to seek help. He must be warned of the dangers of leucoplakia and kraurosis, and not wait until carcinoma has developed before he refers his patient elsewhere. As accurate diagnosis, he cannot find much help in an academic summary of possible causes. For example, in dealing with

ulcers of the vulva the author refers, to conditions such as tuberculosis, which the busiest of consultants will see on the rarest occasions and the busiest general practitioner may never see, but she omits carcinoma, which is all too common. True, it is included under tumours of the vulva, but if summaries are to be used for instruction these summaries must be complete at least so far as the common lesions are concerned. An adequate chapter on "danger signs" in gynaecological practice would add much to the value of this book, which in its present form may even mislead those practitioners it seeks to help.

### A BOOK ON TUBERCULOSIS

*A Manual of Pulmonary Tuberculosis*, Part I and an *Atlas of Thoracic Roentgenology*, Part II. By David O. N. Lindberg, M.D. F.A.C.P. (Pp. 233; illustrated, 55/50 or 36s.) Springfield and Baltimore: Charles C. Thomas; London: Baillière, Tindall and Cox. 1943.

The jacket of this volume tells us that "every page is practical. Practical diagnosis, practical treatment, and practical prevention of pulmonary tuberculosis are covered adequately and briefly. Theory, experimental, and controversial subjects are not included. Well-planned charts and graphs relieve the busy practitioners from excessive reading and searching." Referring to Part II of the book—which constitutes two-thirds of it—we read: "The quality of these plates suggests that this Atlas Section will be of greater diagnostic value than any published series of chest roentgenograms." The content of the book unfortunately provide a marked contrast to this advertisement. The tuberculosis specialist will learn little from either the text or the atlas, and the student or busy practitioner will be left with a feeling of confusion and inadequacy. "Reinfection" pulmonary tuberculosis is divided strictly into "exudative" and "productive" forms, apparently distinguished without difficulty by means of a radiograph. Collapse therapy is referred to as compression therapy. And lastly, under "General Treatment Considerations," the reference to syphilis reads: "The problem of tuberculosis and syphilis is still under extensive study. The treatment, in general, should be actively directed to whichever disease is the more fulminating."

The illustrations consist of 44 figures, charts, and tables in the text, and 145 reproductions of radiographs in the atlas. These are negative prints, reproduced postero-anteriorly.

### Notes on Books

There is a recognizable tendency in modern medical literature towards the production of small books which are little more than pamphlets, dealing with a very limited aspect of a subject or with a point in technique. This is well exemplified in *Local Anaesthesia: Brachial Plexus*, by Prof. R. R. Macintosh and Dr. William W. Mushin, a book of some 50 pages consisting for the most part of a series of very excellent drawings (by Miss McLarty) and photographs of the anatomical basis of brachial anaesthesia, with the necessary explanatory text. The method described is that of Patrick, and he would indeed be a poor technician who failed to produce adequate anaesthesia after studying these illustrations, for every point is made perfectly clear and the correct visualization of the anatomical relationships involved is rendered easy. The publishers (Blackwell Scientific Publications; 10s. 6d.) are to be congratulated on the general production of a book which is up to a good peace-time standard.

Mr. Kurt Colsen's small book on *Fractures and Fracture Treatment in Practice* for the use of medical students and practitioners was favourably noticed in our issue of Oct. 7, 1943. The author is tutor in the department of surgery and registrar to the surgical nrm of the University of the Witwatersrand. A second edition has now been received from the Witwatersrand University Press, Milner Park, Johannesburg, South Africa. The price is 12s. 6d.

The International Bureau for the Suppression of Traffic in Women and Children (12, Old Pye Street, Westminster, London, S.W.1) has published under the title *The Abolition of Tolerated Prostitution* a series of lectures given at an international meeting held in October, 1943, at the London School of Hygiene and Tropical Medicine. Two of the lectures dealt with the medical argument; they were given by Prof. Cyril Burt, who referred particularly to psychological factors, and by Dr. Edward Glover, who spoke on pathological factors.

## Preparations and Appliances

### APPARATUS FOR SYSTEMIC ADMINISTRATION OF PENICILLIN TO YOUNG CHILDREN

Dr. C. A. ST. HILL writes from the Department of Pathology, University of Liverpool:

Systemic administration of penicillin to infants and young children by the subcutaneous or intramuscular route presents problems not encountered in the treatment of adults. The small size of the patients prohibits the use of an ordinary continuous drip or of the Ministry of Health's "Eudrip" No. 1, as the amounts delivered per day by these methods are too large. Thus, the "Eudrip" No. 1 delivers 100 c.cm. per day. This in an infant weighing 7 lb. is equivalent to 2,000 c.cm. in a 10-stone adult, and would certainly produce waterlogging in a short time.

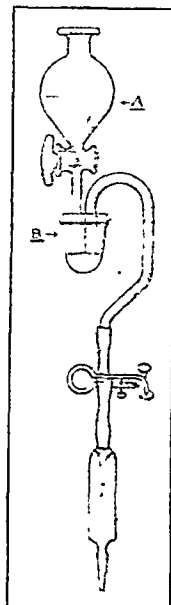
For this reason an apparatus has been devised and used which delivers 12 to 24 c.cm. of penicillin a day by an intermittent drip method, and which can be rapidly constructed from apparatus in everyday use in a routine pathological laboratory.

The apparatus consists of the following parts:

The main reservoir (A in diagram) is a 50 c.cm. capacity separating funnel. The stem of this, shortened to a length of about 3 in., forms the inlet for the secondary reservoir (B). This latter consists of a two-holed 1-in. rubber bung with an ordinary surgical rubber glove-finger drawn over it, the contained volume being adjusted to 2 c.cm. The outlet tube curves downwards and passes, via a short length of rubber tubing fitted with an adjustable screw spring clip, to a dripper with as fine a jet as possible. Both the inlet and outlet tubes of the secondary reservoir end flush with the lower surface of the rubber bung to facilitate expulsion of bubbles. The dripper is connected to the delivery needle by a length of 3/16 in. rubber tubing.

After filling the apparatus and expelling air bubbles, the main reservoir is sealed off from the second reservoir by means of the stopcock. The solution is allowed to drip into the patient as slowly as possible. As this proceeds, the rubber glove-finger gradually becomes emptied and consequently collapses. When emptying is complete the flow of solution automatically ceases and there can be no emptying of the dripper and lower lengths of tubing with consequent production of air locks when the secondary reservoir is refilled. Two hours after the first injection has been started and at 2-hourly intervals subsequently, the nurse in charge of the case refills the secondary reservoir by opening the stopcock for a few seconds. Immediately the secondary reservoir is refilled the drip will restart and continue until the 2 c.cm. contained in it has drained away.

The advantages of the apparatus, therefore, are: (1) Small amounts of fluid are given. (2) A minimum of supervision is necessary. (3) The 2 c.cm. of penicillin solution contained in the secondary reservoir are delivered to the patient once every 2 hours without the danger of the apparatus being emptied. (4) The apparatus is easily made from material readily available.



At the last quarterly court of the Directors of the Society for Relief of Widows and Orphans of Medical Men, with Dr. R. A. Young, president, in the chair, the death of one of the vice-presidents, Mr. Ernest Ware, was reported and also the death of one of the widows in receipt of grants: she came on the funds of the Society in 1929 and received in grants on behalf of herself and son £1,925; her late husband paid in subscriptions £52 10s. It was decided that a Christmas present be made to each widow next December. Membership is open to any registered medical man who at the time of his election is resident within a twenty-mile radius of Charing Cross; relief is granted only to the necessitous widows and orphans of deceased members. A new list of members is shortly to be printed, and the secretary would be very grateful if members would send any recent change of address to him at 11, Chaodoss Street, Cavendish Square, London, W.1.

## POST-WAR REHABILITATION AND RESETTLEMENT

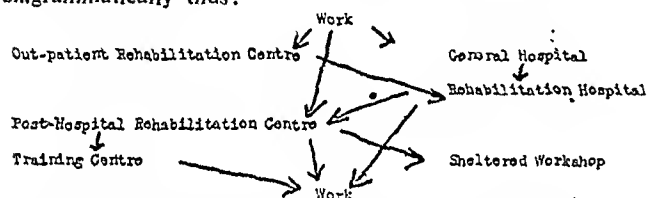
BY

G. D. KERSLEY, M.D., F.R.C.P.

Major, R.A.M.C.; Specialist in Physical Medicine

Rehabilitation, the complete range of treatment continued till the fullest working capacity is restored, has exercised many minds for many months. Numerous aspects have been dealt with by various authorities: the Army at the convalescent depots and selection centres, the R.A.F. at rehabilitation centres, the Ministry of Health at their rehabilitation departments at the main hospitals, the Ministry of Labour at their centre at Egham—where “pre-vocational guidance” is also involved—the Ministry of Pensions at Roehampton, the miners, the dock workers, and now even private enterprise backed by various industrial firms, are all engaged in tackling this problem in their own particular way. The field is vast, and includes not only the treatment of injuries and the scourge of rheumatism, but also planned convalescence, the prevention of breakdown in health, pre-vocational guidance so as to ensure correct placing of labour according to physique and mental fitness, vocational training, and provision of sheltered workshops. Yet, so far, co-ordination of these essentials of complete rehabilitation on a national basis is lacking. Below an attempt is made to outline the services necessary to carry out such a scheme.

The natural sequence of rehabilitation may be shown diagrammatically thus:



An *Out-patient Rehabilitation Centre*—the medical equivalent of a fracture A unit, with which it could be combined—would provide out-patient treatment and advice. It would be supervised, probably as a part-time appointment, by a medical officer who had had some special training in rehabilitation methods, and it would be visited regularly by one or more consultants. Rheumatic and orthopaedic cases requiring specialized and institutional treatment could be sent from here to a rehabilitation hospital.

*General Hospitals* would refer cases requiring long-term orthopaedic or rheumatic treatment to rehabilitation hospitals or hospital groups, while those patients requiring planned convalescence would be sent to a post-hospital rehabilitation centre. Each hospital of any size, however, will require its own physiotherapy and diversional occupation departments, and to co-ordinate these and to ensure that active treatment is started at the earliest possible moment a rehabilitation officer will also be necessary. The latter appointment would usually be held by a physician or surgeon already on the hospital staff.

The *Rehabilitation Hospital* or hospital group would receive patients from out-patient rehabilitation centres, fracture B and C centres, and general hospitals. It would consist of one or more hospitals—rheumatic, orthopaedic, and any with fracture A departments—and would have communal amenities in the form of a physiotherapy department, a gymnasium, a heated indoor swimming-pool, occupational therapy workshops, an x-ray department, and a laboratory. It should be situated within easy reach of an industrial area, but in open country, and it should maintain a very close link with the nearest medical teaching school and university in order to facilitate and co-ordinate teaching and research. Four of our largest spas—Bath, Buxton, Droitwich, and Harrogate—could, with a little expansion, easily fulfil these conditions for their surrounding areas, but they would no longer be watermongers. A widespread movement in this, the right direction, was exemplified when recently the chairman of a spa committee announced that his spa's policy was to do all in its power to make it a useful cog in the wheel of the rehabilitation machine, and only to use the waters—applied according to the laws of orthodox physics—as one part of the facilities available to the medical team. The spa rheumatic hospitals would then act as the rehabilitation nuclei for their localities—Bath for Bristol and South Wales, Buxton for Manchester and Sheffield, Droitwich for Birmingham, and Harrogate for Leeds and Bradford. A senior medical or surgical qualification would have to be a *sine qua non* for their senior staff appointments—a regulation already introduced at one of these hospitals—and a closer liaison with the

dean and professors of medicine and surgery of their associated universities would be required. A fourfold plan of co-operation between each spa hospital and its neighbouring university should be considered: (a) the use of the spa hospital for both postgraduate and antegrade clinical teaching; (b) the reference of cases requiring specialized institutional treatment and investigation to the spa hospital from the hospitals to which the university medical schools are attached; (c) co-operation over special research; and (d) a closer staff liaison, including the possibility of the professor of medicine becoming an honorary member of the Hospitals Medical Board and of certain beds being made available to the medical unit of the university. It is hoped that research, in addition to being linked with the university, will also be co-ordinated with that undertaken elsewhere, through a central body such as the Empire Rheumatism Council or an appropriate committee of the British Orthopaedic Association.

As regards the internal administration of such a rehabilitation hospital, co-ordination by a rehabilitation officer would be necessary. Individual treatment such as physiotherapy and specific occupational therapy would be prescribed by the medical officer in charge of the case, who would also place the patient in a grade. Each grade would then have its organized programme of general exercise and diversional occupation or employment, and the technicians would refer to the doctor in charge of the case, by a system of slips via the rehabilitation officer, any remarks on the reaction to treatment and suggestions about alterations or regrading of the patient. Additional privileges in the way of late passes, etc., for the higher grades would act as an incentive to progress.

The *Post-hospital Rehabilitation Centre* would take the place of the convalescent depot in the Army, with the difference that it would have to deal with women as well as men, would take all age groups, and, instead of a hardening programme, diversional instruction and occupation and pre-vocational selection would be substituted. This centre would take patients from the rehabilitation and general hospitals and also direct from work when it was felt that a period of rest, build-up, and possibly change in occupation would avoid a breakdown. It should primarily be a medical unit, but every effort should be made to get away from the hospital atmosphere. An important entity would be a welfare department, which would follow up the progress of the individual in the occupational workshops with a view to replacement, or retraining where it eventually proved necessary. While at this centre many might be able to continue study or training in their own jobs or do some useful work, for which they should receive remuneration. The running of short courses for industrial medical officers, almoners, factory managers, and social workers would be another function of such a centre. On discharge men would return direct to work, to a Ministry of Labour training establishment, or to sheltered workshops.

The Tomlinson report made three main recommendations with regard to resettlement: that employers must accept a fixed quota of the partially disabled, that these disabled persons should be registered, and that certain occupations should be scheduled especially for employment of such “handicapped persons.” This has been criticized (*Lancet*, 1943, 2, 771) in so far that it is felt that a large proportion of the disabled could fend for themselves on the open market if employers were educated as to their use and value, and if both the worker and the employer were protected from financial risk should it be found later that the handicapped person could not “cope,” or if there should be some increase in the old disability or the onset of a new one. The cessation of all sick benefit as soon as any light work is undertaken and the liability of a firm employing a handicapped man, perhaps more prone to accident than normal, both militate against any voluntary solution to the problem of employment of the disabled. Yet a circular from the United States Office of Education showed that 98% of firms employing partially disabled persons found that, when suitably placed, such employees were actually more reliable than their fit co-workers.

Moreover, from another angle the financial security of the individual cannot be disregarded in considering the problem of rehabilitation. Undecided compensation is the greatest single cause of delay in return to work, owing to its psychological effect. If, however, financial security is safeguarded, it is felt that comparatively few could not find a suitable post when aided by suitable pre-vocational guidance and, if necessary, by vocational training. For the few failures, sheltered workshops or communities are, however, necessary. These will require extension in number and scope, and should include facilities for employing the chronic rheumatic in addition to those for the tuberculous, the injured, and the blind.

H. D. Pasachoff, M. J. Madonick, and C. Drayer (*Amer. J. Dis. Child.*, 1944, 67, 201) record cases of four siblings showing the characteristic features of Marfan's disease or arachnodactyly. Two showed mental retardation. Air encephalography revealed definite internal hydrocephalus in one and some dilatation of the ventricular system in the other. The father and paternal grandfather showed elements of the disease.



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- References
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| 1. "Treatment of Burns by Envelope Irrigation," <i>British Medical Journal</i> , July 12th, 1941, pp. 46-48. | 2. "Experiences in an E.M.S. Base Hospital," <i>Edinburgh Medical Journal</i> , January, 1942, p. 25 | 3. "Treatment of Burns in Air Raid Victims," <i>Nursing Times</i> , January 31st, 1942, p. 75. |
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## BRITISH MEDICAL JOURNAL

LONDON

SATURDAY NOVEMBER 11 1944

## A NATIONAL THORACIC SURGICAL SERVICE

Thoracic surgery in this country virtually started during the last war and arose primarily from the demands of treatment of battle casualties. Between the two wars the advances in this field of surgery have been so great that the Society of Thoracic Surgeons of Great Britain and Ireland, which was founded nearly 10 years ago, has recently issued a printed memorandum in which it outlines a scheme for the provision of a national thoracic surgical service.\* Though it would have been easier to design the pattern of this service if the planning for the future of the medical services for the whole country had reached a more mature stage, it is still important that such a memorandum has been drawn up, and the suggestions made in it deserve attention.

The success of surgical methods in the treatment of thoracic diseases has led to such an increased demand for their use that there is a danger that development will proceed along unsatisfactory or unsafe lines. Thoracic surgery is a difficult branch of medicine and one which requires much special skill and experience if disasters are to be avoided. The time has passed, or should have passed, when the physician calls upon or directs his surgical colleague to perform some particular operation upon the chest. If good work is to be done and advances are to be achieved the thoracic surgeon not only must be highly trained himself but must be able to call upon the help and co-operation of many associated workers. The understanding of thoracic diseases alone requires considerable training and experience, the full investigation of a case before operation is decided upon may be complex and calls for much judgment, the operative procedures necessitate a high degree of surgical skill and must be supported by an equally skilled anaesthetic technique. Proper pre-operative and post-operative management may be time-consuming, and it needs the assistance of a specially trained nursing staff and physiotherapists. Many local authorities and smaller hospitals throughout the country recognize the scope of thoracic surgery and are trying to secure the services of a surgeon for it. For good results the thoracic surgeon must be backed up by a proper organization or team. It should be clearly understood that even a trained thoracic surgeon cannot obtain good results if he is expected to make casual visits for operations and leaves the pre- and post-operative care to unskilled personnel, however enthusiastic they may be. The surgeon untrained in thoracic surgery who undertakes casual work under such conditions is certain to bring disappointment both to himself and to his patients.

The problem arises particularly in the treatment of pulmonary tuberculosis. Many centres exist throughout the

country in which there is as yet no provision for even the simplest methods of treatment by collapse therapy, many such institutions do not possess an x-ray apparatus or provision for artificial pneumothorax treatment. The mortality and morbidity from this disease remain so high that the demand for increased facilities is very great, and thousands of patients yearly are still denied the benefits which surgical treatment alone can bring. Many patients, after much time and public money have been spent on their treatment, reach a stage in which thoracic surgery is needed to complete their cure, and are unable to obtain admission for this owing to the shortage of beds, their condition so deteriorates while they are waiting that the chance of a good result is either greatly diminished or lost altogether. Nearly the same applies to sufferers from non-tuberculous conditions of the chest. To give some idea of possible future requirements it is worth recording that in the two chief chest hospitals in London there is normally provision for some 150 surgical patients. During the war the London E.M.S. chest centres have provided an additional 450 beds, and yet there are still long waiting-lists. It is anticipated that after the war the demand for yet more accommodation will be even greater, and in this regard one must remember that, although some of the present E.M.S. centres may fit into a future national organization, others will have to return to their peacetime use. If, therefore, the public is to have the thoracic surgical treatment of a standard to which it is entitled its needs can be met only by the establishment of a properly organized service with centres adequately staffed and equipped.

Provision for the teaching of thoracic surgery receives special consideration in the memorandum. The student does not require a highly specialized knowledge of any particular branch of surgery, and only enough of his time need be spent in a department of thoracic surgery to allow him to become familiar with the various methods of investigation of cases and the type of surgical help that can be offered to his patients. For this reason the undergraduate teaching hospital needs a department of no more than some 25 beds and an out-patient clinic. Graduates should concentrate on the work of a large chest unit or special chest hospital, where more intensive study is possible. The training of thoracic surgeons is even more important. In the present generation thoracic surgeons have graduated from the field of general surgery, and not a few still practise in that field. The thoracic surgeon of the future should have had a thorough training in general surgery and so should have served for a period of at least two years as a surgical first assistant or registrar. In addition he should have devoted at least two years to the special study of surgical chest diseases. Some of this time could well be spent abroad, but the remainder would be passed at a special chest hospital or one of the special chest centres.

Chest surgery is essentially a branch of medicine which requires area organization, and any scheme will have to be worked in conjunction with the tuberculosis services in co-operation with local authorities. It is proposed that each area should have at any rate one primary thoracic surgical centre, and it is emphasized that each centre ought to handle all types of thoracic surgical disease, any attempt to separate the surgical treatment of pulmonary tubercu-

\* The hon. secretary of the society is Mr A. Graham Bryce, 3, Lorne Street, Manchester, 13.

losis from that of other chest diseases is strongly deprecated. As the thoracic surgeon should be able to obtain the advice of his colleagues in various other departments of medicine and surgery, and will need full facilities for good radiological work, access to pathological laboratories and laboratories for research, the centres in university towns should be part of or very closely affiliated with the teaching hospitals. The work of a centre cannot be carried out efficiently by surgeons and nurses who engage in it as a temporary occupation. The regional medical staff which would be needed should be composed of a director, or assistant director, a number of surgical officers of the standard of registrar, and house-surgeons, physicians, and radiologists.

The department of thoracic surgery at the area teaching hospital might well be the primary regional unit, having 50 to 100 beds; or it might be a much smaller unit owing its existence mainly to the requirements of undergraduate instruction. If the primary unit for the area was situated elsewhere it would still have a close association with the university. In most regions there would have to be one or two secondary or branch units, one or both of which would naturally find their place in the larger sanatoria in which the necessary staff and equipment had been installed. This would satisfy the wish of those who feel that better results will accrue if tuberculous patients are operated upon in a sanatorium than if they are transferred to a city hospital for this purpose. While there is a shortage of trained thoracic surgeons it would be a disservice to patients suddenly to abolish facilities which already exist for the efficient performance of operations of a minor nature in scattered smaller institutions. Such smaller centres will, however, disappear when the surgical work they are doing can be done at the chief centre or one of the larger branch units. An organization of this kind would provide ample facilities for the training of a large and adequate number of thoracic surgeons who not only would work under the supervision of the director during their training but would also be encouraged to consult with him about the management and treatment of cases at subsidiary centres. The director himself would work at the primary regional unit, but would maintain this supervision over and contact with his juniors and assistants at the smaller centres.

The scheme drawn up by the Society of Thoracic Surgeons may at present seem rather Utopian, but it is sound and has been well thought out. If successful it should certainly enable the public to obtain efficient thoracic surgical treatment in almost any part of the country, whereas at present this is limited to a very few places.

## THE PROBLEM OF AGEING

We publish to-day a letter from Dr. A. S. Parkes, the chairman of the Nuffield Foundation's medical subcommittee on the causes and results of ageing, asking for information about research at present in progress on problems of interest to the subcommittee. The formation of the Foundation's Survey Committee and Medical Subcommittee is a clear indication of the increasing interest in the social, economic, and medical problems of ageing and

of aged people. On the medical side the problem has received sporadic attention since earliest times, for the most part from the unhappy point of view of rejuvenation. The modern approach, in contrast, is by way of the characterization of the process of ageing and the study of the special disabilities of the aged, and only thence to a consideration of what can usefully be done towards the therapeutic retardation of the process of ageing. The characterization of the ageing process presents peculiar difficulties. It is easy to say that ageing starts at birth (more strictly, at fertilization of the ovum); but the idea is not a helpful one, and in practice it is more useful to regard the onset of ageing as the first impairment of bodily function, for reasons not obviously pathological. The physiological or biochemical factors involved in such impairment, the sequence of events in different organs, the forces initiating the process, and the pathological conditions essentially associated are all problems which arise in the characterization of old age, and only when these have been elucidated can any rational approach to the problem of retarding the process be made.

The decrease in the birth rate and the increase in longevity in the last three or four decades have led to ominous changes in the age distribution of the population and will accentuate all medical, social, and economic problems relating to old people. According to the Beveridge report, men of 65 and over and women of 60 and over who in 1941 comprised 12% of the population, will in 1971 comprise 20.8%, with a corresponding decrease in the proportion of those at productive ages. If there is any substantial increase in the birth rate the increase in the actual proportion of the aged may be less than this estimate, but, short of some most unexpected decrease in longevity, the increase in gross numbers from 5.6 millions to 9.6 millions is inevitable. In so far as the aged are directly or indirectly dependent for support on younger members of the community, the burden on the latter is bound to increase greatly in the next few decades. This point is well shown by the statement in the White Paper on Social Insurance that between 1965 and 1975 there will be an increase of about 800,000 in the pensioner population and a decrease of more than 1,000,000 in the contributing population. In 1945 there will be 16 and, in 1975, 31 pensioners for every 100 contributors; only a small part of this increase will be due to the gradual inclusion of new classes after a qualifying period. Here, then, we have the crux of the economic problem of the aged—the retention of productive capacity as long as possible and the allocation of productive occupations especially suited to old people. Ancillary to this question is the estimation of full working capacity. Physiologically and psychologically it is a truism to say that one person of 40 may be as old physically and mentally as another one of 60; yet the present tendency, especially among the professional classes, is to have a rigid retiring age of 60 or 65. Clearly this policy may have to be revised. It would be of great interest to know whether the increase in longevity over the last century has been associated with an increased duration of working capacity or whether the shorter life of earlier days was more usually fully active until the end. Whatever the answer to this question, it

s quite evident that at the present time further increase in longevity, whether due to prophylactic or to therapeutic measures, will have serious consequences for the nation unless there is a comparable increase in the duration of working capacity

### PHYSIOLOGY OF THE VAGINA

The Fallopian tubes, uterus, and vagina are all developed from the Mullerian ducts. It is therefore not surprising that the tubes and vagina resemble the uterus in that they react to ovarian hormones and take part in the menstrual rhythm. The tubes respond not only by changes in the mucosa but also in the activity of their muscle coats. Indeed they have been credited with a menstrual function at times, and have been shown to be capable of a decidual reaction in pregnancy. Cyclical changes in the vagina are less obvious but are nevertheless demonstrable. A relation between the ovary and vagina was first suggested some fifty years ago, but only recently have the specific vaginal responses been determined. In this country Cruickshank and Sharman<sup>1</sup> in 1934 made a valuable contribution to our knowledge of this subject, and now Rakoff and others<sup>2</sup> present a review of the physiology of the vagina, together with an account of their own studies carried out on 500 women. Oestrogens induce hyperplasia of the vaginal epithelium and bring about a deposition of glycogen in its intermediate and superficial layers. The amount of the glycogen in the vaginal cells at different stages of life is thus directly proportional to the oestrogenic activity of the ovary—a phenomenon to which we recently drew attention<sup>3</sup>. During the active reproductive life of woman it is said that the amount of glycogen present in the vaginal epithelium is proportionately greater than that in any other tissue of the body with the exception of the liver. The effect of progesterone on the vagina is less clearly defined. Under experimental conditions it appears that very large doses may produce epithelial proliferation and cornification. However, in physiological amounts and when administered in combination with oestrogens its effect is more often opposed to that of oestrogens. It does not influence the amount of glycogen present in the cells. Androgens inhibit both epithelial proliferation and glycogen deposition. The transformation into glycogen of glucose received from the blood is believed to be a special function of vaginal epithelial cells, and it is assumed that the glycogen is the source of the lactic acid which is the characteristic component of the vaginal fluid. A prevalent opinion is that this change is brought about by the action of Doderlein's bacillus, although the reported finding of lactic acid in the sterile vagina at birth does not support it. A second view supposes that the formation of lactic acid is the result of an enzyme, while other theories involving both enzymic and bacterial action have also been put forward. The flora of the vagina certainly varies with its pH, and Doderlein's bacilli predominate when the vagina is most acid. But it has still to be shown which is the cause and which the effect.

The vaginal cycle consists of a proliferative phase corresponding to the follicular phase of the ovary and the proliferative phase in the endometrium. This is followed by further hyperplasia and cornification during the early part of the luteal phase, and later by desquamation during the days preceding menstruation. The vaginal pH also shows variations, the lowest figures being obtained at the mid-interval phase—that is, about the time of ovulation.

This is followed by a gradual rise up to the time of menstruation, after which there is a return to the more acid side. Rakoff and others<sup>2</sup> point out that not all workers have obtained the same results in regard to the rise and fall of the vaginal pH. The discrepancies may be explained by the fact that the pH differs at different levels in the vagina, and, moreover, unless special care is taken false readings may be obtained owing to contamination with the alkaline secretion from the cervix. In any case, the normal range of variation is small.

All the evidence goes to show that the acidity of the vagina is important in protecting it from infection, and among the few micro organisms which thrive when the pH is within the normal range of 4 to 5 are Doderlein's bacillus and the yeast and yeast-like group. The latter indeed flourish when the vagina is most acid, as in pregnancy, when the pH may fall as low as 3.8, and when it is unusually rich in fermentable carbohydrates. This explains why infection with monilia (vaginal thrush) is most common in pregnancy and in the presence of glycosuria.

### NUTRITION IN JAPANESE INTERNMENT CAMPS

The nutrition of Allied nationals in Japanese internment camps is the subject of a recent report<sup>1</sup> based on the evidence of repatriated doctors and nurses. About a dozen camps were set up by the Japanese authorities to house just over 15,000 internees. The Japanese policed the camps and supplied the food, while the internal administration, preparation and cooking of food, and sanitation were in the hands of the interned. In general the rations supplied were low in calories, protein, calcium, iron, and vitamins. Canteen purchases were severely restricted because of lack not only of money but also of food. Black markets flourished in many of the camps, those with enough money being able to buy from their captors sugar, jam, fruit, eggs, and sometimes meat. Black-market extras and comforts provided by the Red Cross enabled some of the internees to survive without serious evidence of deficiency disease. After three or four weeks' internment most of them experienced hunger for the first time. Nearly all adults lost weight, in some camps losses of 40 lb to 60 lb were not uncommon. The basic diet consisted mainly of polished rice, soya beans, potatoes, pot herbs, and a little pork, with water-buffalo meat, duck eggs, and white flour when available. Fresh cows' milk and watered buffalo milk, when obtainable, were given to infants and small children. The average daily calorie intake on this diet was 1,500 to 2,000, the daily protein intake 40 to 80 grammes. The intake of calcium was low (0.12 to 0.25 gramme daily), as was also that of iron. No reliable data are available for the vitamin content of the diet, but it was generally agreed that the intake of vitamin B and riboflavin was low. And the food was unpalatable. This is not surprising, as there were practically no facilities for cooking. This meant that stew containing all the food for the day except bread was the only item on the menu. The Japanese made little or no provision for medical care. The only medical and surgical supplies were those taken to the camp by the interned people themselves and those provided by the Swiss authorities.

Secondary anaemia from lack of iron, and hypotension, muscular weakness, and oedema, due probably to lack of protein, were reported in many camps. Deficiency of vitamins of the B complex manifested itself by loss of energy, restlessness, numbness, paraesthesiae, loss of reflexes, decreased appetite, tachycardia, and pains in the extremities. These symptoms responded to treatment with

<sup>1</sup> J. Obstet. Gynaec. Brit. Emp., 1934, 41, 205.

<sup>2</sup> Amer. J. Obstet. Gynec., 1944, 47, 467.

<sup>3</sup> Brit. Med. Journal, 1943, 2, 753.

<sup>1</sup> Adolph, W. H., et al., War Med., 1944, 5, 3-9.

vitamin B<sub>1</sub> and yeast. The clinical symptoms of beriberi and pellagra and some of the manifestations of ariboflavinosis (cheilosis, angular stomatitis, pigmentation of the alae nasi, glossitis, and seborrhoeic lesions) were observed in some of the interned. Diarrhoea was reported from most camps. This was not always infective in origin, as in one camp it yielded to treatment with nicotinic acid. Spastic colitis, due to the unaccustomed amount of roughage in the diet (coarse rice, bread, and vegetables), was common. A nutritional disease affecting the eyes, apparently of neuritic origin, was reported. The symptoms were blurred vision and quick fatigue on reading, or even inability to read at all. This may have been due to a deficiency of the vitamin B complex, though no cure was found for it in the camps.

All this makes disturbing reading. Unless there is quick improvement of the diet of those who are still interned, nutritional disease, with a high morbidity and mortality, will become widespread, and with it an increased susceptibility to such infections as malaria and dysentery.

### NEW HOUSES

If post-war England does not come up to the expectations of post-war Englishmen, it will at least not be for lack of Government Departments and Committees. Housing, for example, is engaging more or less of the attention of the Ministry of Health, the Ministry of Works, the Ministry of Town and Country Planning, and the newly appointed Minister of Reconstruction. The Ministry of Health appointed a Central Housing Advisory Committee to make recommendations on the design, lay-out, construction, and equipment of dwellings, and it has been assisted by the reports of 22 expert committees set up by the Ministry of Works. One result is an admirable report entitled *Design of Dwellings*,<sup>1</sup> to which is added the report of a study group on site planning and lay-out in relation to housing.

The dimensions of the housing problem are formidable, and almost every flying bomb that gets through increases them. It is contemplated that during the 10 or 12 years after the war between three and four million houses will be built, more than half of them by local authorities. Such a programme will determine the domestic standards and habits of England for generations; therefore no detail of design can be regarded as unimportant. The houses built during the inter-war period were certainly an improvement on their Victorian and Edwardian predecessors, but some faults were outstanding, such as the marked separation between private and municipal housing, the building of houses without regard to communal facilities, and the location of residential estates too far away from places of employment. In the houses themselves the chief complaint was the smallness of the scullery or kitchen and the lack of a room for the expression of family life apart from the one where, in many families, meals—or their remains—are almost constantly on the table. On the controversy of house versus flat the subcommittee states that flats are largely unpopular. But in such a place as Welwyn Garden City, where the demand for flats might be expected to be low, it was found that roughly 10% of the households preferred that kind of accommodation.

The report makes, and illustrates, some interesting suggestions for dividing up the ground floor of the small house. The one we like best is the provision of a recess in the large living-room—the term “parlour” is banned—for the family meals, so that the rest of the room is available for other activities; also the provision of a small utility room where laundry and dirty household work

can be done. The report calls in general for more space in houses. Attention is drawn to the nervous strain of living in too cramped quarters. Reduction of space below a certain limit actually increases the work of running a house. It is, of course, a saving of labour if family meals are partaken in the kitchen where they are cooked; but how many kitchens would stand the strain?

One problem in the new housing will be to provide accommodation for old people. Old people, if in that term we include those aged 65 and over, number probably 5 millions, as against 1½ millions at the turn of the century. There is a clear case for the provision by local authorities of smaller dwellings for old people, not segregated from the others but embodying certain arrangements with a view to the physical infirmities of the occupants. Accommodation for single people living alone has also been largely overlooked in housing, both private and municipal. The report makes no proposal for the central heating of small houses. The solid-fuel furnace—open fire or some form of stove—seems likely to outlive its detractors. It is disappointing to hear that the subcommittee does not consider it practicable to provide refrigerators in municipal dwellings. It is hoped mass production may in time bring them within the reach of the bulk of the population. On the all-important matter of rent it is considered that the average rent of a three-bedroom post-war house, assuming a 3½% rate of interest, and excluding local rates, should be 13s. 7d., or, if interest is at 3%, it may be as low as 12s. 6d. The subcommittee which produced this report included seven women members, and its recommendations are no doubt of a more practical character in consequence.

### THE ALMONER'S WIDENING FUNCTIONS

The term “almoner” still conjures up in the minds of many people a hospital officer whose chief function it is to assess and collect patients' payments. The annual report of the Institute of Hospital Almoners (Tavistock House North, W.C.1) warmly welcomes the extended definition of the almoner's functions given in the report of the Social and Preventive Medicine Committee of the Royal College of Physicians, especially the statement that the almoner's chief function is an assessment of the patient's needs, rather than of his means. The Institute has prepared a memorandum on the almoner's place in the scheme put forward by the Tomlinson Committee for the training and resettlement of disabled persons. Here the almoner's task will be two-fold: to maintain contact with the patient through the successive stages of his treatment, training, and resettlement, and to be the channel through which the health services and the industrial organization may meet and confer. The Institute is now in close touch with the Ministry of Health concerning the supply of almoners to rehabilitation centres. The past year has seen a gratifying increase in the number of local authorities which include an almoner on the staff of their clinics for venereal disease and also of their tuberculosis clinics. In Scotland there has been progress in the employment of almoners by public health authorities: three almoners are now working in public health departments, two in Edinburgh and one at Stirling. The inflow of almoner students is being maintained, thanks to the recognition by the Ministry of Labour that a supply of adequately trained almoners must be continued. During the present training year 125 students are being prepared for almoners' duties—the largest number on record.

The next session of the General Medical Council will open on Tuesday, Nov. 28, at 10 o'clock, when the President, Sir Herbert Lightfoot Eason, will take the chair and deliver an address.

<sup>1</sup> H.M. Stationery Office. (1s.)

## Correspondence

### Survey Committee on Problems of Ageing and the Care of Old People

SIR,—In March of this year the Nuffield Foundation announced the formation of a survey committee to consider problems of ageing and the care and comfort of the aged, and of a medical subcommittee to deal with medical problems, especially medical research problems, of the causes and results of ageing. The Medical Subcommittee is now considering its programme of work, and, in order to avoid overlapping and to promote general integration of relevant research, is anxious to make contact with investigators already working on this subject. The questions immediately before the subcommittee relate to the morphological, physiological, pathological, and psychological changes which characterize the syndrome of ageing, and to the factors which expedite and retard the process.

The secretary of the Medical Subcommittee, the Nuffield Foundation (Survey Committee), 12, Mecklenburgh Square, London, W.C.1, will be glad to hear from investigators, medical men, or biologists who have research along these lines in hand or projected, and who are not yet in touch with the committee—I am, etc.

A. S. PARKES

Chairman of the Medical Subcommittee

### Neurological Signs in Riboflavin and Allied Deficiencies

SIR,—I have to day received the *Journal* of July 29 containing an account of the Lumleian Lecture by Dr Hugh Stannus and your editorial comment thereon. I am particularly interested in the mention of cerebellar signs in the syndrome of Hawes, Pallister, and Landor, and am able to confirm the clinical neurological aspect of his statements, having made a special study of the neurology in 1940 and 1941 with Dr. E. S. Monteiro. Eighteen cases of the pellagroid syndrome were admitted to the neurological clinic, Singapore, and studied in detail, and from an examination of these cases it became apparent that many of these exhibited spinocerebellar signs of a gross type, and were frequently demonstrated as such. Hawes, Pallister, and Landor were unfamiliar with the cerebellar component of these cases until the demonstration of the spinocerebellar element served to explain the gross ataxias met with, in the absence of adequate posterior column defect and of pyramidal signs. (When I say posterior column loss I am referring to loss of a type of sensation known to be conducted along these tracts. I do not infer that the primary lesion is in the tract. I believe that the tract lesions are secondary to death or disease of cells in the posterior root ganglion.) Pallister and Landor had regarded these cases as somewhat in the nature of subacute combined degeneration, but neither Hawes and Pallister nor Monteiro and myself, using special neurological technique, had ever been able to demonstrate evidence of pyramidal release. While Monteiro and I were engaged in a neurological study of these cases Pallister's paper appeared in which he described 15 cases of ataxia occurring in the Chinese. Although the findings in this paper were somewhat scantily recorded from the neurological point of view, when these signs are tabulated they give evidence of the cerebellar component. This was done by Monteiro and myself, and in a discussion of this syndrome before the Medical Society of Tanjong Pagar Hospital was demonstrated in connexion with our own cases, which they closely resembled. Dr Hawes was informed by letter of the progress of our neurological investigation, which clarified a subject that he had been studying for years.

The majority of these cases, in which anisocoria was marked and in which the cerebellar component was conspicuous, occurred in tonkin coolies. These coolies would frequently go for long voyages in these ships, being fed by a contractor. On their return the changes had often become irreversible, and so far as the eye was concerned an actual corneal ulceration had taken place, usually unilateral though circumferential injection was present on the contralateral side. The eye changes and periorbital response quickly to riboflavin. Photographs of these eyes were taken, the eye condition

being studied simultaneously by Williamson. It was remarkable that the ataxias could come on very rapidly within the course of a few days. These ataxias were sometimes associated with bands of subjective numbness on the trunk of root type. On the other hand, as Dr Stannus says, provided the case was treated early a complete or almost complete recovery would ensue. We had cinematograph and flash bulb photographic tracings of limb movement, using Dr Gordon Holmes's technique, to demonstrate this. In the case of the small girl described by Stannus, nystagmus and vertigo were present, which made recognition easy. Neither nystagmus, vertigo, nor intention tremor was demonstrated in any of our cases, although dissection of movement and dysmetria were readily shown both by direct observation and by means of the flashing bulb with a C38 tuning fork. This accounts partly for the failure of the earlier observers to recognize the cerebellar component in the Malayan cases.

That these cases were apparently spinal in origin led me to believe that the lesion lay essentially in the sensory ganglion cells of the spinocerebellar system—that is, Clarke's column. The signs were essentially sensory cerebellar and not motor. Further, the fact that we were able to demonstrate root involvement in some cases, together with the fact that these changes were labile and reversible, led us to believe that we were dealing with a cell disorder and not a tract one. This, naturally, is a forerunner of Dr Stannus's remark on systematization, in which he says it is based on neuropil. This was put forward as a hypothesis. Dr Stannus's observations on the capillary bed take the matter a step further.

Regarding the morbid anatomy of these cases, only one came to necropsy, the nervous system of which was being studied by Mrs Helen Burke, who held a research scholarship in the Medical College and who was working in the unit as a neuropathologist. This case was not absolutely typical of the Hawes-Pallister-Landor syndrome, exhibiting, as it did, frank pellagra, but nevertheless spinocerebellar signs were demonstrated. The tissue was fixed immediately after death by intrathecal formalin, and the most striking feature in the Nissl preparations was the degeneration of nerve cells in Clarke's column. These showed various stages from a change in shape to complete destruction. A somewhat similar change, though not so gross, existed in the cells of the posterior root ganglion. Tract degeneration was confined to the column of Goll, in which individual nerve fibres had undergone degeneration suggesting that this was secondary to cell degeneration. This patient also exhibited a somewhat similar degeneration of the optic nerve. He had complained of a dimness of vision, but, like most of these cases, did not show recognizable disk changes. The cerebellum itself had not been studied at the time of the fall of Singapore, as Mrs Burke was, together with all American women, evacuated to the United States early on.

Finally, in writing this letter I do not wish to appear pedantic, but I feel that in fairness to Monteiro, who is now a prisoner in enemy hands, and to the Singapore School of Medicine, where the clinical neurology had been worked out, this should be put on record. Monteiro and I had intended to communicate to Dr Stannus our findings before publication for his comment, as we regard him as the world authority on this subject. The original case notes will, I think, be available after the war—I am, etc.

G. A. RANSOME

Temp. Lieut.-Col. I.M.S.,  
Late Associate Professor of Medicine and  
Lecturer in Neurology, King Edward VII  
Medical College, Singapore.

### Infantile Diarrhoea and Vomiting

SIR—The paper by Drs. Alexander and Eiser (*Journal* Sept. 30) on infantile diarrhoea and vomiting has given me great pleasure. I offer my congratulations to the authors on the success of their diligent medical treatment. I am in complete agreement with all their statements except one. In the summary it is stated that "the aetiology of this killing disease is obscure." With this I venture to disagree, for I believe the aetiology is perfectly clear, and that if generally accepted and acted on much would be done with regard to prevention and cure.

The figures given by Drs. Alexander and Eiser give convincing evidence in favour of my contention. In 60 out of 140 cases of diarrhoea and vomiting without evidence of gastro-enteritis purulent otitis media was present. This condition cannot exist without adjacent cells being involved—in infants the relatively large mastoid antrum. We may therefore conclude that in these 60 cases mastoiditis was present. But as is shown at operation and in the post mortem room, mastoiditis is common in the absence of otitis media or aural discharge. It follows therefore, that in addition to mastoiditis in the 60 cases it was



present in many of the others undiagnosed. We may reasonably assume that the great majority of infants with diarrhoea and vomiting are in fact suffering from mastoiditis in its catarrhal or purulent stage.

The questions now arise: How is infantile mastoiditis acquired? and, Is diarrhoea and vomiting the cause of mastoiditis or mastoiditis the cause of diarrhoea and vomiting? All are agreed that diarrhoea and vomiting is far commoner in bottle-fed than in breast-fed infants, and that the former are frequently fed lying down in a position which invites milk or vomit to enter the Eustachian tubes while swallowing. In this way foreign material enters the tympanum and mastoid antrum and causes mastoiditis, followed by diarrhoea and vomiting. Breast-fed babies are not subjected to this peril and are therefore relatively immune to mastoiditis acquired by feeding in an unnatural position.

A further question now arises: How does mastoiditis cause diarrhoea and vomiting? The tympanic cavity and mastoid cells receive parasympathetic innervation from VII and IX. A reflex from the inflamed cells passes via VII and IX to the parasympathetic portion of X, which supplies motor and secretory fibres to the intestinal canal. This abnormal reflex disturbs the normal harmony between sympathetic and parasympathetic impulses in favour of the parasympathetic, resulting in diarrhoea and vomiting. It will be generally conceded that the younger the infant the more easily is this harmony disturbed, thus explaining the greater severity of diarrhoea and vomiting in younger infants. We are forced to the conclusion that in the great majority of cases diarrhoea and vomiting is a physical sign denoting mastoiditis. There are always additional physical signs which render the diagnosis certain, such as restlessness, crying out, putting the hand to the head, a bald patch caused by rubbing the head on the pillow, and, most significant of all, enlarged glands in the posterior triangle of the neck.

It is not always realized that mastoid sinusitis, like sinus infection in other cells—e.g., ethmoids—occurs in three distinct stages: (1) mucoid, (2) mucopurulent, (3) purulent. In the first two stages spontaneous recovery is often observed, helped by medical treatment on the lines laid down by Drs. Alexander and Eiser. Purulent mastoiditis, however, is usually a fatal condition unless surgical treatment is obtained. If, therefore, a child with diarrhoea and vomiting ceases to improve in spite of medical treatment, and if on examination is found to have some or all of the physical signs enumerated above, purulent mastoiditis should be diagnosed and operation advised. In this way many infants' lives could be saved.

**Prevention:** (1) Breast-feeding when possible. (2) Never bottle-feed lying down. (3) When a child is too young or too ill to sit up or turn over, never nurse or feed him on his back. Prop him up in his cot on his side and change sides every half-hour. Take him out of his cot for feeding and hold him in the natural position. Strict observation of these three rules would prevent the onset of mastoiditis to a large extent both in healthy infants and in those suffering from air-borne or food-borne infections.

It is my confident opinion that, when cure and prevention are carried out on the lines indicated above, the appalling infant mortality will be materially lowered, perhaps even by half.—I am, etc.,

Birkenhead.

P. W. LEATHART.

### Drugs and the Doctor

SIR,—Your leading article of Oct. 21 on drugs and the doctor is both welcome and timely. This criticism of the White Paper is justified, and fortunately it is easy here to see that the interest of the public and the interests of medicine are identical. Therefore there need be no delay in actively tackling the problems so lucidly expounded in your article.

Sane pharmacotherapeutics is not only necessary but is now available over a rapidly extending field. It would appear that the initiative of the American Medical Association in organizing the Council of Pharmacy and Chemistry has produced an effective weapon. May I therefore suggest that the British Medical Association should immediately organize a similar procedure

for this country. An initial conference between the B.M.A. and representatives of the Royal Colleges, the Pharmacological Society, and the Pharmaceutical Society could determine the best form for such a council. We might well improve on the method of the Americans. Such a body will give prestige to the B.M.A. and progressively gain in influence, and its published recommendation could hardly be ignored by the Government.

Some of the problems mentioned in your article, such as the teaching of pharmacology, cannot be dealt with in this manner, but it is unnecessary to wait for the reform of such teaching (and pharmacologists are keenly aware of the urgency of this) before taking such action as suggested above.—I am, etc.,

London, W.I.

HUGH GAINSBOROUGH.

### The Metric System and Medicine

SIR,—Among my recently qualified contemporaries there is widespread criticism of the metric system which has so far not been recognized in your columns. Everyone will agree that we are at present unintelligible to foreigners, but very few that I have met will admit that the apothecaries' system is in practice inferior to the metric. In argument my colleagues object to decimal points and "large numbers of noughts," complaining that they are difficult to remember and clumsy to use. Perhaps these and other objections are more emotional than rational and arise from a too recent acquaintance with the task of learning some 150 doses in "the other system." I am surprised, none the less, that the five other letters so far published in favour of the metric system have called forth no murmur of dissent, and I should like to anticipate and answer some common objections. These are: (1) difficulty in remembering doses; (2) danger of misinterpreting the decimal point; (3) inaccuracies in the metric system itself.

Whether the chief difficulty lies in getting the number of noughts right or whether it arises from an Anglo-Saxon distaste for decimals, the fact remains that fractions expressed decimally are distinctly harder to remember. This is therefore a method open to errors in prescribing. Dr. A. H. Douthwaite (*Journal*, Oct. 7, p. 478) has acknowledged this and pointed out part of the remedy, but, with apologies to him, I am keen to argue it further. Secondly, the decimal point can be a source of error even when correctly remembered, for prescriptions are (a) sometimes written hastily, and (b) always read by someone else before being dispensed. Surely, then, the distinction between 1 g. and .1 g., important to the patient, should depend on something more than a single ink-spot. To miss it is rather easier and slightly more serious than to confuse the 3 and 5 signs. Most metric prescribers take the obvious precaution of expressing the tenth as 0.1, but more than one proprietary preparation could be mentioned in which the precautionary nought is omitted from the label on the bottle. I have now been informed of two cases of error arising from this, in both cases the patient fortunately receiving one-tenth of the intended dose. In both, a label printed .5 mg. was read as 5 mg.

It is fundamental to see that (1) and (2) are objections not to the metric system but to the use of decimal fractions. Why should decimals necessarily be used? When we divide the ounce we use whole numbers of drachms or grains. In the metric system, as originally laid down, we divide the gramme into decigrammes, centigrammes, and milligrammes. Those accustomed to using the metric system in medicine find it convenient to think in terms simply of grammes and milligrammes. As Dr. Douthwaite says, it remains for textbooks and examiners to do the same. The B.P., in confining itself to grammes and decimal fractions of a gramme, has used the metric system in the most awkward way possible. The superior usefulness of the milligramme is perhaps not sufficiently well known. With the introduction of whole milligrammes we have practically abolished all fractions, for, in descending the scale, we have to split the grain long before we split the milligramme. Almost all the doses involving fractions lie between  $\frac{3}{4}$  and  $\frac{1}{64}$  grain, and can therefore be expressed by whole numbers of milligrammes. Thus the dose of morphine becomes 8–20 mg. Decimals may be harder to learn than vulgar fractions, but

whole numbers are surely easier than any traction at all. But still there are some decimals, it is objected. Why should there be? If we can speak of  $1/2$  grain, why not  $1/2$  milligramme?

Doses of the order of a few milligrammes are likely to increase with the introduction of greater numbers of potent synthetic preparations, and there is no doubt that the milligramme (and for some vitamins the microgramme) is the unit of the future. When a conservative opponent has been impressed with the useful size of the milligramme, he is apt to object that its relation to the gramme ( $\times 1,000$ ) is unwieldy. I feel it would be a mistake to try to please him with decigrammes and centigrammes, for simplicity is our principal aim. The B.P. took a step in the direction of simplicity when it confined itself to the grain and the ounce and, in the metric system, the gramme, and I feel it is desirable that we should be content to add only the milligramme (later, perhaps, the microgramme for vitamins). The size of the gramme is by no means astronomical in relation to that of the milligramme. The number of small units in the big unit is only about twice the number of grains in an ounce, and since alterations of dose, to be effective, frequently necessitate doubling or halving, the mental adjustment to this change should be easy. The effective way in which milligrammes still replace the majority of fractional doses by whole numbers is due to the fact that the gramme is only  $1/30$  ounce. This again is desirable, for the drugs which are dispensed in whole numbers of ounces are few indeed. The gramme, of which four go to make a drachm, is a considerably more useful weight.

When we consider liquid measure we may seem to be in a weaker position. The minim is practically never split, except in such terms as  $7\frac{1}{2}$  min, whereas the millilitre, being about 17 times larger, is split in 92 of the 197 fluid doses in one hospital's pharmacopoeia. One device would be to use vulgar fractions, another would be to adopt the microlitre, volumetric equivalent of the milligramme. Thus one of the most awkward metric doses—that of tincture of strophanthus (2-5 minims or 0.12-0.3 ml)—would become approximately  $1/8$ - $1/3$  ml or 120-300 microlitres. The microlitre, for which some suitable abbreviation would no doubt be forthcoming, is, of course, the cubic millimetre, familiar volumetric unit of clinical pathology. A third alternative would be to make the decimillilitre ( $1/10$  ml, or about 1.7 minims) the standard dispensing unit, and slightly alter the strengths of a few tinctures and other preparations which are, after all, expressly laid down at present to give a correct dose in whole numbers of minims. If the metric system were universally adopted it would be simple to make a tincture of strophanthus with a dose of 2-5 decimils.

It is unfortunate for the sake of simplicity, that the litre, standard of measure, should (in water) weigh 1,000 times the gramme, standard of weight, so that a millilitre does not weigh a milligramme, but it is better to have a milligramme occupying a microlitre than a grain occupying 109.7142 minims. Perhaps, in quoting this figure, it is unwise to press the matter to so many decimal places, for the more erudite opponents of the metric system can point out a difference, at about the fifth decimal place, between the mil and the ccm, and between the ccm, and the volume of a gramme of water; this arises only from the improvement in laboratory technique since the original standards, all derived from the metre, were set up. Your correspondent Dr S A W Rushbrooke (*Journal* Oct 7, p. 478) acknowledged this when he stated "Approximately 1 ccm of water weighs 1 gramme." The error, however, is so small that it can be entirely ignored except in the most precise physical and chemical research. I have no doubt that the care with which the original standards were made would satisfy the most fastidious dispenser.

It has been interesting to sound the opinions of some junior medical students on this subject. I have found those fresh from the university unanimously in favour of the metric system. Innocent as yet of the apothecaries' system, they can visualize what quantity of a powder would weigh roughly a gramme, and can estimate with commendable accuracy the metric capacity of a vessel such as a measuring cylinder or a bottle. They have long appreciated that any calculation intrinsic to the system can be performed in the head or on the shirt-cuff,

and their reaction to the arbitrary divisions of the apothecaries' table is frank dislike, while the information that the imperial ounce contains 437 and a half grains is met with incredulous laughter. Yet they seem to change their views. The pale-faced final-year student has adopted the grain and the minim apparently without a struggle. However, there is no doubt that for the new drugs the metric system has come to stay; and with the apothecaries' and imperial systems in full use its presence only adds to the existing chaos. The time has surely come, then, to adopt metric measure for all drugs.

The point I wish to emphasize is that in dropping the old measures we need lose nothing. The milligramme, the gramme, and the mil (or decimil) are units just as suitable for precise and brief representation on paper, and can be just as friendly and amenable to the memory as any other units of weight or measure—I am, etc.

St Albans Herts

T C BEARD

SIR—Few can doubt the advantages of the metric system in medicine. The arguments for it, so well set forth by Prof W C W Nixon (Sept. 2, p. 320) and by Dr. Howard Jones and Mr S T March (Sept. 23, pp. 413, 414), are irrefutable. Why, then, has it not been introduced or why are no active steps being taken at the moment to secure these advantages for the future? The reason is probably the inertia of established custom combined with an inexpressed fear of confusion which might result and perhaps give rise to accidents. Neither of these reasons, however, is really valid, and if doubt remains there is an excellent precedent by which we might be guided. Some few years ago British ships were steered by orders which were derived from the primitive use of the hand tiller. When the ship's head was to be turned to starboard the order given was to port so many points or degrees, because when the tiller was put over to port the vessel's head turned to starboard. For many years it had been obvious that in conformity with custom in some other countries it would be more logical to order starboard when the ship's head was to be turned to starboard. It was argued, however, that to make such a sweeping alteration to helm orders might be disastrous, confusion result, and collisions occur. Nevertheless, both the Admiralty and the Board of Trade, with an admirable strength of purpose and despite opposition from the inevitable "die-hards," determined to make the change, and in one night helm orders were altered by completely reversing them—i.e., port became starboard and vice versa. The result was as surprising as it was satisfactory, for so far as I am able to ascertain not a single collision occurred in consequence. I suggest that if we should make up our minds to change to the metric system it could be done overnight, and that there is every reason to think the outcome would be just as happy as with helm orders—I am, etc.

LAMBERT ROGERS,  
Surgeon Captain, R.N.V.R.

### "Dissident Doctors"

SIR—Your footnote to Dr. Stark Murray's letter (Oct. 21, p. 340) denounces the actual or prospective existence of Socialist, Conservative, etc., medical associations, and asserts that "there are political organizations in plenty to give medical men what political information they need, and to offer them scope for political activity." You go on to say that "Dr. Murray obscures the issue by confusing medical politics with politics in the familiar use of that term."

To day political action by politicians gravely threatens our whole mode of life. Politics is being forced upon the medical profession, which, if it is to maintain its integrity and honour, must think politically. State control of the profession is imminent. Here surely, if ever, is an occasion where "politics in the familiar use of the term" has impinged so completely on "medical politics" that there is no distinction between the two. Dr. Murray favours the Government scheme—i.e., the N.H.S.—and in general I find myself in the heartiest disagreement with his views, but I must commend one statement in his letter. He says, "Surely it is the duty of all of us . . . to take part in all political activities that concern our way of life."

But while Dr. Murray sees his political duty to be fostering State control of the profession and building up the "Socialist Medical Association," my own conception of the most urgent need, both in the profession and nationally, is a strong movement to defend our shrinking and seriously menaced liberty.

If I dislike the S.M.A., I should equally dislike a Conservative or Liberal M.A. Nor should I find comfort in Common Wealth or the I.L.P. All our existing political parties appear at present to be united both in their hatred of liberty and in their approval of State control of medicine. The Liberal Party used to claim to be the champions of individual liberty and the opponents of State control. But what was the label of the great prophet of the servile State when he was recently returned as M.P. for Berwick?

Doctors are to give up their own premises and work in welfare centres. They are liable to be sent wherever the State decrees, whether they like it or not. Men who prefer the city will go to the country, and vice versa. The State will own the wretches, lock, stock, and barrel. The Prime Minister, who is so busy winning the war, has nevertheless time to introduce measures for enslaving the medical profession. He should remember that his Government owes its existence *solely* to the need for prosecuting the war, and but for that need he would not be Prime Minister at all. He and his Government have no right to meddle with controversial domestic legislation. He did, in fact, give a pledge to introduce no controversial measures. But it appears that one must be polite and not annoy him with reminders about his promise. Certainly no one bothers to do this.

We are to be under the thumb of frequently changing Ministers of Health, whose interest in "health" is likely to be fleeting and temporary, since during their sojourn in that Ministry their minds will be preoccupied with hopes of "higher" office. In France four years ago a crisis proved that both the political system and most of the parties were rotten. That country has found new life in a movement called "Fighting France." Couldn't we have a "Fighting Medical Movement," or something of the kind?—I am, etc.,

London, S.E.14.

ALLAN A. MACDOUGALL.

SIR,—Your editorial reply to Dr. Stark Murray's letter (*Journal*, Oct. 21) takes up an impossible attitude on the question of medical affairs and politics. If politics mean anything to a man they must influence his actions in all his spheres of activity—professional or otherwise. All the doctors who take part in discussions on the White Paper do so from a political point of view—from that of their party, if they belong to one; if not, from that of the party for which they would vote at an election. The White Paper is a political subject and cannot be divorced from politics. A doctor, no more than any other man, cannot be expected not to apply his general political philosophy to matters concerning his own profession. If he did so he would rightly be accused of insincerity. Perhaps there is no "Conservative Medical Association" because the British Medical Association already fills the need. To judge from discussions on the White Paper in which I have taken part, or which I have read, there is a preponderance of Conservative opinion among my professional brethren. It is common knowledge that an idea is held to be non-political by Conservatives when it is in accordance with the general policy and outlook of the party. Surely we need not be ashamed of "political" discussion even if it runs on, broadly, party lines, because "politics" are the expression in external affairs of the fundamentals of our philosophy of life.—I am, etc.,

Kingswood, Bristol.

N. S. B. VINTER.

SIR,—Having read your article on the S.M.A. and Dr. S. Smith, and your subsequent reply to Dr. Murray, I feel I still need some clarification on the question of medical men and political organizations.

Members of the S.M.A., so far as I understand, believe that doctors would work best, and the public would have the best medical service, under Socialism. In so far as they have this point of view they are entitled, as any ordinary group of citizens, to form an association and try to bring other medical men to their point of view. Now, the White Paper is by no

means Socialism or even an appreciable advance towards it, but the S.M.A., together with the majority of the profession, unfortunately not so vocal, accept the principles of the White Paper because it is the basis for discussion for an advance upon the present medical services. In advocating this point of view the S.M.A. is not grinding any political axe; it feels, as an association of progressive doctors, it should support any policy which would improve the British health services. I cannot see how this can have anything but a good effect on the B.M.A., for it would strengthen the public's confidence in doctors. \*I have yet to hear of members of the S.M.A., either as a group or as individuals, disrupting the B.M.A. or lowering the status of doctors in the eyes of the public. The members of the S.M.A. who have been able to devote a considerable amount of time in the organizations of the B.M.A. have proved themselves loyal and true members of the B.M.A. How, in these circumstances, the S.M.A. can be charged with being even remotely responsible for the M.P.A. is difficult to conceive. It was precisely this official attitude in Europe before the war, of putting the blame for developing reaction on the mere existence of progressive bodies, that fostered reaction which eventually destroyed the official bodies.—I am, etc.,

Princes Risborough, Bucks.

S. LEFF.

SIR,—It is reasonable to suppose that doctors, who see so much that is grim and distressing in the daily life of the community, could make a sympathetic contribution to the nation's plans for the betterment of social conditions. There must be many medical men and women who would be keenly interested in the consideration of social problems, but who shy away from politics in the familiar use of the term. It implies no derogation from loyalty to the main professional society that some, who would otherwise take little or no share in public affairs, should find an opportunity to apply their special knowledge and experience in company with their medical colleagues who share the same ideas.

It seems harsh that doctors should be criticized in their official journal for participating in an organization whose aim it is to promote a legitimate social and political policy so long as that policy is in accordance with democratic principles. It is surprising that the *Journal* should adopt so didactic an attitude on this matter, especially in view of the almost unanimous vote concerning the safeguarding of the full political rights of doctors under the proposed National Health Service.—I am, etc.,

St. Annes-on-Sea.

JOSEPH PARNES.

SIR,—Dr. Frederick Dillon (Oct. 28, p. 576) appears to have joined the ranks of the eulogists of the scientific method as a panacea for our ills, and he appears to consider this much-vaunted nostrum as "the only possible basis for an ordered life, individual or national." But most of us desire an orderly, not an ordered, life; in fact, we thought that this war was being fought to preserve us from an ordered one.

That reason is good we should, I suppose, all admit; and that scientific method is good is a statement that would also be widely accepted. "But the science of reason is not necessarily the best guide in the conduct of human affairs. It was logical for the French to request an armistice in 1940, and illogical for the British to continue the fight against Germany."

It is very odd that we doctors, whose training has been "a smattering of several sciences, followed by a prolonged study of the human animal in health and disease," should be so easily gulled by the propaganda of authoritarianism. Perhaps we are ashamed to proclaim our freedom, because it is part of an unpopular creed. Latham knew well how mankind, including doctors, could be misled by fashion: "Depend upon it, what all men indiscriminately are told they ought to know, all men indiscriminately will soon pretend to know, be it never so extravagant."—I am, etc.,

London, W.1.

A. PINEY.

\* East, W. Norwood (1944). *Med.-Leg. Rev.*, 12, 69.

† Bosanquet, W. C. (1937). *Mediævala Medici*, Aldershot.

‡ Latham, P. (1878). *Collected Works*, 2, 7, New Sydenham Society, London.

# CORRESPONDENCE

Nov. 11, 1944

## Bacteriophage Treatment of Bacillary Dysentery at Alexandria

SIR.—Commenting on my article under the above title (*B.M.J.*, 1942, 1, 719) Col. J. S. K. Boyd and Major B. Portnoy (*Trans. roy. Soc. trop. Med. Hyg.*, 1944, 37, 243), in a reprint sent to me by courtesy of Col. Boyd, ask me what seems a pertinent question. If "the early use of bacteriophage prevents the development of acute bacillary dysentery, becomes the established rule to treat acute bacillary dysentery and its frequent precursor enteritis, why has 'the total annual number of cases of dysentery . . . averaged about 650 during the period [1928-40] and has not gone down to any appreciable extent?' The answer is simple, but I would first point out that the number "650" is an abridgment average, for which I am in no way responsible. It did not figure in my original text. It simply appeared justified to the abridger, strike this average to facilitate his task of abridgment, which I am greatly indebted to the abridger for, and I would further remark in passing that for none of the numbers of the article am I responsible, since they were all culled from the supposedly impartial official vital statistics of Egypt. In effect, 650 annual cases of global dysentery (amoebic, bacillary, lambliar, etc.) per year for Alexandria, on a population of three quarters of a million, appears to me ridiculously low and must be very wide of the mark. Although this is so I felt justified in using the official statistics because I used them throughout on a comparative basis, to compare Alexandria data with corresponding Cairo and rest of Egypt data in the belief that common errors would thus automatically cancel out. In my original text, which was too long to publish, I criticized some of the flaws in the Egyptian statistics of dysentery about which and vital statistics in general, the authorities are very concerned and are continually talking about reformatting them. Imperfect as Egyptian statistics undoubtedly are it is well to remember that owing to the nature of the problem no country in the world can probably boast at the present hour of perfect dysentery returns and statistics.

Now, to answer Boyd and Portnoy's query. Since nothing has changed in the aetiology of the dysenteries over the years 1928-40 (flies, filth, sanitation in general, grapes inadequately washed, raw figs, etc.) the risk of attack has obviously been the same year by year. The administration of a few ampoules of phage to a few privileged and enlightened individuals here and there in the community suffering from enteritis and acute bacillary dysentery can hardly be expected to eradicate or influence very greatly the foregoing foundations of the various dysenteries. Why, then, should Boyd and Portnoy shy at the statement that the "total annual number of cases of dysentery has averaged about 650 during the period [1928-40] and has not gone down to any great extent"? Phage has never been given prophylactically by me to healthy individuals, although Cmdr Wilson (*B.M.J.* 1942, 2, 81) whom Boyd and Portnoy quote, rather seems to think so. It has only been given by me to sick people. Actually, the former is an experiment that I have often wished could be done, but hitherto supplies have not permitted its being undertaken by me. Hence, Boyd and Portnoy are thinking wide of the mark if that is what they have in mind when they state that my argument is "based on figures which do not substantiate claims made elsewhere . . . to wit, that the early use of bacteriophage prevents the development of dysentery." If that is their view, then such a dish-up is to distort my teaching. What the early administration of phage does prevent, for which I coined the expression "preventive development" (*B.M.J.* 1942, 2, 676) is the development of diarrhoeas and "Guppy tummies" into full-blown attacks of bacillary dysentery. That is what I have insisted on and taught—not the something else which I have insisted on and taught—wrongly from their writings, Wilson (*loc. cit.*), and perhaps Boyd and Portnoy (*loc. cit.*), would have their readers think I have taught. Let it not be forgotten that the article which Boyd and Portnoy incriminate constitutes no more than an attempt to ascertain from impersonal data the equivalent of the U.K. Registrar General's statistics—what might be the general repercussion on a community of its impact with phage. There is no evidence that any of those

whose deaths are recorded ever had phage treatment, or even any specific treatment. Though the enlightened public of Alexandria are phage-minded, there are many backwaters and subsoil pockets among the native non-hospital population of this by Boyd and Portnoy may help to explain what troubles them concerning the vital statistics "figures which do not substantiate claims made elsewhere by this author." Also, therein I have not the slightest doubt will be found the explanation of that proportion of the deaths, due to bacillary dysentery, of the 5% case mortalities from global dysentery, recorded of recent years for Alexandria—I am, etc.,

ARTHUR COMPTON  
Director of Laboratory Service  
Alexandria Municipality

Alexandria

## Undescended or Retractable Testis: Differentiation

SIR.—During conduct of a children's surgical outpatient department I have been surprised how often cases labelled "undescended testis" prove on examination to be examples of "retractile testis," an acute cremaster having pulled the organ well up into the region of the inguinal canal. A simple method of examination will easily differentiate the normal from the abnormal. The child should be stripped from the waist and be lying down. The examining hands should be warm. First inspect the median raphe of the scrotum. If the amount of rugose scrotal skin on one side is less than on the other, the probability is that the undeveloped side never contained the testis. If the amount is equal on both sides, then either the scrotum is normal or else neither testis has descended. In the latter case the whole scrotum is symmetrically underdeveloped.

Now proceed to palpation, which should be carried out gently and without hurry or fuss, the object being to attempt manipulation of the testis from the region of the inguinal canal into the scrotum. The canal is situated a little (1/2 in.) above and parallel to the inner half of the inguinal ligaments. Stand on the affected side and employ the left hand for the right side, and vice versa. Coax the child to give a preliminary cough. This often dislocates the organ from its resting place. Using the pulps of index and middle fingers exert moderate pressure just lateral to the commencement of the canal, and, keeping up the pressure, slide the fingers down the whole length of the canal. If a normal testis has been drawn up, it will be pushed by the fingers towards the scrotum, grasped as soon as possible by the fingers and thumb of the other hand, and thereafter pulled down as far as possible. If the testis is truly imperfectly descended then it cannot be pushed or pulled the whole distance to the lower pole of the scrotum, or if ectopic it will reach some site other than the scrotum.

The same manoeuvre can be carried out with the patient standing, but I have found it more satisfactory when he is lying down—I am, etc.,

K. I. MACROSSON  
Glasgow

## Artificial Insemination

SIR.—I cordially support Dr Harper's appeal (Oct. 14) for an authoritative pronouncement on the ethics of artificial insemination. The letters which you have published from time to time, the references here and there to "semen bureaux or banks" or to "panels of semen donors," and Dr Harper's account, from a country town, of the remarkable invitation to a woman patient of his at a birth control clinic to get her husband to act as a donor to an insemination panel, all give the impression that this new procedure is attaining some magnitude without sufficient recognition of the fact by the profession at large.

The Medical Defence Union has recently published an advisory leaflet to steer the practitioner through the shoals of possible involvement in charges of conspiracy or of adultery levelled against the couple or the donor. The leaflet covers even the extreme case of artificial insemination of the single woman or the widow. The particular claims of the unmarried woman and of the professional woman, to which this might well be a reference, were touched on respectively by Dr. Anne McCandless and Dr. Pearse Williams in your columns a year ago (Oct. 2 and 16, 1943).

Even apart from any pronouncement from such a body as the General Medical Council, surely the profession is already able to form sound conclusions in the light of the fundamental significance of the marriage bond. In marriage, the man and woman in effect take a most solemn pledge, among other things, to have their children by that partner and by no other person. The pledge is not invalidated by childlessness, for the marriage ceremony included no exemption clause for infertility. For the woman to have a child by a donor not her husband is to break that pledge, and to argue that absence of physical conjunction means that the child is not by that donor is merely to play with words. For the medical practitioner to enable the woman to attain this end in this way is to aid and abet her in evading her pledge, even though this be with the husband's collusion. Call it adultery or what you will, I assert that no medical practitioner careful of his personal and professional honour can be a party to such an offence against marriage, however hard the individual case.

To pass from the married to the single woman, and to turn the latter into an unmarried mother by artificial insemination, is again to degrade marriage by assuming that morally it is not always necessary as a preliminary to begetting a family. Can any practitioner, recognizing the social implications of such an assumption, regard himself as acting with honour in aiding such a course?

Artificial insemination of the wife by the husband's semen falls in a different category. Where it is carried out, as described by Dr. Mary Barton (Sept. 4, 1943), by "insemination of the cervix from the vaginal pool following normal intercourse," after elimination of all other hindrances to effective union, the practitioner is only assisting an act entirely right in itself and directed to a right end. The essential objection here, and a sufficiently serious one, is aesthetic rather than moral, in the intrusion of the doctor into so intimate a relation. If the couple are prepared to pay that price, they are, I suggest, entitled to invite the practitioner's help. If, on the other hand, the husband's semen has to be obtained by a process involving masturbation, I would submit—perhaps not so acceptably as in the preceding conclusions, by reason of the bias created by the general adoption of methods of artificial contraceptives—that to the couple that fact should feel so besmirching to the act of conception as to make it wrong to them and therefore to the practitioner.—I am, etc.,

Birmingham.

H. P. NEWSHOLME.

SIR,—Dr. Margaret Hadley Jackson, in her letter on this subject, states: "It is noteworthy, however, that demand by the citizen for legal protection in this matter has not yet been voiced, nor has organized religion committed itself." May I make a clear statement of the position of the Catholic Church on a more fundamental matter, which by inference leaves no doubt of her position *vis-à-vis* artificial insemination? It is a commonplace of moral theology that deliberate ejaculation of semen in any situation other than the vagina—i.e., in normal consummated sexual intercourse—is an unjustifiable infringement of the natural law. That being so, there is no question of waiting to see how the Church will commit herself on this secondary subject.—I am, etc.,

Stannmore.

F. HARWOOD STEVENSON.

### Débridement

SIR,—If a word suggests, or can be made to suggest, a vivid mental picture, it is pedantic to reject it on the ground that its applied meaning is not its original meaning. "Débridement" is such a word. The surgical process it so admirably describes consists primarily in the removal of dead flesh, and débridement in its medical sense can be simply defined as the removal of debris. For those who prefer a coined word of English origin, "de-sloughing," with its suggestion of removal of sloughs or potential sloughs, is probably the best. But "débridement" is better than "de-sloughing," since it suggests the removal of dirt, clothing, and other forms of introduced debris, as well as that of sloughs. "Epluchage" to most Englishmen means nothing, and the mental picture aroused by the term "revision" was for most of us fixed long before we had completed the arduous path to qualification.—I am, etc.,

London, W.1.

DAVID H. PATEY.

### The Surgeon and the Anaesthetic

SIR,—Mr. Herbert H. Brown's stimulating championship of chloroform (Aug. 5, p. 191) raises several interesting points. He maintains that no danger attaches to light chloroform anaesthesia, arguing from its apparent safety when used to produce analgesia only, which is not quite the same thing. It is true that chloroform, when skilfully given, can produce analgesia without much impairment of cerebral control. The same can be said of trichloroethylene, ether, and nitrous oxide. But it is arguable whether such analgesia can really be produced without "any interference with the special senses or the slightest mental confusion." The fact that "the sense of hearing becomes if anything more acute" is itself inconsistent with this statement. If the effect were a real hyperacusis rather than a distorted appreciation of sound, it would follow that we never hear so well as when slightly anaesthetized, and old ladies would hasten to barter their ear trumpets for a Junker inhaler.

The point that anaesthetists tend to avoid chloroform because of its association with the coroner's court is most interesting, and raises issues which should be widely discussed. But the drug that kills the quicker is surely the more lethal, if only because it gives less time for counter-measures.

Mr. Herbert Brown suggests that "the surgeon should choose the anaesthetist who will give the anaesthetic he prefers in the manner required." It is to be hoped that most surgeons would prefer the anaesthetist who is competent to choose and administer the anaesthetic best suited to the patient in the circumstances. We all recognize the patient's need for a comfortable and quiet night before operation, but some would not agree that it should be obtained "by a small injection of morphine and atropine." Atropine is not a sedative, and it can cause a dryness of the mouth which is anything but comfortable to the patient.

In his last paragraph Mr. Brown resurrects the old bogey that pentothal when once injected into the blood cannot be removed until its time is up. All anaesthetic drugs are carried to the brain in the blood, and none can be removed except by katabolism. In condemning the "one-shot" method, by which an arbitrary dose is introduced all at once into the blood stream (in contrast to the method of keeping the syringe in place and injecting minimal quantities at intervals as they are needed) he will have the support of most anaesthetists but when he gives "a whiff of chloroform" for dental extractions surely he is doing something very like it.—I am, etc.,

RONALD F. WOOLMER,  
Surg. Cmdr., R.N.V.R.

### Service Medicine

SIR,—I have noticed in your columns many letters which have alternately reviled and praised State medicine as it is practised in the Services, adducing from their arguments point against or for the National Health Service as projected in the White Paper. May I as a Service doctor "for the duration" put the matter as I see it from my station over-seas.

These writers have, politely, called each other liars. The truth is, they are all right in their ways. It is true, as some say, that Service doctors have little to do, and, as others say that their day is always full; that, as some say, the equipment is good, and, as others say, very bad; that, as some say the patient gets better attention than in civil life, and, as others say, much worse. I can easily explain this from my own experience. My day is full, but careful calculation tells me that one-quarter of it is doing the work of a doctor—i.e. healing the sick and the prevention of disease—the other three-quarters is with Service matters—form-filling, indenting inspecting, and other routine matters. The equipment is available if demanded on the proper forms in quadruplicate, giving full reasons (and a few more for luck) and usually several times; but this procedure must be gone through, otherwise the equipment will often be bad.

A man may report sick and receive attention for the most trivial ailment and be treated with courtesy; he can be sent to the appropriate specialist for anything more serious with great ease, and have full investigation made. But he may be admitted to hospital for something trivial, stay there overlong,



and develop a handsome neurosis by contagion. His position on sick parade is prejudiced from the start by the fact that one must put one's loyalty to the Service first. One thinks not of a patient to be healed but of a man who may be trying to get away with something (not a malmonger, for they are rare, but an exaggerator), and he tries to prove he is ill before you start to think of him. Then in the background of our minds is a wild procession of forms to be filled in about him. Gradually, in spite of oneself, one ceases to be a doctor in the best sense, a healer, but becomes a State servant.

I know that I, who was at least on the beginning of the path to becoming a good doctor before joining up, am now right off the path and will have to struggle to get back. That all this is necessary to the proper prosecution of the war I have no doubt, but that it is necessary to the prosecution of the peace I have every doubt. That the N.H. Scheme is but another "Service scheme" I have no doubt either, the experience I have had reading orders in the Service gives me a clear view of the mailed fist inside the velvet glove. No sanctimonious blessing over the profession by a Minister of Health can make me give way with a pious hope that things will turn out for the better. Hence as what little I have done in uniform has been a part of a fight for freedom so I hope that when I don a "civil" suit again I shall not have to join in another fight for the freedom of the profession. My service has at least taught me the value of that freedom, and for myself I demand in any State scheme (1) freedom to treat my patient in the manner I think best, with the full resources of medicine at my command without the introduction of any third party whatsoever; (2) freedom to criticize that scheme in any way I like; (3) freedom to practise where I wish and to choose any branch of study I wish; (4) that neither my conduct nor my treatment in the practice of medicine may be officially censured or criticized except by a properly elected council of my peers.

The main attraction of a doctor's life is its individuality and acceptance of personal responsibility. One's conscience is one's guide, the tradition of the profession one's light, and the judgment of colleagues one's best corrective. In a State service one's conscience is replaced by instructions, tradition by the Service discipline, and the judgment of others and one's advancement depend on one's capacity for treading delicately between forms.

Let me, finally, congratulate the B.M.A. on its statesmanlike handling of this terrible problem, never having lost its temper, when I have lost mine so many times. Because I have presumed to criticize, I must ask you to respect my anonymity. Can there be any worse comment on a State service than that those who praise may publish over their names, those who criticize may not?—I am, etc.,

UNDER THIRTY

### Chemically Induced Resuscitation

SIR—The recent literature that has passed through the various columns of the *Journal* on the subject of artificial respiration prompts me to write on matters relating to this, which I propose to call as a title "Artificial Respiration Versus Chemically Induced Resuscitation."

It has been my experience, and probably the experience of a number of my colleagues, that ceaseless efforts at any type of artificial respiration, whether it be Schafer's, Silvester's, or Eve's, have failed to resuscitate in the various forms of asphyxia, especially those of poisoning. If it has not failed to resuscitate, the time taken to produce the respiratory mechanism to function is considerably long tedious, and anxious. In the group of poisons I should like those of the anaesthetics, inhalation or basal, to come first, as they are usually the most commonly met with, next in order are the orally ingested poisons, or those administered by a syringe—e.g., morphine, etc.—and, lastly, the carbonic acid type of asphyxia.

I have no hesitancy in stating that the following method will produce function of the respiratory mechanism within five minutes in an apparently dead patient and save not only anxiety but ceaseless exertion and probably failure of resuscitation by the ordinary methods.

The method I have adopted and found so effective is this: atropine sulph. 1/30 gr. hypodermically immediately on cessa-

tion of respiration, or, if not in an operation theatre, immediately on contacting the patient. Next an intravenous injection of one of the cardio-respiratory stimulants—I prefer anacardone (nikethrimidum)—2 ccm is given within half a minute. As a rule this is usually sufficient in a moderately asphyxiated patient. In one who is more deeply asphyxiated another 2 ccm anacardone is given intramuscularly in the left pectoral region or deltoid after an interval of 3 minutes, and a further injection of atropine sulph. 1/100 gr. 5 minutes after the first injection. Friction over the precordial region with the hand should be done by an attendant. If there is any possibility of resuscitation at all this method produces it, and if done within 5 minutes of asphyxia a taking place.

The most dramatic case I can recall was one of morphine poisoning, suicidal, where artificial respiration for 20 minutes failed to produce any effect. Within 5 minutes of the method described a long drawn breath was taken, and breathing was thereafter maintained. The patient from a completely comatose state, became semi-conscious almost immediately, and was able to get up and walk about, assisted, of course, and completely conscious within the hour.

I think it would be quite logical to presume that the asphyxias of drowning, electric shocks, and poisonous bites would also react to this method. It should be worth a trial. In conclusion I should like to state that only the healthy individual has been considered as the subject for such treatment. It is doubtful whether one suffering from a toxæmia would recover—I am, etc.

London S.W. 16

A. H. BARTLEY

### A Question of Priority

SIR—In the interests of independent British scientific research and truth, I suggest that the following facts should be neither overlooked nor suppressed. During my researches in bacteriology I have had the good fortune to add to our knowledge in some branches, but more particularly by my discovery of the "vitamin" in 1910, which I named the essential substance, and by my discovery of the "bacteriophage," which I named the "bacteriolytic agent." The source of this first vitamin—now frequently called vitamin K—was described in a paper read before the Royal Society, Nov. 17, 1910, and published in the *Proceedings*, section B, 83. It is given also in extended detail in the *Proceedings*, section B, 1912, 84, and in the *Centralblatt für Bakteriologie*, 1914, 73. This research received no Government support.

My first description of the "bacteriophage," which I named the "bacteriolytic agent," was given in the *Lancet*, Dec. 4, 1915, and later in more detail in the *Annales de l'Institut Pasteur*, Nov., 1931, 47 (on the invitation of Drs. Roux and Calmette), in the *Journal of Hygiene* July, 1936, and in other papers, but again the research received no Government support. I submit that this indicates a bad national policy.

I may add that the financial resources of the Brown Institution are small, and that since 1936 I have received practically no financial support to enable me to complete my extensive research on viruses, and I have had no colleagues in the laboratories to give any assistance—I am, etc.,

Cambridge Surrey

F. W. TWORT

### Relief and Reconstruction in Europe

SIR—Your leading article on relief and reconstruction in Europe (Oct. 28, p. 566) clearly shows the grim urgency of the needs of the peoples of Europe. The immensity of the problem calls for a most determined effort by the peoples of the United Nations and in particular by the British and American, to meet this unprecedented disaster.

Although your references to Italy's plight are, in the given space, comprehensive and sympathetic, I do not think your reference to the Government "without power or popular support" is either exact or helpful. The present Italian Government is in fact, a Government of national union, and has the full support of the various political parties of the National Front, from the right to the extreme left. Its vitality has been recognized by Mr. Churchill and President Roosevelt, and increasing powers are being granted to it, even if too slowly, to my mind. As doctors we are not satisfied with recognizing



that somebody is ill: it is important to diagnose also if the patient is getting better or is getting worse. In spite of inevitable crisis and setbacks I think our prognosis about Italian democracy should be a favourable one.—I am, etc.,

Queen Mary's Hospital, Sidcup.

E. MONTUSCHI.

### Princess Tsahai Memorial Fund

SIR.—It was the generous ambition of the Princess Tsahai of Ethiopia to build a hospital in the capital city of her country which would include provision for sick children not hitherto available in any Ethiopian hospital, and would be a teaching institution where her young compatriots with a vocation for hospital service could obtain the necessary training. Her father, the Emperor Haile Selassie, had created a trust for her, represented by a holding of £13,704 in British War Loan. In the summer of 1942, returning on what was then a perilous journey to her country, the Princess signified her desire that in the event of her death this trust fund might be used towards founding a hospital in Addis Ababa. The lamented death of the Princess occurring soon after her return to Ethiopia, the above trust reverted to the Emperor. His Imperial Majesty, in accordance with the Princess's known desire, has most generously placed the whole amount at the disposal of the National Provincial Bank Limited, Overseas Branch, 1, Princes Street, London, E.C.2, for the use of the Princess Tsahai Memorial Council, as and when it can be suitably employed in the hospital project.

The Council most gratefully acknowledges, with warm thanks to the Emperor, this generous gift. £3,000 of the benefaction has already been remitted to Addis Ababa to roof the hospital building, and work is proceeding. A further considerable sum is required to equip and endow the hospital, which commemorates the initiative of the young Princess, whose devoted service in British hospitals is gratefully remembered, and which will be a helpful tribute of friendship from this country to a loyal and sorely tried ally. Three wards in the hospital will commemorate the service of gallant British friends. The General Orde Wingate Ward is to be endowed in the name of the soldier who led the Emperor Haile Selassie's army to victory in 1940. The John Melly Ward will commemorate the doctor who raised and led the British Ambulance Service in Ethiopia when the Italian invasion began in 1935. The Davies Ward will bear the name of the late chairman of the Memorial Council.

I shall be glad to acknowledge both donations and annual subscriptions to the Princess Tsahai Memorial Hospital, addressed to me, c/o Messrs. H. Reynold and Co., Honorary Chartered Accountants to the Fund, 1, Bloomsbury Square, High Holborn, London, W.C.1.—I am, etc.,

HORDER,  
Hon. Treasurer, Princess Tsahai  
Memorial Hospital Fund.

## Universities and Colleges

### UNIVERSITY OF EDINBURGH

A gift of £70,000 has been made to the University of Edinburgh by Sir Robert McVitie Grant to found a Chair of Dermatology. This is the first professorship of its kind to be established in Britain, and the development is regarded by the University Court as an encouraging and significant one, in view of the increasing attention now paid to the study of diseases of the skin. The donor is chairman and managing director of McVitie and Price, Ltd. His father, the late Sir Alexander Grant, made benefactions to Edinburgh University for general purposes and in connexion with the Chair of Geology.

### UNIVERSITY OF LIVERPOOL

Miss Florence Horsbrugh, Parliamentary Secretary to the Ministry of Health, opened on Oct. 27 the new Department of Child Health which has been established by the University in conjunction with the Liverpool City Council and the voluntary hospitals on Merseyside. The aim of the department, under the direction of Prof. N. B. Capon, the first holder of the chair, is to teach child health to medical students and graduates and to undertake research into the problems connected with child welfare and health. The new department embraces special wings at the Alder Hey and the Royal Liverpool Children's Hospitals. Congratulating those concerned on "the

grand alliance" that had been formed between the Corporation, the University, and the voluntary hospitals, Miss Horsbrugh said it was an encouraging feature that in a time of war, destruction, and suffering they were opening a new department which would combine child welfare services in order to give the next generation a better chance and build up healthy children and healthy citizens. She hoped that the scheme was the beginning of a partnership which would lead the country.

### ROYAL COLLEGE OF OBSTETRICIANS AND GYNAECOLOGISTS

A quarterly meeting of the Council was held on Oct. 28, with the President, Mr. Eardley Holland, in the chair.

The following were admitted: *To the Fellowship*: Leonard Colebrook, L. G. Parsons. *To the Membership*: J. N. I. Emblin, J. P. Erskine, Agnes M. Stewart, Elsie M. Terry, Irene M. Titcomb. *In absentia*, A. H. MacLennan, R.C.A.M.C.

The following have satisfied the examiners and have been awarded the Diploma of the College: S. J. Barr, E. K. Blackburn, D. W. Briggs, Maud Lovett Buchanan, Alison Clarke, Josephine A. Davidson, A. S. Esslemont, P. K. Holding, J. K. Irving, R. J. McC. Jamieson, D. L. H. Jones, M. Lipsitz, P. A. T. Lowden, J. M. Pallot, B. D. Patel, Jean A. Robertson, Margaret O. Thorpe, R. A. K. Wiener, Ruth M. H. Winter.

### CONJOINT BOARD IN SCOTLAND

The following candidates, having passed the final examinations, have been admitted L.R.C.P.Ed., L.R.C.S.Ed., L.R.F.P.&S.Glas.:

J. E. Bossman, Enid W. Brett, J. Y. Brown, A. L. Buchanan, J. S. G. Clark W. H. Dempster, T. W. Duff, R. J. Frame, James Gemmell, Philip Harris J. D. Hope, B. D. Jacobson, L. Jaffe, I. S. Lechler, J. Mazel, Gordor Paterson, M. R. Pitts, M. M. Salzmann, E. Shenken, H. Shilling, K. S. Stewart, Richard Thomas, J. S. Tugendreich, R. S. Walker, A. L. Walcott, N. Klein, M.D., a graduate of a recognized foreign University, was also admitted a Licentiate.

## Obituary

### ERNEST WILLIAM HEY GROVES, M.S., F.R.C.S.

On Oct. 22, 1944, Ernest Hey Groves died at his home in Clifton, Bristol, after a long and distressing illness, and there passed away with him a great English surgeon.

He was born at Coonoor on the Nilgiri Hills in India on June 20, 1872, the son of Edward Kennaway Groves, a civil engineer. When his father retired he settled in Bristol, bringing home with him his 3-year-old son. The boy had a will of his own, for it is related that on the steamer, finding his shoes too tight and pinching his feet, he took them off and flung them overboard. He went to school at Redland Hill House, Bristol. Thence he gained an entrance scholarship at St. Bartholomew's Hospital, London, where he obtained the B.Sc.Lond. in 1890, and qualified M.R.C.S., L.R.C.P. in 1895 taking the M.B. in 1897 and the M.D. in 1900. He held the post of resident accoucheur at Bart's under Sir Francis Champneys before entering upon general practice. He went first as assistant in various parts of the country, and then settled into practice on his own account at Kingswood Bristol. Here he performed many major surgical operations on private patients in his own house, where his wife assisted in the theatre and nursed the patients. Mrs. Hey Grove (née Frederica M. L. Anderson), whom he married in 1896 had been a nurse at Bart's, and his success in establishing a reputation as an operating surgeon while in general practice in the outskirts of Bristol was in no small measure due to her competent help and encouragement. When in 1903 a vacancy occurred on the surgical staff of the Bristol General Hospital Hey Groves was invited to become assistant surgeon, an almost unprecedented recognition of the surgical attainments of a G.P. But by this time Groves had attained high academic honours, having taken the B.S. degree with honours in 1904, the M.S. with gold medal in 1905, and the F.R.C.S. in 1905—a remarkable record for a man engaged in busy practice. The judgment of the election committee of the Bristol General Hospital was amply justified by his previous record, and still more so by his subsequent performance. Before long he had turned his attention to bone surgery and became one of the pioneers in bone-grafting. His judgment was sound, his technique

admirable. No one could be bolder when boldness was required, yet he could be as cautiously conservative as anyone upon occasion. In the war of 1914-18 he took a commission in the R.A.M.C.(T), and went to Egypt in charge of the surgical division of a general hospital during 1915-16. On returning to England he was attached as surgeon to the Beaufort War Hospital, Bristol. His friendship with and admiration for Sir Robert Jones were cemented by their common interest in orthopaedic surgery. It was in orthopaedic surgery that his reputation became world wide, and when the B.M.A. met in Bath in 1925 he was president of the Orthopaedic Section. In 1933 he travelled to Australia for the B.M.A. Meeting, where he was again president of the Orthopaedic Section and was honoured by being made a Fellow of the Royal Australasian College of Surgeons. In 1928-9 he was president of the British Orthopaedic Association. At the Royal College of Surgeons of England he achieved notable recognition. He was Hunterian Professor in 1914, Jacksonian Prize-man in 1917, Arms and Gales Lecturer in 1917, Bradshaw Lecturer in 1926, and Hunterian Orator in 1930. He was a member of Council for 23 years, and became a Vice-President of the College.

Perhaps one of his greatest triumphs was the making of the *British Journal of Surgery*. The germ of the idea in 1913 was his, though it was fostered from the beginning by the late Lord Moynihan. Here is an appreciation of his work as Editorial Secretary of the *Journal* from a former member of the publishing staff:

"It was my good fortune to act as secretary to Mr. Hey Groves for nearly 25 years in his work with the *British Journal of Surgery*. An editor's task is not an enviable one but it would have been hard to find anyone more energetic and understanding as the editor of that journal which he founded in 1913, and which owes its present high position in the surgical world very largely to his industry and far-sighted policy. His kindly criticism of articles sent in for publication, his helpful letters to young surgeons submitting, perhaps for the first time, articles regarding the arrangement of which they were rather dubious, his advice about illustrative values, were all typical of his sincere resolve to maintain in surgical journalism the very highest standard. He was ever on the watch for articles dealing with 'everyday' surgery, and long tedious tables of statistics did not greatly impress him. His search for critical reviews of such subjects as tumours of the lung, surgery of the sympathetic nervous system, etc., brought in articles which have since been invaluable to research workers. He looked forward eagerly to the monthly meetings of the Editorial Committee which were held in the Examiners' Room of the Royal College of Surgeons (the very room in which the idea of the *B.J.S.* was born) his mind ever ready to answer any question arising out of the minutes or to accept suggestions for the betterment of the *Journal*. The presentation to him in October, 1933, of a beaten silver salver (the work of Omir Ramsden) was a symbol of the gratitude and affection which the Editorial Committee and subscribers felt for him and he prized both the gift and the spirit behind the gift very highly. Lord Moynihan, in making the gift said: 'This presentation is made to you on behalf of a number of subscribers to the *British Journal of Surgery* in recognition of your invaluable services during twenty years as Editorial Secretary. We offer you this salver and cheque as a tribute to your efficiency and devotion. You were one of those in whose mind was conceived the idea of founding in this country a journal worthy of the contributions to the art and science of surgery which England and the British Empire were making. Difficulties were many, and opposition and indifference were found in such places. In earliest days and throughout twenty years, with the exception of one year when you served in the Army overseas, our activities centred round you. All our plans all our ambitions, all our efforts found in you a most willing, most competent, and tireless worker. Your industry your wise judgement, your enthusiasm and unswerving faith, have been of value beyond reckoning in maintaining year after year our corporate efforts. To-day and by our simple gift we seek with our affection to assure you of our cordial recognition of your invaluable help.'

In Bristol Groves was professor of surgery for ten years, from 1922 to 1932, and his work was recognized by the University when the degree D.Sc. *honoris causa* was conferred upon him at the centenary of the Bristol Medical School in 1933. Belfast, too, made him an honorary LL.D. and the National University of Ireland an honorary D.Sc. When he first became professor he started clinical rounds in alternate weeks at the Hospital and the Infirmary, for he found the two institutions in something like opposition and rivalry, with the Infirmary students knowing nothing of the Hospital, and vice versa. But beyond these public endeavours to promote

harmony and co-operation one who worked with him for 18 years writes:

Possibly I know of some of his generous actions that few others are aware of. At least two successful medical men were enabled to complete their medical studies which otherwise they would, owing to financial difficulties, have had to abandon. He found out about their circumstances and paid the rest of their fees. Incidents he used to tell me about his own student days help to show the tenacity of purpose he had. He won a scholarship for Bart's, and was sent to London to live with an uncle who resided at the far end of Hampstead. His uncle kept him, but did not allow him any pocket money. He had no money from home, and so he used to get hold of an odd arm or leg from the dissecting room and smuggle it back to Hampstead, and in the basement, by the light of candles gave grinds to younger students for a few shillings, but often he said there was a 'free' list for these grinds as well. Someone had to hold the door for if they had been found out they would have been sunk. Another incident was when a London surgeon asked him if he had ever seen London in the dawn, or before dawn broke. Mr. Groves said: 'I know the dawn in London as well as any surgeon you could name, I expect.' He said he was a devotee of Gladstone, and when he could he used to get into the House of Commons and listen all night to the Home Rule Bill debates, then walk back to Hampstead at 4 a.m., because, of course, there was no transport available at this time and he had no money for cabs. He said he did this many times. I cannot think of many modern students who would walk 4 to 5 miles in the chill of dawn to hear even Winston Churchill.

He was a prolific writer in the journals, and had published his well known *Synopsis of Surgery*, *Surgical Operations for Students and Nurses*, *Fractures*, and with Fortescue Brickdale *A Textbook for Nurses*. His recreations were golf, swimming, motoring and travel. How he loved travel, and what a companion he was! Not the least of the attractions for him was the Moynihan Surgical Club. He called his travels 'a busman's holiday,' but it was not only to study surgery and surgeons in new places that he loved travelling. The novelty of other towns and other lands enthralled him. He was a dependable colleague, a cheery and delightful travelling companion and a grand friend. To his widow, who survives him we offer our deep sympathy. *Requiescat in pace*.

J A N

Dr CHARLES J. TRIMBLE C.B., C.M.G., one of the best known medical men in the Preston area died on Oct. 8 at the age of 88. For very many years he had been a notable figure in general practice and to the older generation of Preston people he was the well beloved and trusted physician. On his retirement from general practice he had devoted his extraordinary energies to administrative work, so that the younger generation of doctors knew him as an M.O.H., always ready with help and guidance cheerfully given. Ever careful of the clinical freedom of the practitioner, he enjoyed the trust and co-operation of every doctor in the neighbourhood. His interests were many and varied. His work in connexion with the Order of St. John of Jerusalem of which he was a Knight of Grace, was nationally recognized, and his lifelong association with the Territorials had won for him the richly deserved honour of Honorary Colonel of the 88th Field Brigade R.A. During the last war (he was 59 years of age in 1914) he served with distinction as O.C. of a base hospital in France and was mentioned in dispatches for bravery and administrative ability on three occasions, and at the conclusion of hostilities he received the honour of the C.M.G. For his services in the Boer War he was created C.B. For many years he served as a Justice of the Peace, was a Deputy Lieutenant for Lancashire, served on the county council, and was a freemason of 30 years' standing. D.J.D. writes: 'Of Irish birth, Dr. Trimble was a most charming personality. He loved life, enjoyed the company of his fellows and children adored him. He was most generous and was always anxious and willing to serve all who sought his aid. I was privileged to attend him during his last illness, he was ever grateful for any service given, and his interest in things medical remained acute even in the last month. The final chapter of his life presented a vivid, unforgettable picture. The unstinted devotion and kindly care of his daughter, who had been his lifelong companion, the constant unwavering attention of his successor as M.O.H. the loyalty of the officials who had served him in the past and perhaps above all, the generous welcoming smile and kindly handshake of a courteous and gallant gentleman. F.H. writes: 'The death of Col. Charles J. Trimble in his eighty-ninth year closes a life of activities which in their variety can seldom have been equalled by a member of the medical profession. In a career of such merit and of unusual extent it would be difficult to say which field of work was his

predominant interest. He served on all the medical committees of the Lancashire County Council, and through his wide knowledge of human relations rendered most valuable service. Perhaps the tuberculosis service, which developed mainly under his chairmanship, may be considered a fitting memorial to his public work. To all his undertakings he brought to bear a keen and powerful intellect, and by his enthusiasm and unsparing efforts ensured their success. Many high honours were conferred upon him, and during the last war he was awarded the gold life-saving medal of the Order of St. John in recognition of brave conduct and leadership, during a period of great stress for the unit he commanded. By his friends and colleagues he will be remembered for his loyalties, for his cheerful and generous nature, and for his gift of kindly humour. Family doctor, medical officer of health, soldier, and administrator, in all these capacities he excelled, and his life is a fine example of devotion to duty and a record of noble service to his fellow-man.

C. E. V. R. writes: Dr. ALFRED COLES of Bournemouth will be remembered by his fellow-practitioners as a distinguished physician of the old Edinburgh school, who had a special aptitude for clinical pathology and haematology. To bacteriologists the name Coles will be familiar from his writings on optics, critical microscopy, psittacosis, blood parasites of man and animals, and in particular his lifelong efforts to demonstrate the value of the ordinary microscope for the study of virus elementary bodies. Coles was a genuine enthusiast, and, in company with Mrs. Coles, devoted most of the leisure hours of his retirement from practice to the hobby of microscopy. As a free-lance research worker he led an ideal existence; he cultivated the friendship of those he admired, and possessed an indefatigable desire for investigating the aetiology of infective diseases of unknown origin, sustained by his unbounded zeal for the study of microscopical objects of minute size. He performed his researches at his own expense and sought neither financial reward nor other advantage from anybody, but derived much amusement as a critical spectator from observing the efforts of others. Coles said and wrote what he believed to be correct; he made many interesting original observations in the field of microbiology and (like all true pioneers) made many pardonable mistakes. He was also a great authority on bird life and, with Mrs. Coles, spent many hours observing the migratory habits of these creatures on the South Coast shores. The death of Dr. Coles removes from our ranks a unique character, free and independent, a great doctor, and a born student of biology, to the knowledge of which he has made lasting contributions.

## Medical Notes in Parliament

### Legislation on N.H.S.

MR. WILLINK was asked on Nov. 2 by Sir LEONARD LYLE what progress was being made in his discussions with the medical profession about the establishment of a National Health Service; and by what date he anticipated that he would be in a position to evolve definite legislative proposals for submission to Parliament. Mr. WILLINK replied that since he had stated the position to Dr. Howitt on July 13 the Representative Meeting of the British Medical Association had been arranged for early next month. Meanwhile, the Council of the Association had agreed to his suggestion that they should send representatives to elucidate points in their own draft statement of policy. Useful discussions for this purpose had taken, and were taking, place. He was not yet in a position to say when legislation would be introduced. He did not propose to cajole or compel the medical profession to join the Civil Service, or in any other direction.

### Medical Work of UNRRA

UNRRA have appointed a medical liaison officer for each of the countries in which they expect to function. It will be the duty of these liaison officers to assess the need for further medical personnel. It is expected that the chief need of UNRRA for doctors will be for work with the displaced persons section of the administration. Apart from work with this section, it is thought that doctors who entered this country as refugees will best be able to assist by serving in the health organizations of their own countries rather than in UNRRA itself. Mr. RICHARD LAW gave this reply on Nov. 1. He said refugee Jewish doctors would be able to return to their own countries other than Germany.

### Health in "Blitzed" Areas of Southern England

In a debate on Oct. 27 about repair of war-damaged houses in London and South-East England Mr. ROBERTSON said the race was between repairs and disease. Tuberculosis was increasing in Streatham, his division. Chemists could hardly deal with the prescriptions which poured in. People were living with continual draughts through the rooms or were living in one habitable room, with the furniture from upstairs piled into the other. Dr. HADEN GUEST asked whether the health situation was being carefully watched. During the last war, when housing conditions were better, a world-wide epidemic of influenza arose. Tuberculosis was not the only unfortunate thing which might happen. There was danger of some new plague from the ruins of the devastated homes.

Mr. WILLINK said that in the London region the total loss of houses was 109,000, and on Sept. 22 800,000 houses needed repair to make them reasonably comfortable. This did not include houses where a "field dressing" had sufficed or those where the damage was too serious to be tackled this winter. Mr. Willink did not allude to the dangers to health.

### Medical Examination on Demobilization

On Oct. 31 Mr. PARKER asked the Secretary of State for War whether arrangements could be made for a thorough medical and dental examination of all men and women on demobilization from the Army. Sir JAMES GRIGG: Yes, Sir. Such arrangements will be instituted when the release scheme is brought into operation. It was later stated that similar arrangements would be made for the Navy and R.A.F.

### Antitetanus Serum

On Oct. 31 Mr. A. EDWARDS asked the Minister of Health to what extent hospital staffs were obliged to inject antitetanus serum in all cases of accident, except where the patients refused to permit this; whether he was aware that the serum occasionally had disastrous effects, as at the Norfolk and Norwich hospital recently, where a patient died from anaphylactic shock caused by an administration of the serum; and whether he would intimate to those hospitals with which his Ministry had any connexion that it was inadvisable to make the administration of antitetanus serum a routine matter. Mr. WILLINK said that so far as air-raid casualties and other cases falling within the Emergency Hospital Scheme were concerned, hospitals were instructed that tetanus antitoxin in the doses prescribed in the instructions must be injected in all cases of injury. He was advised, on information supplied by the Medical Research Council, that the danger of anaphylaxis was very small, and he was not prepared to advise hospitals in the sense suggested in the last part of the question. The only cases of tetanus among air-raid casualties reported to his medical officers had occurred where no antitoxin had been given or where the instructions had not been fully observed.

### Tuberculosis in the Services

On Nov. 2 Mr. JAMES GRIFFITHS asked how many persons graded A1 on admission to the Forces had been refused pensions on the ground that their disability—tuberculosis—was not due to their service. Sir WALTER WOMERSLEY regretted that the records did not enable him to give the figures asked. The large majority of cases of tuberculosis were accepted as due to service. Each application was considered in the light of the available evidence, including the member's medical history and the conditions of his service. Among the cases rejected it was not uncommon to find that, whereas the member on entry was graded I on clinical examination, he was subsequently found, by mass radiography, to be suffering from a quiescent lesion and to have been discharged to prevent the possibility of reactivation.

**Committee on Artificial Limbs.**—Sir WALTER WOMERSLEY announced on Nov. 2 the appointment of a committee to consider the design, development, and use of artificial limbs and of appliances connected therewith, under the chairmanship of Sir Brunel Cohen; the medical members are: Dr. A. A. Atkinson, Prof. T. P. McMurray, Mr. G. Perkins, and Prof. H. J. Seddon.

**Casualties among Doctors.**—On Oct. 31 Dr. HOWITT asked the Secretaries of State for Air, for War, and the First Lord of the Admiralty the number of casualties among doctors serving in the Navy, the Army, and the R.A.F. during the war up to the present time. The reply in each case was that it would not be in the public interest to give the information asked for.

### Notes in Brief

Sir James Grigg said the present requirement that artistes who wished to entertain the Services abroad must be vaccinated and inoculated was one which must be maintained.

## Medical News

Lord Moran and Prof. G. W. Pickering will speak on pre-medical education at a meeting, to which members of the B.M.A. are invited, of the London and Home Counties Branch of the Science Masters Association to be held at Mercers' School, Holborn, on Nov. 11, at 2.30 p.m.

The speakers at the second annual general meeting of the Research Board for the Correlation of Medical Science and Physical Education, which will be held at the Royal Institution, 21, Albemarle Street, W.1, on Nov. 15, at 3 p.m., will be the Minister of Health, Sir Alfred Webb-Johnson, and Brigadier F. A. F. Crew. The chair will be taken by Brig. F. D. Howitt, and the business will include an interim report by the board on "Medical Science and Physical Education and their Relation to Maternity and Child Welfare, Education and Recreation, and the Services."

Two meetings of the British Institute of Radiology will be held this month at the Reid-Knox Hall, 32, Welbeck Street, W.1. On Nov. 16, at 8 p.m., an ordinary meeting will be followed by a symposium on "Physical, Biochemical and Therapeutic Aspects of Volume Dosage," at which one of the speakers will be Dr. F. Ellis. The following day there will be a meeting of medical members at 5 p.m.

A meeting of the Clinical Society of the Royal Eye Hospital will be held at the hospital, St. George's Circus, Southwark, S.E., on Friday, Nov. 24, at 5 p.m., when a talk will be given on "Foreign Service Experiences" by Major A. J. Cameron, Dr. F. Rowland Hill, and Major J. O. Oliver.

At an open meeting of the Scottish Eastern Association of the Medical Women's Federation on Friday, Nov. 24, at 8.15 p.m., in the B.M.A. Scottish House, 7, Drumshough Gardens, Edinburgh, Sir John Boyd Orr will give an address on "The Health of Mother and Child." Practitioners and senior medical students are cordially invited to attend.

Mr. R. Ogier Ward has been appointed surgeon to St. Peter's Hospital.

The Aylesbury office of the *Lancet* has now been closed, and all communications should be addressed to the London office, 7, Adam Street, Adelphi, W.C.2 (telephone, Temple Bar 7228).

## EPIDEMIOLOGICAL NOTES

### Discussion of Table

In *England and Wales* during the week measles notifications went up by 691, and those for scarlet fever by 24. The incidence of these diseases has risen continuously during the past two months. Whooping-cough, dysentery, and diphtheria also were more prevalent than last week, the increases being respectively 73, 33, and 13.

There were 355 more cases of measles in Lancashire last week, and 68 more in Cheshire. The increase in measles notifications has been more rapid in Lancashire than elsewhere in the country: during August 22% of the total cases were notified in this county, while in the past four weeks the percentage was 37; the largest returns were from Liverpool C.B. 258, Manchester C.B. 232, St. Helens C.B. 110—i.e., these three towns notified almost one-sixth of the total cases in the whole of England and Wales. Although the incidence of scarlet fever rose, the only large local variation was a fall of 76 in Lancashire. London had 15 more cases of diphtheria than last week, and Lancashire 39; half the total cases in the latter county were recorded in Liverpool C.B., which, with 61 notifications, had over one-tenth of the total for the whole country.

The rise in dysentery was due to an outbreak among 48 persons in Yorks West Riding, Wortley R.D. The other principal centres of infection were London 57, Lancashire 50, Surrey 38, Essex 28, Middlesex 26, Glamorganshire 26, Gloucestershire 16, Northamptonshire 12.

In *Scotland* the incidence of infectious diseases remained practically constant. The only local variation of note was an increase of 16 in the cases of diphtheria reported from Glasgow.

In *Eire* notifications of diphtheria rose sharply from 110 to 153; the disease is widespread, involving fifty-five areas.

In *Northern Ireland* a fall of 46 was recorded in the notifications of scarlet fever.

### Week Ending October 28

The notifications of infectious diseases in *England and Wales* during the week included: scarlet fever 2,288, whooping-cough 1,061, diphtheria 554, measles 4,442, acute pneumonia 538, cerebrospinal fever 47, dysentery 362, paratyphoid 14, typhoid 9, acute poliomyelitis 14.

## INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended Oct. 21.

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year, for: (a) England and Wales (London included), (b) London (administrative county), (c) Scotland, (d) Eire, (e) Northern Ireland.

Figures of Births and Deaths, and of Deaths recorded under each infectious disease, are for: (a) The 125 great towns in England and Wales (including London), (b) London (administrative county), (c) The 16 principal towns in Scotland, (d) The 13 principal towns in Eire, (e) The 10 principal towns in Northern Ireland.

A dash — denotes no cases, a blank space denotes disease not notifiable or no return available.

Disease	1944					1943 (Corresponding Week)				
	(a)	(b)	(c)	(d)	(e)	(a)	(b)	(c)	(d)	(e)
Cerebrospinal fever Deaths	36	1	19	3	1	46	2	19	2	4
Diphtheria Deaths	580	24	175	153	25	725	44	233	187	41
Dysentery Deaths	391	57	110	—	—	249	65	45	2	—
Encephalitis lethargica, acute Deaths	1	—	2	—	—	—	—	—	2	—
Erysipelas Deaths	—	—	63	14	5	—	—	67	6	1
Infective enteritis or diarrhoea under 2 years Deaths	50	3	19	13	1	51	6	14	25	6
Measles* Deaths	3,779	54	253	33	106	546	50	47	17	—
Ophthalmia neonatorum Deaths	76	3	16	—	1	91	13	13	—	—
Paratyphoid fever Deaths	6	1	—	—	—	—	—	1	—	—
Pneumonia, influenza† Deaths (from influenza)	640	40	5	1	3	579	41	19	1	5
Pneumonia, primary Deaths	25	4	4	3	—	13	1	8	1	3
Poliomyelitis, acute Deaths	—	—	194	21	5	32	195	11	8	12
Poliomyelitis, acute Deaths	14	—	5	3	1	13	—	—	—	—
Puerperal fever Deaths	—	—	8	15	1	—	3	15	—	—
Puerperal pyrexia‡ Deaths	157	9	21	3	—	158	15	10	2	1
Relapsing fever Deaths	—	—	—	—	—	—	—	—	—	—
Scarlet fever Deaths	2,176	44	322	48	59	3,317	316	445	67	105
Smallpox Deaths	—	—	—	—	—	—	—	—	—	—
Typhoid fever Deaths	9	—	6	10	4	7	—	—	13	—
Typhus fever Deaths	—	—	—	—	—	—	—	—	—	—
Whooping-cough* Deaths	970	49	78	19	12	1,459	103	154	10	22
Deaths (0-1 year) Infant mortality rate (per 1,000 live births)	334	32	72	43	24	355	49	67	43	19
Deaths (excluding stillbirths) Annual death rate (per 1,000 persons living)	4,288	573	605	235	108	4,089	627	612	199	124
Live births Annual rate per 1,000 persons living	6,559	478	997	357	268	5,973	704	859	392	283
Stillbirths Rate per 1,000 total births (including stillborn)	202	17	23	—	—	200	24	37	—	—

\* Measles and whooping-cough are not notifiable in Scotland, and the returns are therefore an approximation only.

† Includes primary for England and Wales, London (administrative county), and Northern Ireland.

‡ Includes puerperal fever for England and Wales and Eire.

§ Owing to evacuation schemes and other movements of population, birth and death rates for Northern Ireland are no longer available.

## Letters, Notes, and Answers

All communications with regard to editorial business should be addressed to THE EDITOR, BRITISH MEDICAL JOURNAL, B.M.A. HOUSE, TAVISTOCK SQUARE, LONDON, W.C.1. TELEPHONE: EUSTON 2111. TELEGRAMS: *Antiology Westcent, London*. ORIGINAL ARTICLES AND LETTERS forwarded for publication are understood to be offered to the *British Medical Journal* alone unless the contrary be stated.

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### ANY QUESTIONS?

#### Tourniquets

**Q.**—In two fairly recent first-aid manuals the old direction that tourniquets should be relaxed every 15 minutes is repeated. The disadvantages, difficulties, and even dangers of this procedure in first-aid work are obvious. Both the manuals are otherwise excellent and I recommend them confidently to my classes. To which system—circulatory, peripheral, or central nervous—is the danger of allowing much longer intervals to elapse supposed to be due, and is there any evidence in support of the manual's direction?

**A.**—There is experimental proof (by Blalock and others) and clinical confirmation for the view that prolonged continuous application of a constricting tourniquet to a seriously injured limb greatly lessens the chance of survival not only of the affected limb but even of the very life of the subject of the injury. When applied for more than a short time the tourniquet produces an ischaemia which damages the tissues, and particularly the lining endothelium of the small capillaries, which on resumption of the circulation allow the fluid part of the blood to transude into the tissue spaces and thereby deplete the circulation and increase shock. There is also some evidence that toxic metabolites are formed in ischaemic tissues, and that these are later swept into the general circulation and do harm. It is good policy to do without a tourniquet when possible, and to apply it for the shortest time compatible with safety when it must be used. In a normal limb a tourniquet can usually be left on for thirty or forty minutes without any harm accruing—e.g., operations on the knee—but in dealing with a seriously damaged limb there is sound sense in permitting a temporary re-establishment of the circulation after a period of 15 minutes. This is not always possible and sometimes risks have to be taken, but the principle remains sound.

#### Tuberculin Testing

**Q.**—Would tuberculin testing of the general population, say, of a town of 60,000 persons yield any information that could be applied in the administrative control of tuberculosis?

**A.**—Tuberculosis testing of a selected community of, say, 60,000 persons of the general population would indicate the incidence of the infection but would give no information as to the morbidity of the disease. If all the negative reactors were retested at four- or six-monthly intervals until they gave a positive result, it could lead, by intensive search, to the discovery of the infecting agents. Such case-finding methods have been used with success in the U.S.A. and are valuable in the control of the disease among children. Both in adults and in children the development of the primary lesion can be observed and any necessary treatment prescribed if the time of the conversion of the skin reaction is known. A tuberculosis skin-test survey would also enable special attention to be given to the negative reactors who were, or contemplated, working or living in contact with open cases of tuberculosis.

#### Mixed Drinks and "Hangovers"

**Q.**—Why is it that the "mixing" of alcoholic drinks has more effect on an individual than if he sticks to one variety? Why do some drinks have worse after-effects than others, especially if mixed? What is the best treatment for a "hangover"? The last point does not seem to be dealt with very adequately in any literature, and is, I have found, of great importance when dealing with men who have to do a highly specialized job, sometimes after a "hectic" party.

**A.**—The first point to consider is whether the "mixing" of alcoholic drinks of similar nature—e.g., different types of cocktails—has a more inebriating effect than an equal number of any one of them. Is the resulting exhilaration from a "white lady," a "side-car," and a dry Martini greater than three like volumes of any one of these, even the weakest of the three? Frankly I do not know,

but suspect that there is no noticeable difference. If it does exist it can be explained only on the assumption that other constituents—e.g., volatile oils—vary in their powers of accelerating or retarding the absorption of alcohol from the stomach. I suspect that in the case of spirituous liquors one drinks more by being tempted by different flavours.

Presumably your correspondent is mainly interested in the harmful effect of "mixing" beer or wine with spirits. The Germans, who used to know a lot about drinking before they became a pest to their neighbours, were fond of quoting, "Bier auf Wein das darf nicht sein: Wein auf Bier das rate ich Dir." I believe, however, that there were numerous variants to suit the taste of the individual bibber. That the greater degree of drunkenness cannot be explained simply on alcoholic content seems clear, and one is forced to assume that other constituents of wines, beer, and spirits must play their part, though probably in relation to the process of absorption rather than to a direct effect on the central nervous system. Before committing ourselves to such a theory we ought to find out whether it is really true that such "mixing" is harmful. I know of no scientific approach to this age-old problem. This is strange in view of the fact that there would be no lack of volunteers! It is alleged that the "hangover" of "mixed" drinks is worse than that of a bout of "single-track" drinking. Again, if this is so the non-alcoholic constituents of the drinks are probably responsible. Some years ago Hurst attempted to demonstrate that liver damage followed a single bout of drunkenness, and that it caused the "hangover" symptoms. The evidence was inconclusive. The probability is that the symptoms are due to (1) the effect on the brain; (2) gastritis; (3) hepatitis. I believe the first is the most important, for the symptoms can be abolished with cocaine. This I do not advise. Every man has his own treatment for "hangover." My own, which is no worse than many others, is: (1) A bottle of Vichy water, or substitute, before retiring. Obviously only the seasoned and experienced toper will carry this out. (2) Half a pint of cold water containing a teaspoonful of sod. bicarb. stirred up in it, together with a tablespoonful of "Enos," on rising. (3) A cold bath. (4) Breakfast, no matter how revolting it may appear. (5) If the victim is not due to fly or drive a car, a small dose of "the hair of the tail of the dog," etc. Fernet Branca is the best "hair," though thoroughly disgusting. Amphetamine sulphate 10 mg relieves fatigue in a certain proportion of post-alcoholic sufferers, but depression later in the day usually cancels out the earlier benefit.

#### Coronary Thrombosis

**Q.**—A man aged 56 had, without apparent cause, a severe vomiting attack with substernal pain and pains in both arms. Coronary thrombosis suspected. The pains cleared completely in two days with rest. A specialist reports E.C.G. normal, heart normal, B.P. normal (150/100), and no sign of disease. After several weeks' freedom pains have now returned, coming at intervals of several days in scapular region, sternum, and arms.

**A.**—An attack of substernal pain with pain in both arms makes the diagnosis of coronary thrombosis most probable. An alternative diagnosis would be hard to find. It is not unusual for abnormal signs to be wanting at a subsequent examination, and even the electrocardiogram may be normal. Such negative findings are in general favourable. As to the pains which have now returned, an important question would be, Are they produced or worsened by exertion? If so, it is angina of effort. If not, further rest in bed may be desirable.

#### Obesity in a Young Woman

**Q.**—A young married woman aged about 24 years, about 5 ft. 4 in. in height and over 14 st. in weight, told me that twelve months previously she was under 11 st. Her breasts had become very large, pendulous, and painful. I gave her instructions as to diet, and ordered her some thyroid extract. The improvement was slight and she tends to relapse.

**A.**—A few more clinical details are really required to make the diagnosis certain, but the patient is probably suffering from a condition which seems to have become commoner of late, a combination of fat and fluid retention. The cause is not known, some believing it to be hypothalamic and others nutritional. There is no definite evidence to relate it to any endocrine gland. Those patients who can "stay the course" are greatly benefited by a diet low in carbohydrate and fat and as high in protein as present circumstances allow. They should avoid salt and limit their fluid intake to two pints a day. Diuretics such as mersalyl, urea, and ammonium chloride are helpful. Thyroid is useful even in those patients who are not hypothyroid, as it helps fluid excretion. It should, however, be pushed to the limit of tolerance or it is almost useless. If the dose is increased very gradually at intervals of a fortnight or so, any signs of intolerance will be mild and will rapidly abate when the drug is discontinued. Treatment may then be begun again with a slightly smaller dose. If this regime is followed, most patients lose weight very satisfactorily, but many are unwilling to cut out carbohydrates when there is no extra protein available.



## Acne Rosacea

Q.—What is the basic cause of acne rosacea (braids nose)? Is it due to the production and circulation of his urine or some other substance from a chronic gastritis?

A.—Rosacea, or acne rosacea, has no single basic cause, but rather depends upon the summation of a number of different factors, including a seborrhoeic background, gastro-intestinal dysfunction with hypochlorhydria or sometimes hyperchlorhydria, and possibly the absorption of histamine from the gastro-intestinal tract. Rosacea is also influenced by sex and age and by certain articles of food, of which tea, coffee, alcohol, and "hot" things are the most important, and by focal infection of the teeth and tonsils.

## Drugs and Fibrositis

Q.—When rest and warmth relieve pain apparently due to neuritis can cure be hastened by giving vitamin or other treatment?

A.—The presumption is that the term "neuritis" is used here to indicate a painful affection of fibrositic origin. There is no evidence that rheumatic conditions of this kind are benefited by vitamins. Nicotinic acid has been used in the treatment of neuritis, but this is because it is a vasodilator, not because of its action as a vitamin. Apart from pain-killers, such as aspirin, drugs are of little value in fibrositis. Iodine has been used in various forms on the grounds that it relieves chronic inflammation, and cinchophen (atophan) or colchicum is recommended if the blood uric acid is raised. Other general remedies include removal of septic foci and treatment with vaccines, protein shock, or bee venom. All these, however, are much less likely to give relief than appropriate local treatment.

## Farmer's Lung

Q.—A patient of mine is suffering from bronchitis. He has been employed for several years cutting hay in the parishes (chief cutter). Has any similar experience been noted of bronchiectasis arising in a person in the same or similar work?

A.—There is a condition, apparently due to the inhalation of the dust of mouldy hay, which is well known to country dwellers and could properly be called "farmer's lung." Dr Richard Fawcitt of Ulverston has done much work on this subject and in your correspondent will look up his paper in the *British Journal of Radiology* (June, 1938, 11) he will find a full account, including the information that bronchiectasis does occur in the later stages. See also W. N. Pickles, *Public Health* October, 1944, for a short description. The early symptoms are gradually increasing dyspnoea with hard, irritating cough and clear, sticky sputum. If the condition is present in the lungs a culture of the sputum, after exclusion of the patient from hay for some days and after repeated mouth-washing and gargling to prevent accidental contamination, will show various moulds, forms of *aspergillus* and *muco* being the most common. Fawcitt describes the x-ray picture as presenting a soft soom-fake mottling, widely distributed throughout both lungs, and later evidence of a patchy fibrosis with small cavities. It seems likely that the lungs of the above patient have become affected in this way after years of exposure to the dust of hay. A course of potassium iodide must be tried, but it is obvious that the condition has progressed too far for a cure to be expected and it would be unwise for the patient to continue in the same work. As a preventive, some form of respirator should be used, probably a gauze mask worn over mouth and nose would be sufficient. It is suggested that this patient's chest be x-rayed and the sputum examined for moulds. Dr. J. T. Duncan, Winchester College, Winchester, is investigating the mycology of this complaint and is anxious to have specimens of sputum.

## Dyspareunia

Q.—What treatment would you suggest for a young married woman who complains of dyspareunia? The hymen is intact and does not appear to be unduly tough; the hymenal opening admits one finger-tip. She is rather highly strung and was very apprehensive on examination, which seemed to cause her much pain. The husband is on active service, and she looks forward with mixed feelings of pleasure and fear of "being hurt" to his periods of leave. Is there any indication for surgical intervention?

A.—As is usual in these cases, the difficulty here appears to be nervousness and consequent vaginismus rather than an anatomical defect at the introitus. It is not stated how long the couple have cohabited, but if this woman "fears" her husband's return, then a natural cure is no longer likely. Treatment should not be further delayed, otherwise a cure will be more difficult to obtain. The nature of the trouble and the importance of muscular relaxation should be explained to the patient. She should be instructed in the use of vaginal dilators, which can be obtained in sets of three different sizes. If the patient lies in the full dorsal position and

concentrates on abducting her flexed knees, the pelvic musculature will be relaxed; the smallest dilator, well lubricated, should then be passed. The object should be to teach her to pass the dilators herself, and when she can use the largest size it should be left in place for ten to fifteen minutes each day for about three weeks. A preliminary application of a local anaesthetic ointment is sometimes helpful in the early stages of the dilatation. Also a very nervous and shy patient can sometimes pass dilators herself more easily than can a doctor or nurse. When the husband returns he should be instructed in the proper approach to coitus. If need be the patient should use the largest dilator immediately before the renewal attempt at coitus. Unless the patient co-operates well and makes rapid progress, the above regime should be preceded by digital dilatation of the vagina (to admit three fingers) under general anaesthesia. In general this gives excellent results, but it is important to start the patient passing dilators within 24 to 48 hours after the operation—not to produce further stretching but to convince her that the "obstruction" has been removed and to restore her confidence. If the examination under anaesthesia reveals that the tissues are rigid and will not stretch easily, then enlargement of the introitus by plastic operation might be required, but this is exceptional.

If this physical approach to treatment is without avail, then the psychological condition of the patient should be explored.

## Polyuria in an Infant

Q.—My daughter aged 5 months, bottle fed, weight 13½ lb, has a very increased polyuria and frequency. Nappies are soaked, very often as soon as put on, and this may be repeated every five minutes and the bed sheets and prom sheet are usually soaked. The urine is markedly acid to litmus, but does not contain albumin or sugar. A nappy left on for about an hour smells sometimes very strongly of ammonia and overnight this change proceeds further, with the smell of ammoniacal decomposition reminiscent of prostatic cases. Although sturdy and compact, she is small and has gained weight slowly, having suffered from casein intolerance, so that her diet has chiefly been Benger's milk mixture. Should alkalis or any other drugs be used in an attempt to combat the acidity of the urine? If so, would this affect the polyuria and frequency? What dosage would be recommended?

A.—It would be wise to exclude a urinary tract infection by the bacteriological examination of a catheter specimen of urine. Otherwise it would appear that the infant has what is sometimes called "compensated acidosis," often caused by excess of fat in the diet. It would be interesting to know if full-cream milk is being used with the Benger's, and also if cod liver oil is being given, and in what dose. Presumably in such cases fatty acids are diminishing the alkali reserve, and the body compensates by causing the child to pass urine which is either excessively acid or contains an excess of ammonia salts which decompose in the nappies in contact with the soda present. Often a mild urethritis or even cystitis is set up by irritation, and frequency results. On this basis it would be wise to restrict the fat in this infant's food, increasing the carbohydrate and substituting a vitamin concentrate for the oil, if given. Citrate in doses of 5 gr three times a day should be given, and powdered boric acid used freely on the nappies and in the perineal region to mop up any free ammonia.

## Epidemic of Boils

Q.—I should be glad to have suggestions on the prevention and treatment of widespread recurrent attacks of boils, extending over a period of months, in clean and apparently healthy people with normal urines and no other discoverable foci of infection.

A.—This question is rather misleading. Does it mean that staphylococcal infection, manifested by crops of boils, is spreading among a group of workers in close contact—e.g., typists in a large office? If so, there are two problems: (1) to prevent spread of the infection from case to case, and (2) to protect or cure the individual. If staphylococcal infection is spreading in an office, as it sometimes does, attention must be given to the atmospheric conditions—e.g., ventilation and humidity—which affect both the comfort and the health of the occupants. The staphylococci may persist in the dust of the room, which should, therefore, be thoroughly washed down and preferably disinfected with sulphur or formalin vapour. If skin infections are prevalent among the staff staphylococci will be present on the fingers of those who are clinically affected and also perhaps of those not obviously infected (symptomatic carriers). In this way, papers, pencils, typewriters, etc., become contaminated and may be the means of passing on the staphylococci. In these circumstances the regular use by all staff of a satisfactory skin antiseptic may help to limit the spread. Washing the hands with an antiseptic soap in a small quantity of warm water reduces the numbers but does not get rid of the staphylococci.

As regards the individual already infected, the affected parts and the surrounding skin should be kept covered with an antiseptic



dressing until the lesions are quite healed, for widespread multiple boils are usually due to auto-inoculation by contaminated fingers. A wet dressing of mercuric chloride 1:1,000 with an elastoplast covering does very well. If the boils are large and causing constitutional upset the patient should be kept off work and made to rest, for there is a danger of generalized infection. Penicillin is now available for the hospitalized patient. Recurrence of the boils may be prevented by the use of an autogenous vaccine, preferably containing staphylococcus toxoid, so that the individual's resistance is raised both to the toxin and to the organism itself. There is experimental evidence that antitoxic immunity is an important factor in limiting the spread of staphylococcal infection in the tissues.

#### Milk and Sugar-beet Tops

**Q.**—Does the feeding of cows on sugar-beet tops affect their milk composition either quantitatively or qualitatively? I ask this question with reference to babies fed on cow's milk.

**A.**—The feeding of cows on excessive quantities of sugar-beet tops or molassed beet pulp, or beet molasses may cause a fishy flavour and odour to appear in the milk. These beet by-products contain the nitrogenous base betaine, beet-tops containing an average of 0.3%. Betaine is metabolized by the cow primarily to trimethylamine oxide and rapidly excreted as such in the urine, but while the concentration of the oxide in the blood is high small amounts, of the oxide pass into the milk, and, if they remain there, react with the unsaturated acids of the milk fat to produce a fishy taint. If, however, sufficient time elapses before the next milking the subsequent lowering of the trimethylamine oxide content of the blood will be followed by the gradual diffusion of the oxide back from the milk to the blood, and the possibility of the occurrence of the taint is considerably lessened. The taint is avoided by limiting the amount of betaine fed to the cow and arranging a long interval between the feeding and the next milking. Not more than about 60 lb. of beet tops, given immediately after the milkings, should be fed each cow daily. Samples of fishy milk have been found to contain from 5 to 11 mg. of trimethylamine oxide per litre, and a similar amount of free trimethylamine resulting from the ready reduction of the oxide. Apart from these effects the feeding of sugar-beet tops to cows is unlikely to affect adversely the normal composition of the cow's milk.

#### Prefrontal Leucotomy

**Q.**—Has prefrontal leucotomy been performed to any extent on patients outside mental institutions? If so, does it have any effect on the intelligence, and is it probable that the patient would be enabled to earn his own living?

**A.**—Prefrontal leucotomy is most successful in relieving states of severe tension, whether protracted or episodic, and its uses are, broadly speaking, confined to four classes of illness: (1) depressive psychoses, in which convulsion treatment is contraindicated or has not proved successful; (2) obsessive-compulsive states of a disabling degree of severity; (3) some cases of florid schizophrenia intractable to other treatments, including insulin and electric convulsion therapy; (4) long-standing, violent conduct disturbances, which may be associated with schizophrenia, epilepsy, psychopathic personality, mental defect, etc. In the last group improvement is likely to be only symptomatic, although recovery has occurred. The operation has been, and may well be, performed in neurological units, general hospitals, or well-equipped nursing homes, so long as the patient's mentality and conduct do not require the special amenities of a mental institution. Most obsessive-compulsive states and some depressions fall into this category. It must be remembered, however, that leucotomy is a brain operation, requiring, if risks are to be minimized, the services of a neurosurgeon experienced in the special technique of the operation, and his regular team of assistants.

Gross intelligence defect is rarely if ever seen. On the other hand, discrimination of the finest degree is likely to be affected, and a more irresponsible attitude to life may occasionally develop. Leucotomy should not be recommended where patients occupy professional or highly responsible executive posts if there is a reasonable chance of recovery without operation; other work can usually be carried out as well as, and in many cases of long-standing obsessional personality definitely better than, before the illness.

#### Penicillin for Osteomyelitis

**Q.**—I have a patient recently discharged after recurrent operations for osteomyelitis. Is he faced with the prospect of continued operations, or does penicillin hold out a hope of arrest or cure?

**A.**—The penicillin treatment of chronic osteomyelitis is disappointing (see, for instance, I. M. Robertson, *B.M.J.*, April 15, 1944, p. 519). Penicillin is a valuable adjunct to radical surgery, but its administration, whether locally or even systemically, will not overcome an infection which is firmly established in bone.

## LETTERS, NOTES, ETC.

### The Neurotic Background

**Dr. JOHN B. PRIMMER** (Cowdenbeath) writes: Air Commodore Gillespie's excellent paper on psychological medicine and the family doctor will bear reflection, and should be taken to heart. The neurotic background is all too common. About thirty years ago, before psychotherapy had taken firm root, I inquired into the past history of a multipara. She was fair, fat, and forty, and complained of a plenitude of distressing symptoms that did not seem to fall into any particular pattern. Her frequent appearances and her loquaciousness necessitated a hold-up in a busy surgery. During a pause I diverted her thoughts from the present to a full discussion of her past. After much circumlocution she at last unburdened her soul and confessed that, many years before, she had been raped at a Sunday-school picnic! I did not try to elucidate any morbid details, but as a result of examination reassured her that there had been no untoward result, and that there was nothing organically the matter. Salpingitis, and certainly sterility, could be ruled out. No further treatment was necessary, and I saw her no more. With her husband she subsequently emigrated to a part of our far-flung Empire, where she reared more children. Fortunately I did not advise operation. At that time it was said that an ovary had a much chance of survival as a snowball in hell!

### Non-tropical Elephantiasis

**Dr. BRIAN P. HARRIS** (Rottingdean) writes: As an alternative to operation for elephantiasis Dr. James Knott described a method of treatment in *Trans. roy. Soc. trop. Med. Hyg.* in 1937 or 1938 which I have tried with success in East Africa and which is roughly as follows. The affected leg and thigh are wound round with Turkish towelling from toes to groin, which is kept in position by a few thread stitches. A pair of wooden side-splints (Gooch's splinting is suitable) whose combined width does not completely encircle the limb is applied to opposite sides of the leg. Drawings with points facing outwards are fastened along the splints by pieces of adhesive strapping. A similar pair of splints is applied to the affected thigh. Hessian is now wound round leg and thigh from toes to groin, over the wooden splints, and is again held in position by a few stitches. Beginning at the toes, cord is now threaded round and round the limb through the hessian with a packing-needle and pulled tight. The limb is now surrounded by towelling, splints, hessian, and cord. The patient is allowed to walk about and considerable pressure can be exerted on the limb by tightening the cord and taking up the slack daily. (Oedema fluid exudes into the towelling.) After a fortnight or month the coverings are removed. Sufficient reduction in size of the limb may have been effected to enable a leather gaiter from toes to groin to be made for permanent wear. Or the splints, etc., may have to be reapplied with pressure for a further period. The method would appear to apply equally to non-tropical elephantiasis. The original paper should be consulted.

### Red Vision after Cataract Operation

**SIR STEWART DUKE-ELDER** (London, W.1) writes: Your answer (Nov. 4, p. 614) as to the aetiology of iridopsis after cataract extraction is, to say the least, inadequate. A cataractous lens absorbs preferentially the short (blue) rays of the spectrum, a circumstance which probably explains the occasional and fleeting occurrence of "blue vision" after an extraction. Moreover, no over-correction of spectacle lenses will produce the visual effect noted. Contrary to the suggestion made, "red vision" after a cataract extraction is not very uncommon; it is also liable to occur whenever a sudden excess of light enters the eye, as after an iridectomy, maximal dilatation of the pupils, or prolonged snow-dazzle. So far as I know, no adequate explanation has been advanced. The fact that the red phase of an after-image is the most potent may have something to do with the matter; while the report by Edmund that the symptom disappeared rapidly on the administration of vitamin A in a night-blind subject may be interpreted to support Fuchs's view that in some way it is associated with the visual purple. Whatever it may be the explanation must be physiological rather than optical.

### Alum-precipitated Pertussis Vaccine

**GLAXO, LABORATORIES LTD.** (Greenford, Middlesex) write: In your issue of Oct. 7, in answer to a query on whooping-cough prophylaxis (p. 486), you state that the alum-precipitated whooping-cough vaccine is not generally available in this country. This vaccine is, in fact, generally available and can be obtained without difficulty. We first prepared it in response to a request from a M.O.H. Later, as a result of further demands, we prepared further supplies but restricted its distribution to public health authorities. More recently, as we became assured of the value of this vaccine, we have made it generally available in phials of 5 c.cm. and 10 c.cm.

## STUDIES ON HEPATIC DYSFUNCTION

### II. THE VALUE OF SULPHUR-CONTAINING AMINO-ACIDS AND CASEIN DIGEST IN THE PREVENTION OF POST-ARSPHENAMINE JAUNDICE

BY

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Eller and Whipple (1942) observed that in protein-depleted rats chloroform anaesthesia was followed by fatal liver damage. This damage could be averted completely by the administration of methionine before anaesthesia. These observations suggested to us that the liver damage which occurs during an attack of post-arsphenamine jaundice might be averted by some similar treatment.

We have pointed out before (Beattie and Marshall, 1944) that in a clinic under the supervision of one of us the incidence of post-arsphenamine jaundice during the years 1942-1943 was over 50% of all cases treated entirely at the clinic. The incidence did not vary from month to month. Moreover, the time of greatest incidence of the disease lay between the 13th and 19th weeks after starting arsenical therapy. In view of these observations it seemed worth while to attempt a series of experiments to determine if methionine, any of the other sulphur-containing amino-acids, or casein diets rich in methionine, would exert some demonstrable protective effect against post-arsphenamine jaundice during the time when the disease was most frequently developed. Apart from the scientific interest of such a study, a positive result would have some immediate practical value. It is important in antisyphilitic therapy with the arsphenamines to ensure an interrupted series of arsenical injections at weekly intervals for a period of at least six months except for a four-weeks period beginning at the end of the 10th week of treatment. An attack of post-arsphenamine jaundice necessitates the withholding of arsenic during the period of icterus and for a few weeks or months thereafter, the chances of a cure of syphilitic infection are considerably diminished. Any treatment which would tend to reduce the incidence of post-arsphenamine jaundice, postpone it to late in the course of treatment, or, alternatively, so to reduce its severity as to enable the patient to continue to receive arsenical treatment, would be of value.

#### The Investigation

The experiments covered the whole of the year 1943 and the first three months of 1944. During this 15 months the incidence of post-arsphenamine jaundice occurred in the control groups in 11 out of 36 cases (61%). The time of greatest incidence of the disease in these groups was between the 14th and 19th weeks of antisyphilitic treatment, when 18 cases occurred—82% of all cases. The control and treated groups consisted of patients who received all their antisyphilitic treatment at the clinic (M.I.H.). The experiments were designed so that protective treatment would begin just before the time of greatest incidence of the disease—i.e., at the 14th week. The members in each group were determined by the patients available, the quantity of the various preparations and amino-acids at disposal, and the inevitable loss of men from the groups due to transfer outside the area served by the clinic. It

was not possible to control the diet, as all patients were serving with their units and attended the clinic only as out-patients. It was noted that there was no significant difference in the incidence of jaundice among syphilitics from different units.

The routine antisyphilitic treatment used on all the patients in the control and treated groups consisted of 4 courses, each of 10 weeks, with a rest period of 4 weeks between courses. The weekly treatment consisted of an intravenous injection of 0.6 g. neoarsphenamine and an intramuscular injection of 0.2 g. bismuth in watery suspension. The first week of antisyphilitic treatment (A.S.T.) was reckoned to be the 7 days immediately following the first injection treatment. The weeks of treatment were reckoned consecutively from the first, and included the rest periods. Thus the 15th week of treatment was the week following the first injection of the second course.

Alternate patients arriving at the 14th week of treatment were chosen as controls and given no protective treatment. The remainder were allocated to one or other experimental group. In this way a continuous series of control and experimental groups was maintained for 15 months.

At the start of the investigation we had available a small supply of a dried casein digest prepared by spray-drying a papain-trypsin digest of pure casein. Owing to its unpalatable taste the powder was administered in capsules each containing 0.5 g. of digest. It was found that the practical upper limit of dosage was 20 capsules (10 g. digest) each day. These were given in 4 doses each of 5 capsules at 4-hourly intervals. This experiment was Series I.

To increase the amount of sulphur-containing amino-acids in the daily doses of digest we reinforced the dried casein digest with cystine. As it is well known that cystine can act as a "sparer" of methionine provided the minimal daily requirements of methionine are present in the diet, we thought that the reinforced digest might be more effective than the simple digest powder. To each 97.5 g. of digest 2.5 g. of cystine was added. Assuming that each molecule of cystine in the mixture would "spare" two molecules of methionine, the "maximum effective" methionine content of a daily dose of reinforced digest of 10 g. would be approximately:

Casein digest (97.5 g.)	..	..	..	=	312 mg. methionine
Cystine (0.25 g.)	..	..	..	=	155 mg. methionine
"Maximum effective" methionine content	..	..	..		467 mg. per day

It is probable that such an estimate exceeds the actual effective methionine content; but we had no means of assessing the latter. This experiment was Series II. It was necessary to determine if cystine alone was of value, and four different experiments with different dosages and covering differing periods of administration were carried out. These form Series III. Finally, when pure methionine became available this substance

even in doses of 0.6 g. per day. This formed the Series IV dressing treatment.

The scheme of each of the experiments is detailed below:—

Series I: 10 g. casein digest daily during the 14th and 15th weeks of A.S.T.

Series II: 10 g. reinforced casein digest daily from the 14th to 19th weeks (inclusive) of A.S.T.

Series III A: 0.5 g. cystine from the 14th to 16th weeks (inclusive) of A.S.T.

B: 1.2 g. cystine daily during the 14th to 16th weeks (inclusive) of A.S.T.

C: 0.6 g. cystine daily during the 14th to 19th weeks (inclusive) of A.S.T.

D: 1.2 g. cystine daily during the 14th week, followed by a single dose of 2.4 g. cystine at the time of arsenical injection on the 15th to 19th weeks of A.S.T.

Series IV: 0.6 g. methionine daily during the 14th to 19th weeks (inclusive) of A.S.T.

During arsenical treatment it had been observed that when some or many of the pre-icteric signs and symptoms of post-arsphenamine jaundice are present an injection of neoarsphenamine (0.6 g.) almost invariably was followed by icterus within 7 days. When the injection is withheld most patients (80% or more) developed icterus within the same time. Biopsy findings made it clear that liver damage is usually well marked before icterus appears. For these reasons we considered that post-arsphenamine jaundice had occurred when some or all of the characteristic prodromata were present. In some patients, however, the prodromata were absent and icterus was the first sign of the disease. To avoid using the term "post-arsphenamine jaundice" when no icterus was present, we propose to use the term "liver damage" to include both icteric and non-icteric cases of post-arsphenamine jaundice. The general results are summarized in Table I.

TABLE I

Series	Total Cases	Appearance of Liver Damage (Week of A.S.T.)					Total Jaundice Cases
		14-15	16-19	20-24	25-28	29-38	
I .. ..	8	2	4	—	—	—	6
II .. ..	11	—	5	1	2	1	9
III A ..	6	1	3	—	—	—	4
III B ..	6	—	6	—	—	—	6
III C ..	6	1	3	—	—	1	5
III D ..	6	—	—	1	—	1	2
IV .. ..	10	—	1	3	1	—	5
Totals treated ..	53	4	22	5	3	3	37
Control ..	36	8	10	4	—	—	22

**Explanation of Graphs.**—The detailed results are expressed graphically in Figs. 1-6. The vertical bars at weekly intervals indicate the injection of neoarsphenamine; the height of the bar is proportional to the dose of arsenical given. The horizontal shaded bar shows the duration of the protective treatment, and increases in its width are proportional to the daily dose given when this was increased. The narrow horizontal black bar indicates the appearance of typical prodromal signs and symptoms. Icterus is indicated by a doubling of the width of the bar. Duration of the illness is shown by the length of the bar. The broken line in Fig. 3 indicates treatment with reinforced casein digest.

The effect of the various treatments in deferring liver damage is summarized in Table II.

TABLE II

Series No.	Total Cases	Duration of Treatment (Weeks)	Additional Sulphur in mg./day	Cases of Liver Damage	
				During Treatment	During 21 Days following Treatment
III D ..	6	6	640*	0	0
III B ..	6	3	320	0	6
III C ..	6	6	160	4	0
II .. ..	11	6	143	6	0
III A ..	6	3	133	1	3
IV .. ..	10	6	122	1	1
I .. ..	8	3	78	5	1

\* Given as a single dose on day of injection of neoarsphenamine.

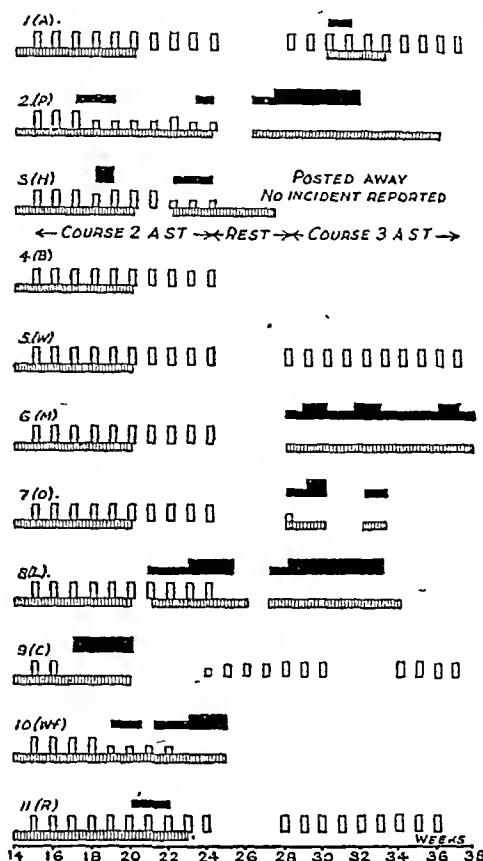


Fig. 1.—Series II.

### Comment

In assaying the value of the "protective" treatments felt we had to provide answers to the following questions:

(a) Is the "protective" treatment of value in reducing the incidence of liver damage during the 15th to 24th weeks of anti-syphilitic treatment (A.S.T.)?

(b) Is there any evidence that the "protective" treatment shifts the incidence of liver damage towards the end of the second course of A.S.T.—i.e., towards the 24th week?

(c) Does the "protective" treatment prevent the appearance of icterus when prodromal signs and symptoms have appeared and arsenical administration is continued?

(d) Is the "protective" treatment to prevent the development of icterus effective only when arsenical injections are suspended or the dose is reduced?

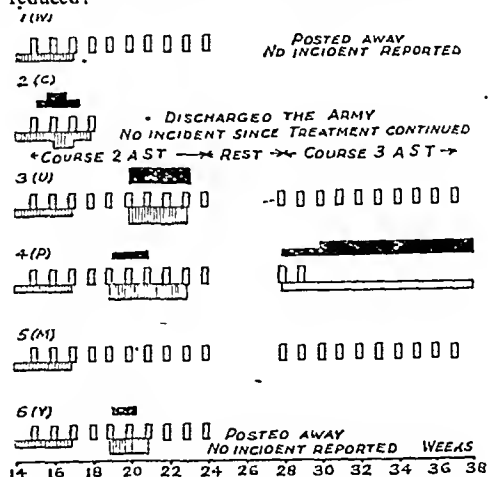


Fig. 2.—Series III A.

The immediately effective treatments are apparently those given in Series III B and D, when no sign of liver damage appeared during the period of treatment. In Series III B, however, all 6 patients in this group had evidence of liver

damage within 21 days after the cessation of preventive treatment, while no such cases appeared in Series III D. The next most effective treatments seemed to be those in Series III A and Series IV, in which only one case in each appeared during treatment. Within 21 days three cases of liver damage occurred in Series III A and one in Series IV.

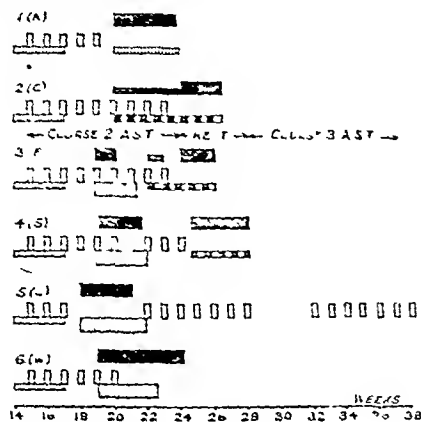


FIG 3—Series III B

As the numbers in each of these groups are too small to bear statistical analysis it is not unreasonable to add them together and to compare the findings with the control group. From the control group (36 cases) the number of cases for a smaller group of 28 cases may be calculated and the probable number of cases during certain weeks predicted. Analysis of a larger control sample (150 cases) has shown that the control group is in fact a fair sample and the incidence of liver damage in the various periods is representative. The analysis is given in Table III.

TABLE III—Cases of Liver Damage during Weeks of AST

	Total	1-14th Week	15-24th Weeks	25-38th Weeks
Controls (36)	14.7	6.2	7.7	0.8
Treated groups (23) III A, B, D and IV	15	1	10	4

In the groups where "protective" treatment was apparently effective the incidence of liver damage was not reduced during the second course of antisyphilitic treatment. This provided an answer to our first question. With regard to the second

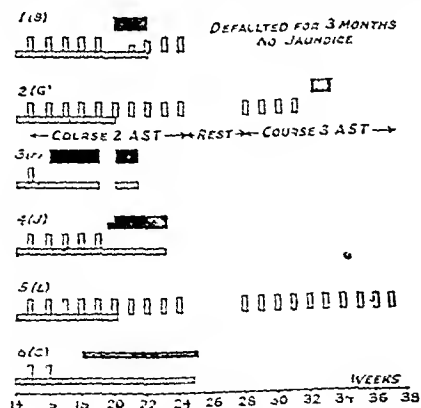


FIG 4—Series III C

and Series IV. If this treatment had been prolonged 6 weeks there is a possibility that the nine cases of damage which appeared within 21 days after the end of protective treatment might not have developed until the 20th-24th week period. In such an event the shift might have been more pronounced. Series III A and C are however

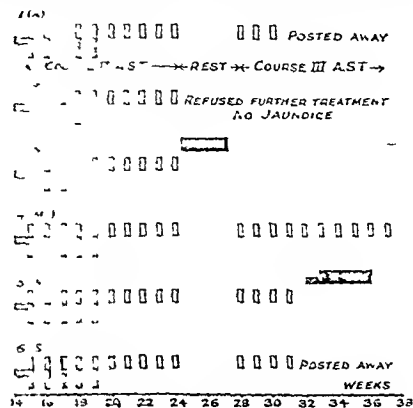


FIG 5—Series III D

practically identical in daily dosage of cystine (0.5 and 0.6 g) on either the length of time over which the cystine was given. Reference to Figs 2 and 4 shows that within the first 6 weeks at the beginning of the second course of arsenical treatment each of these groups had the same number of cases of liver damage. The prolongation of treatment at the same dosage for 6 weeks apparently in no way influenced the development of liver damage in Series III C. It is a fair deduction therefore that such a dosage of cystine is ineffective

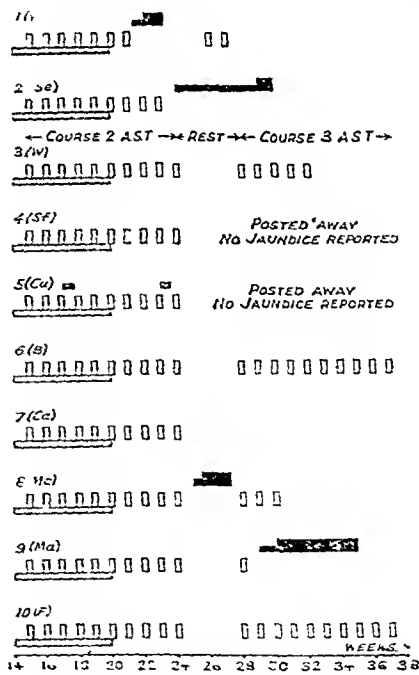


FIG 6—Series IV

question, there is a tendency for more cases to appear later in the second antisyphilitic course than towards its beginning. In Series III A and B the protective treatment was prolonged over 3 weeks instead of over 6 weeks as in Series III D

Doubling the daily dose of cystine for a period of three weeks (Series III B) produced no cases while treatment was being given, but all the group had liver damage before the end of the sixth week from the start of the 21 day treatment

dressings periment is inconclusive in view of what has been boik above regarding Series III A and C. It is possible that if treatment had been prolonged for 6 weeks a similar result to that recorded in Series III C might have been obtained; on the other hand, it is equally possible that no cases might have occurred.

Series III D treatment, in which a daily dose of 1.2 g. cystine was given during the 14th week and was followed by single doses of 2.4 g. cystine on the days on which arsenical injections were given (15th–20th weeks), was apparently effective, as no cases of liver damage appeared either during the period of "protective" treatment or during the subsequent 21 days.

Series IV seemed to show that small doses of methionine (0.6 g.) were almost as effective as the massive doses of cystine of Series III D. It should be noted that, in spite of continued full doses of arsenic, icterus did not develop in the single case of liver damage during "protective" treatment. The very significant delay in the appearance of liver damage in the remaining four cases is noteworthy.

Series I represents an attempt to increase the daily intake of methionine by using a casein digest. The results demonstrate clearly that an extra 0.3 g. of methionine present in the daily dose of digest for 14 days had no effect on the incidence or time of appearance of the post-arsphenamine jaundice. The Series II experiments, in which cystine was added to the digest, present some interesting features. During the period up to the end of the 24th week 5 patients of the 11 treated remained free from liver damage. One (R.) showed signs of liver damage at the beginning of the 20th week, but with continued "protective" treatment did not develop icterus, although full doses of arsenic were given. Two with prodromal signs and symptoms were treated by reducing the arsenical dosage and continuing the "protective" treatment. One of these (P.) did not become icteric, but a full dose of arsenic produced a reappearance of the prodromal phenomena. The other (Wf.), in spite of reduced dosage, eventually became icteric. A mild icterus in one patient (H.) was treated by reducing the arsenical dosage. At the end of 7 days icterus had disappeared and full arsenical treatment was resumed. The suspension of "protective" treatment for two weeks induced a reappearance of prodromal signs and symptoms. One patient (L.) showed no sign of liver damage until one week after the end of the protective period. Resumption of "protective" treatment, with full doses of neoarsphenamine, however, did not prevent the appearance of jaundice. He relapsed again after being without "protective" treatment for one week. Arsenic was not given during the relapse. Icterus appeared in one patient (C.) after two arsenical injections. Suspension of injections and continuation of the "protective" treatment were followed by disappearance of icterus in 3 weeks. Resumption of arsenical injections later without "protective" treatment provoked no relapse.

These results suggest that the addition of but a small quantity of cystine to the casein digest is just sufficient to protect some individuals from developing liver damage, others from the development of icterus, others also from icterus but only if the arsenical dosage is reduced; and others are not so protected. This scheme of "protective" treatment seems therefore to represent almost the balance between adequate and inadequate treatment. Assuming that the addition of 0.25 g. cystine acted by sparing methionine, it would represent the sparing of not more than 0.16 g. The total "effective" methionine supplement would therefore probably not exceed 0.4 g. per day.

Two possible explanations of these results must be considered. One protective compounds might be effective in rendering the neoarsphenamine non-toxic to the liver and presumably also to the spirochaete. Possibly post-arsphenamine jaundice is a partial deficiency disease in the sense that certain compounds, which enable the liver successfully to resist the toxic effects of virus infection combined with neoarsphenamine injections, are not present in optimal quantities in the wartime diet. Supplementation with these compounds presumably may be effective in altering the incidence, time of onset, or severity of the liver damage when it occurred.

Voegtlin (1925) showed that neoarsphenamine in the concentration found in the blood during antisyphilitic treatment

was not lethal to the spirochaete until it had been oxidized to arsenoxide. Arsenoxide is rendered non-lethal, however, if it is allowed to combine with a sulphhydryl-containing compound such as cysteine. Eagle (1939) suggested that arsenoxide killed the spirochaete by combining with sulphhydryl groups concerned in the respiration of the cell. Glutathione is one such compound. The probability is that arsenoxide is toxic to the liver cell through a similar mechanism. It is conceivable that cystine (being readily convertible to cysteine in the liver) might be utilized in this way to detoxicate the arsenoxide. In two of the cystine-protected series the times during which "protective" treatment was continued were identical. In Series III C; however, the cystine was given daily in doses of 0.6 g./day or 4.2 g./week, whereas in III D, with the exception of the first week, the cystine was all given on the same day as the arsenical injections in a dose four times the daily dose of III C but only slightly more than half the total weekly dose. In both groups the overall incidence of liver damage was unaffected. In III C the cases occurred at the usual time or were only slightly delayed. In III D the cases were very significantly delayed in onset (Fig. 5). Such a contrasting result can best be explained by assuming that cystine given in massive doses on the day of the arsenical injection is mainly effective by acting as a chemical detoxicating agent for the arsenoxide thus relieving the liver from the effects of arsenoxide for a least six weeks and enabling it to deal with later arsenical injections successfully for a limited period. There is only one other series in which the occurrence of liver damage was delayed to a comparable extent. In Series IV methionine was given in a manner corresponding exactly to Series III A, discussed above, but the results obtained were strictly comparable to those in III D. It seems impossible that methionine in this case could be acting as a direct detoxicating agent at a level of dosage where cystine was ineffective. It therefore becomes necessary to assume that methionine, unlike cystine in large doses, is effective in the second of the two ways suggested above.

It must be made quite clear that Eagle's work was done *in vitro* and may therefore not be valid under *in vivo* conditions. The experimental evidence on animals is at present equivocal. In some measure this may be due to dietary variations which Martin and Thompson (1943) showed could introduce variations in the acute toxic effects of arsphenamine as great as 50%. The consensus of opinion, however, is that the sulphhydryl compounds, such as cysteine, can diminish the toxic effects of the trivalent organic arsenicals—neoarsphenamine and arsenoxide. Cystine apparently can only exert such an action when it is reduced to cysteine. This reduction of cystine to cysteine can occur in the liver.

The conclusion that cystine is mainly effective as a detoxicating agent, whereas methionine remedies a specific dietary deficiency, is strengthened when actual diet figures of these men are considered. The British Army Home Forces daily ration as issued contains 118 g. protein, of which 58% is of vegetable origin. In fact, we found that the maximum these men appeared to be eating was 100 g. of protein per day. This would give a sulphur intake of about 0.96 g. daily, representing about 2 g. each of methionine and cystine. It is well known that the borderline between adequate and inadequate quantities of the various essential food constituents may be narrow. If there is a suboptimal methionine intake in these men receiving arsenical treatment an increase of 25% might easily be sufficient to raise it to an effective level. On the other hand, the quantities of a sulphhydryl-containing compound sufficient to protect the liver by direct detoxication of the arsenic would have to be very much larger. One molecule of neoarsphenamine requires four sulphhydryl groups for detoxication. If all the administered cystine were converted directly to cysteine and all this cysteine were then combined with arsenoxide, the weekly dose of 0.6 g. neoarsphenamine would require 0.6 g. cystine. This would need to be available during the 24 hours following the injection, as it is known that the greater part of the spirochaetocidal action of neoarsphenamine, which we assume to be similar to its hepatotoxic action, occurs within this period. In view of the many ways in which cystine can be metabolized, apart from its conversion to cysteine, it is not surprising that the minimal effective dose of cystine should approach 2.4 g. when given

on the actual day of injection, or that larger quantities spread over a longer period should be relatively ineffective.

The metabolism of methionine and cystine cannot, however, be regarded as unrelated to each other. Part of the methionine in the diet is undoubtedly converted in the body to cystine and its derivatives. It is probable, therefore, that an increased daily cystine intake given to an individual with a suboptimal methionine intake would increase the amount of methionine available for those functions which cystine itself cannot perform. Such a methionine-sparing effect of dietary cystine was found to occur in growing rats by Rose *et al.* (1937). It is likely that the definite results obtained with daily doses of cystine at the lower levels (Series III A, B, C) and when it was added to the casein digest (Series II) are due to this effect.

\*Such theoretical discussions, however, would be based on larger series of cases. At present it is not possible to extend this series, but the fact is clear that the antisyphilitic in the second arsenical course can be attributed to it. It would seem desirable that men under treatment should receive at least 2.5 g. methionine daily as a prophylactic. This could be done if their diet were supplemented with the synthetic compound or with about 100 g. milk daily. The use of synthetic cystine in quantities necessary to produce the required result is not desirable, in the event of cystine may be to detoxicate the arsenic and to prevent the antisyphilitic treatment. Moreover, the suggested cystine on established liver damage may be conducted.

### Summary

An attempt has been made to control the incidence of liver damage in syphilites under treatment with arsenic.

Sulphur-containing amino-acids were given during the period of treatment when the expected incidence of liver damage was maximal.

Four preparations were tested—casein digest, casein digest reinforced with cystine, cystine, and methionine.

These preparations had no effect on the overall incidence of liver damage. Certain of them, however, were markedly effective in (a) shifting the time of peak incidence of liver damage towards the end of the second course of antisyphilitic treatment or later, (b) moderating the severity of the liver damage when this did occur.

The effect of casein digest reinforced with cystine was less than that of an equivalent quantity of synthetic methionine.

Cystine produced an effect similar to that of methionine only when given in large quantity on the day of the arsenical injection.

It was concluded that men undergoing antisyphilitic treatment should receive dietary supplements as a prophylactic measure against jaundice.

These supplements should not take the form of large quantities of cystine, as this may reduce the chances of the antisyphilitic treatment being successful.

We wish to thank Brig. T. E. Osmond for putting at our disposal the facilities for carrying out this work and for his interest and encouragement. The pure amino-acids used in these experiments were presented by friends in Canada and the United States. We are grateful to them for their generous gifts. The casein digests were prepared by Mr. J. I. M. Jones of British Colloids Ltd. To him and his directors we express our thanks for their co-operation and interest, and for gifts of ample supplies of material.

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A Tsetse Fly and Trypanosomiasis Committee has been appointed by the Secretary of State for the Colonies to consider and advise on the co-ordination of action, including research, directed against the human and animal trypanosomiasis, and in particular against the tsetse fly. The Dominions Office and the Sudan Government are *ex officio* members of the committee, whose chairman is Mr. G. H. Cressy, represented on the committee, whose chairman is Mr. P. A. Buxton, of the Colonial Office. The members include Prof. P. A. Buxton, London School of Hygiene and Tropical Medicine; Dr. H. Lyndhurst, Duke, lately director of the Human Trypanosomiasis Institute in Uganda, and chairman of the League of Nations Sleeping Sickness Committee; Prof. I. M. Heilbron, Imperial College of Science; Prof. L. P. M. Lounie, Liverpool School of Tropical Medicine; Sir Guy Marshall; Dr. S. A. Neave, director of the Imperial Institute of Entomology; and Dr. A. G. H. Smart, Medical Adviser to the Secretary of State for the Colonies.

## ACUTE PERFORATED PEPTIC ULCER

FREQUENCY AND INCIDENCE IN THE  
WEST OF SCOTLAND\*

BY

C. F. W. ILLINGWORTH, F.R.C.S.

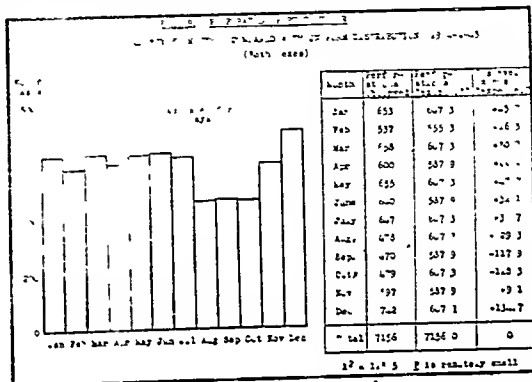
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AND

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Case Frequency by Months (3 Main Hospitals; 20-year Period)

Cases occurring in like months over the 20-year period were added together. Fig. 9 shows the monthly distribution so obtained and demonstrates the divergence between the number of perforations observed and the number which might have been expected if the distribution were uniform (due allowance being made for the number of days in the various months). It will be seen that perforations are unduly common in

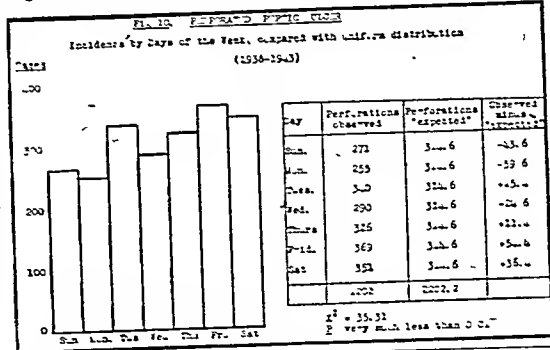


December and relatively uncommon in August, September, and October. This distribution obtained fairly consistently throughout the 20-year period. It is highly improbable that such wide departures from uniformity have arisen by chance.

There is no obvious explanation of the December rise, which is distributed throughout that month and not related to the Christmas season. The low incidence in summer may possibly have a nutritional basis or may be related to the holiday season. In this connexion it is relevant to state that in the West of Scotland July is the popular holiday month, and it will be seen that the July incidence is not low; but it is possible that the period of rest at that time confers a measure of protection during the ensuing months.

### Incidence by Days of Week (2 Hospitals; 6-year Period)

The incidence of perforation by days of the week in two hospitals (Royal and Western Infirmary) was determined for the years 1938-43. Cases occurring on like days were added together, and the result is given in Fig. 10. It will be seen



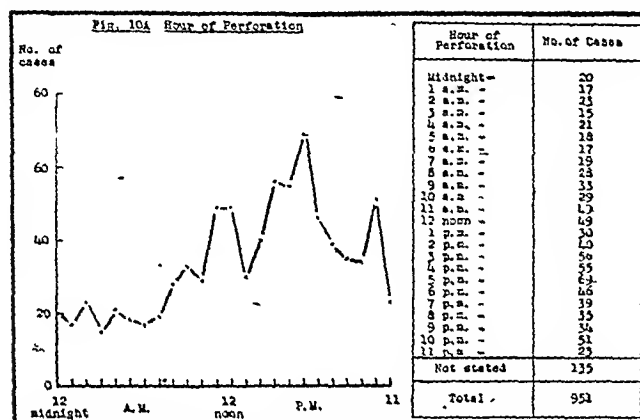
\*A survey made under the auspices of the Nuffield Provincial Hospitals Trust. Concluded from page 620.



that the incidence was lower on Sundays and Mondays than on other days. It is hardly necessary to state that the departure from uniformity cannot be accounted for by treatment being withheld at the week-end. It is, moreover, too great to be readily attributed to chance. The suggestion is offered that the deficiency of perforations on Sunday and Monday may be due to rest at the week-end.

#### Incidence by Hours of the Day

Perforation of a peptic ulcer occurs with such dramatic suddenness and is marked by such intense pain that it is generally possible to determine the precise time of onset. In 951 perforations occurring in 884 patients treated at the Western Infirmary during 1938-43 the time of perforation was recorded in 816 (Fig. 10A). It will be noted that few perforations occur



during the night, and that during the day the incidence gradually rises to a maximum in the period 3 p.m. to 6 p.m., thereafter falling gradually. It is relevant to state that the usual meal-times of the working population in Glasgow are: breakfast 7 to 7.30 a.m., lunch 12 noon, supper 5.30 to 6.30 p.m. The incidence of perforations in relation to meal-times, is not clear and demands further study. It is noteworthy that the incidence is highest towards the end of the working day and lowest during the period of rest. This may be compared with the low incidence at the week-end and after the summer holiday period.

#### Incidence by Site of Ulcer

At two of the main Glasgow hospitals (Western and Victoria Infirmarys) we have classified perforations treated during the period 1924-43 according to the site of the ulcer. The classification has been made on the basis of operation notes recorded in the clinical case-sheets. In Glasgow it is the usual practice that operation notes are written (or dictated) in full by the surgeon responsible, and the records are generally detailed and precise. Consequently we have been able to establish the situation of the ulcer in 97% of cases.

The main difficulty has been in regard to ulcers situated at or close to the pylorus. In an emergency operation if the anatomical landmarks are obscured by inflammation or adhesions it is impossible to determine the precise site of such an ulcer with certainty. As a result, in some cases (a small minority) the ulcer has been recorded as being situated "at the pylorus" or "close to the pylorus" with no more exact guide to its site of origin. Since these juxta-pyloric ulcers are closely akin to duodenal ulcers in appearance and behaviour (and very different from the typical lesser-curve gastric ulcer) we have grouped them with duodenal ulcers under the title "pyloro-duodenal". As their number is small (about 5% of the total) our conclusions on the relative incidence of gastric and duodenal ulcer are not affected materially by this arrangement.

It will be seen (Table II) that duodenal ulcer far exceeded all other types, accounting for 82.9% of the total. The

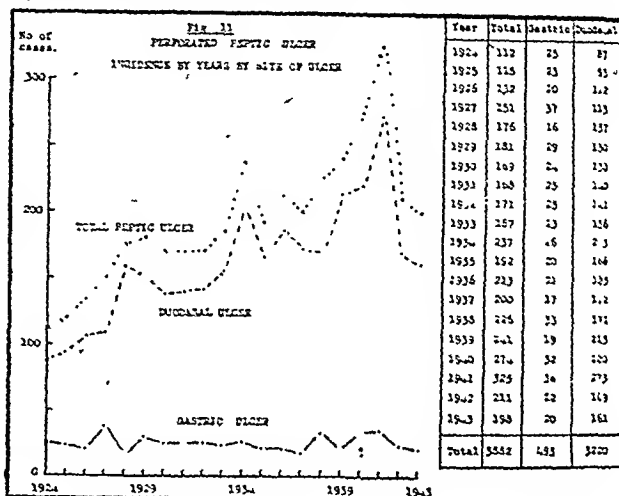
TABLE II.—Perforated Ulcer Incidence by Sites, 1924-43

T. total	Gastric	Pyloro-duodenal	Anastomotic	Site not Stated
3882	423 (12.70%)	3,220 (82.95%)	52 (1.34%)	117 (3.01%)

proportion of duodenal to gastric ulcer is about 13 to 2. Perforated anastomotic ulcers numbered 52, or 1.34% of the total—a remarkably high incidence considering that even in the heyday of gastro-enterostomy the proportion of all ulcer patients subjected to this type of operation must have been very small.

#### Perforated Gastric and Duodenal Ulcer: Incidence by Years (2 Hospitals; 20 Years)

Fig. 11 shows the incidence by years of gastric and duodenal perforations separately and, for comparison, the incidence by



years of all types of perforation together. It will be seen that the incidence of gastric perforation was not materially changed during the 20-year period, whereas the incidence of duodenal perforation has altered greatly. Indeed, the changing incidence of perforated ulcer as a whole merely reflects the growth of its duodenal component.

#### Site Incidence by Sex (2 Hospitals; 20 Years)

Table III shows the incidence in males and females of ulcers at different sites. It will be seen that males predominate in perforations of all types. The sex difference is particularly striking in anastomotic ulcers, all of which occurred in males.

TABLE III.—Site Incidence by Sex

Site	Male	Female
Gastric	442 (12.02%)	51 (25.00%)
Duodenal	3,076 (83.63%)	144 (70.59%)
Anastomotic	52 (1.41%)	0
Site not stated	108 (2.94%)	9 (4.41%)
All sites	3,678 (100.00%)	204 (100.00%)

It will be noted that there is a difference in the sex ratio of gastric and duodenal perforation. In males 12% of perforations were gastric while 83.6% were duodenal; the comparable figures for females were 25% and 70.6%. Statistical analysis shows that it is highly improbable that the difference in sex ratio has arisen through the play of chance.

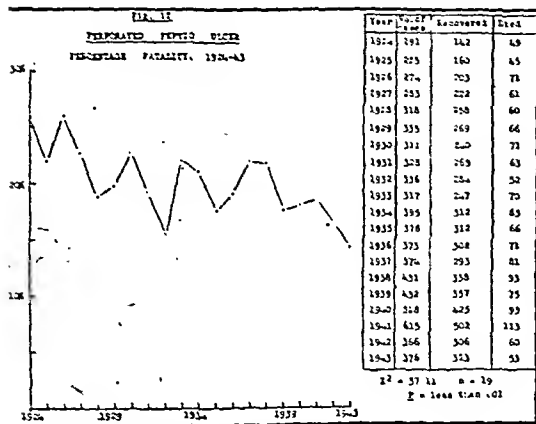
#### Fatality from Perforated Peptic Ulcer

The fatality from perforated peptic ulcer is influenced, as we shall show, by many factors—the sex and age of the patient, the site of the ulcer, the season (winter or summer), the promptness of treatment, as well as (doubtless) the skill of the surgeon and the nature of the operative technique. Perhaps also there may be differences based on geography and race and nutritional standards.

We feel it necessary to emphasize the importance of these factors, for they have an obvious bearing when comparing the mortality rates given by different workers. Unfortunately, few reports in the past have provided the data necessary to make such a comparison with much confidence. For this

asoo we make no attempt to compare the results reported here with those of other workers.

In the 7,156 perforated peptic ulcers contained in our 20-year series the deaths numbered 1,396,\* or 19.5%. During the 20 years the fatality rate has fallen from 25.7% in 1924 to 14.1% in 1943 (see Fig. 12). The fall has not been a steady

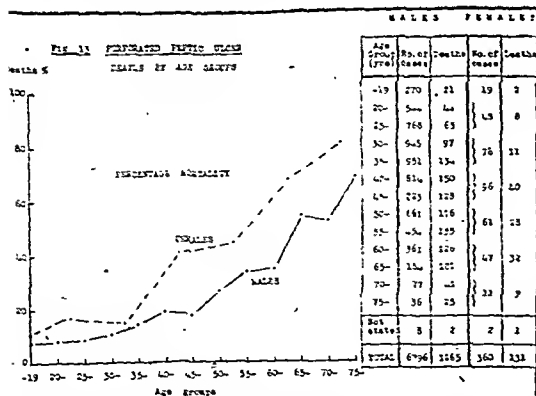


ne, but the trend as a whole is quite clear, and statistical analysis shows that it is unlikely to have occurred as a result of chance. It should be noted that this improvement has been achieved despite an increase in the age incidence. Probably it is attributable mainly to increasing promptness of treatment.

It is relevant to state at this point that in over 90% of cases in our series the operative treatment has consisted in simple closure of the perforation, without gastro-enterostomy. Primary gastrectomy is not practised.

#### Deaths by Age Groups in Males and Females (3 Hospitals; 20 Years)

Fig 13 shows the fatality rate in males and females at various age groups. Males have been taken in 5-year groups; females, owing to the smaller numbers, in 10-year groups.



It will be seen that the fatality rate increases with age and that in all age groups the fatality rate in females exceeds that in males. Over the whole series the fatality rate for males is 18.6%, for females 36.4%. In males the fatality rate remains below 10% until the age of 30 and below 20% until the age of 50, after which it rises rapidly. In females the rise occurs earlier and is more pronounced. The higher fatality rate in

\* This figure and those given elsewhere throughout the report include all deaths occurring at any point after perforation while in hospital. It is relevant to state also that our series includes cases omitted moribund and not subjected to operation; it excludes cases diagnosed as "leaking ulcer" but recovering without operation.

females is not due to the larger proportion of gastric ulcers occurring in that sex, nor do our records indicate that it is due to any difference in the promptness with which treatment is instituted.

#### Deaths by Season (3 Hospitals; 20 Years)

Table IV gives the deaths for the winter and summer months. It will be seen that the rate is considerably higher in winter than in summer. Statistical analysis shows that the difference

TABLE IV.—Perforated Peptic Ulcer. Deaths by Season (Both Sexes)

	No. of Cases	Recovered	Died
Winter (Oct.-March)	3,666	2,901	765 (20.9%)
Summer (April-Sept.)	3,490	2,859	631 (18.1%)
Total	7,156	5,760	1,396 (19.5%)

$$\chi^2 = 8.907. \quad n = 1. \quad P = \text{less than } 0.01.$$

is unlikely to have occurred by chance. Nor do our records provide evidence that the disparity can be accounted for by seasonal variations in the age incidence or sex incidence or in promptness of treatment. It may well be attributable to the increased risk of pulmonary complications in the winter months.

#### Deaths by Site of Ulcer (2 Hospitals; 20 Years)

In males the fatality rate for perforated gastric ulcer is much higher than for duodenal, and the difference is far more than can be accounted for by differences in the age incidence.

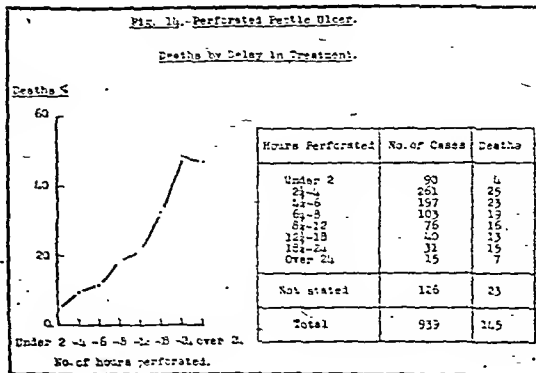
TABLE V.—Deaths by Site of Ulcer

Site	Males			Females		
	Recovered (No.)	No.	%	Recovered (No.)	No.	%
Gastric	316	216	23.5	32	19	37.3
Duodenal	2,625	451	14.6	105	38	26.4
			$\chi^2 = 8.907$ $P = \text{much less than } 0.01$			$\chi^2 = 2.042$ $P = c. 0.15$

In females also the fatality rate is higher in gastric than in duodenal perforation, though, perhaps owing to the fewness of cases, the difference is not statistically significant. Thus perforated gastric ulcer is a more dangerous disease than perforated duodenal ulcer. Our records give no indication that this is due to the promptness with which the two types are submitted to treatment. It may well be due to the fact that in gastric ulcer the perforation is generally of larger size and permits greater escape of more heavily infected contents.

#### Deaths by Delay in Treatment (1 Hospital; 6 Years)

In 939 perforations occurring in 872 patients admitted to one hospital (Western Infirmary) during the period 1938-43 the fatality rate has been assessed by the delay in treatment. In 813 of these cases the number of hours between the time of perforation and operation was recorded. The time interval



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ranged from half an hour to 3 days. It will be seen that in a large majority of cases operation was performed within 6-hours of perforation. This promptness of treatment is doubtless due partly to the fact that the area served is predominantly urban, but much credit must also be given to the diagnostic acumen of the practitioners in this area. Fig. 14 shows that in this series the fatality rate rose progressively with delay in treatment. This, of course, confirms general experience and the reports of all previous observers.

## Summary

Figures are reported relating to the incidence of perforated peptic ulcer in an area in the West of Scotland with a population of over 2 millions. The more notable findings are as follows:

1. From 1924 to 1938 there was a progressive increase in the incidence of perforations. During the war the steady increase has been interrupted by a marked rise in 1940-1, followed by a return to a lower level. These changes almost entirely concern duodenal ulcer.

2. The 1940-1 rise was not correlated with air raids in this part of the country. It is suggested that, in addition to anxiety about the war situation, overwork and perhaps undernutrition may have exerted an influence.

3. The sex ratio has undergone little change during the 20-year period. The rise in 1940-1 and the fall in 1942-3 were confined to men. In women during the war years the general pre-war trend was maintained. This finding is somewhat surprising in view of the great changes which have taken place since 1939 in the habits and working conditions of women.

4. Perforation is rare in childhood; its incidence rises rapidly in adolescence and attains a maximum between the ages of 30 and 40 years. Since 1924 there has been a rise in the mean age which does not appear to be due entirely to ageing of the population. The mean age is higher in females than in males.

5. Perforations are unduly common in December and relatively uncommon in August, September, and October. This low incidence in the summer months may possibly have a nutritional basis or may be related to the holiday season.

6. Perforations are less frequent on Sundays and Mondays than on other days. This may perhaps be related to rest at the week-end.

7. Perforations are unduly common between 3 p.m. and 6 p.m. and comparatively uncommon during the night and morning. The relation of these phases to meal-times is not clear and requires further study. There may be a correlation with periods of stress and rest respectively.

8. The fatality rate from perforations increases with age and with delay in treatment. It is greater in gastric than in duodenal ulcer, in females than in males, in winter than in summer.

This survey has been carried out under the auspices of a committee of the Nuffield Provincial Hospitals Trust appointed in Glasgow for the study of sickness records. Thanks are due to our surgical colleagues and the hospital authorities for furnishing us with the information on which this survey is based, and particularly to the medical superintendents of the three main voluntary hospitals, who have given us every facility for extracting the hospital records. Our task has been greatly lightened by the generous help we have received on all sides. We acknowledge also our debt to Prof. J. W. McNee, of whose staff one of us is a member.

Extracting clinical records often proves disappointing, but in this instance we have been gratified at the amount and the detailed character of the information available, and we have pleasure in recording our appreciation of the care devoted by our colleagues, year in and year out, to this routine task of hospital work.

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That there is a real demand for a contributory hospital scheme for those who desire treatment in hospital private wards and nursing homes is shown by the progress made by the Hospital Service Plan under the chairmanship of Sir Bernard Docker and sponsored by King Edward's Hospital Fund for London. This plan has grown steadily since its inception barely two years ago, and the secretary of the London Association for Hospital Services (10, Old Jewry, E.C.2) now announces that the maintenance refund rate is to be increased from £6 a week to £6 6s., thus indicating a desire among the higher-salaried public to make provision for their dependants and themselves in the event of serious illness. The increased refund is payable to subscribers admitted to hospitals after the end of October.

## EXPERIENCES WITH THE GIANT MAGNET AND METALLIC INTRAOCULAR FOREIGN BODIES IN RECENT BATTLE CASUALTIES

BY

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It is perhaps important to publish the following case just now, and we do so at the suggestion of Brig. Sir Stewart Duke-Elder.

## Case History

On July 15, 1944, L/Cpl. E., a land-mine battle casualty from Normandy, was admitted to No. 4 Canadian General Hospital. He had been blown up on July 3, and was "pulseless" when picked up and transfused that evening. From toes to vertex he was spattered with wounds of various sizes. All were superficial except one in the abdominal wall, one of the left hand, and a penetrating injury of the left eyeball.

The first two wounds were operated upon in France. When received at No. 4 Canadian General Hospital the patient was in good condition. He had received intramuscular penicillin, 50,000 units five-hourly, starting on July 8, to a total of 500,000 units; it was then stopped. On the 18th it was given again—15,000 units every three hours to a total of 150,000 units.

H. A. G. D. located a small foreign body impacted in the retina about 3 d.d. down and in from the disk. The entrance wound was minute, near the limbus towards 9 o'clock. There was haemorrhage of the retina near the track of the missile, but lens and vitreous were clear. The vision was 20/20. A radiograph showed a single minute opacity corresponding in position to the visible F.B. H. A. G. D. had the case transferred to the S.E.C. Ophthalmic Centre for extraction, since his magnet was not very powerful, and assisted at the subsequent surgical procedures.

On July 15 operation was performed under novocain infiltration. Good rotation was ensured by dividing the mesial rectus. A 3-mm incision was made in the sclera through a linear diathermy coagulation, between points of fine silk suture. The incision was seen to be about 1 mm. from the F.B., which was partially hidden by coagulum. Six short applications of the giant magnet with the tip of a beak-shaped terminal on the wound produced no movement. It was considered inadvisable at this time to extract the particle with forceps, for several reasons which need not be discussed here. The patient was retained for further consideration.

The next day, when we were dealing with a minute metallic F.B. in the vitreous of a German prisoner of war by the posterior route, Major H. W. Applin, who was collaborating, observed a slight rocking of the F.B. at the end of about the tenth short application, as the current went on and off. Thereafter the particle made larger excursions from the centre of the vitreous towards the wound and was delivered through the choroid (which had not been incised) at the thirty-fifth application. The immediate post-operative progress in this case was uneventful; the eye remained quiet, the vitreous clear, and the vision 6/6.

This experience encouraged us to continue with magnet extraction in the case of L/Cpl. E., since, meantime, some metallic particles collected from scabs on his legs had proved magnetic, and had given a positive Prussian-blue reaction when dissolved in nitric acid. On July 28 the sclera was exposed down to the previous wound and the curved terminal placed against it towards the side away from the F.B. The magnet was then used in short bursts of about 4 seconds (on a few occasions as long as 15 seconds) for 75 applications. The current was probably flowing for not more than a total of 10 minutes. During this time the F.B. was observed to rock in its bed of coagulum, gradually come out of it, and lie across the wound. The magnet was then too hot to manipulate, and it was considered that its insulation was in danger. The patient was returned to bed.

On Aug. 2, under continuous pentothal, the mesial sclera was freely exposed, the internal rectus being divided again to give free access. The scleral suture was removed from the original wound, on which the beak-shaped terminal was placed. The wound elevated slightly at the first magnet application, and the particle, less in size than the head of a half-inch pin, came out at the sixth trial without any haemorrhage or vitreous showing.

The post-operative course has been uneventful. The vitreous remained clear and the vision good—6/9 with lens.

## Commentary

It has long been known that intermittent applications repeated at a number of sittings will succeed in moving a feebly magnetic particle (see Crawford R. A. D. *Brit J Ophthalm.* 1943, 27, 227), and no doubt others have had similar experiences to ours with recent brittle casualties. It seemed to us and to Major Applin that it may not be generally realized that a small magnetic FB or a larger metallic magnetic particle may behave as a non-metallic FB for a considerable number of magnet applications and be labelled as such. Moreover, with such particles the magnet test of production in a cocamized eye is useless.

There are further lessons to be learned from this case and other recent cases we have dealt with.

1 The posterior route is ordinarily best to posterior segment FBs.

2 The shortest route to the exterior is probably always best, provided it does not drag the particle over or through an intraocular part or structure of relatively greater importance than that in which it is lodged.

3 A beak-shaped magnet terminal is almost essential for work well behind the equator. A blunt cone-shaped terminal is sometimes a danger especially with highly magnetic large bodies, unless they are situated in the anterior segment, since the field is too diffuse to direct the delivery accurately.

4 The removal of small metallic intraocular FBs of feeble magnetism which it is desirable to remove as in the case of iron compounds, is sometimes determined by the patience and perseverance of operator and patient and the lilt of the magnet and rectifier—possibly oftener than we have thought heretofore.

5 It is perhaps stating the obvious to say that exploration of intraocular FBs lodged superficially on the skin of face or body or in the conjunctiva, as to their composition and magnetism, is desirable.

6 To those accustomed to the localization of civil hospitals in peacetime the slower and less accurate methods necessitated by war conditions constitute a great handicap.

7. The fact that frequent applications of the giant magnet increase the magnetism of feebly magnetic alloys should influence technique.

8. The application of a surface diathermy terminal to the sclera in the neighbourhood of a metallic intraocular FB is likely to produce an uncontrollable reaction emanating from the FB. For this and other reasons (e.g. the greater difficulty of withdrawing a magnetic particle from a bed of coagulum) it is probably better technique to apply diathermy to the neighbourhood of the scleral wound after the FB is removed.

9. If prolonged applications of the Army portable giant magnet are required, as in the case described above, it is almost essential to place it on an adjustable stand with a tilting top beside the operating table.

In this article only a representative few of these papers will be considered. Dr. Troltsch of Wurzburg in 1867 recorded the frequency with which he found purulent otitis media in infants aged from 16 hours to 1 year. Parrot (1877), in Paris, was surprised to often find pus in the middle ear of infants at birth. In his lectures on "l'athrepsie" he expressed the opinion that there was close association between athrepsia and otitis media. "Soit comme maladie primitive, soit comme complication" Johnston, Brown, and Tisdall (1930) in a clinical study of 171 cases of intestinal intoxication found otitis media in 109 (63.7%), the predominant organism being the streptococcus which has also been recorded as the chief causative organism in American reviews of the subject. They point out differences between the symptoms of gastroenteritis and those of classical primary mastoiditis, and conclude that intestinal intoxication is not due to masked infection in the middle ear and mastoid antra. Findlay (1932) and Yampolsky (1933) hold the same opinion. Melle (1934) reported on the examination of mastoids in 300 consecutive necropsies in children. In 140 no abnormality was found in middle ear or mastoids, though of this number 62 had died of some alimentary condition. In the remaining 160 pus was found in the middle ear or mastoid. The cause of death in 73 of these had been alimentary intoxication or chronic malnutrition. The remaining 87 of the "pus in mastoid" group had died of causes other than alimentary. In other words, pus in the middle ear or mastoid was not found more often in patients dying of acute alimentary intoxication or chronic malnutrition than in those dying of any other cause. He stated that "from a clinical point of view, and from one's observations at post-mortem I can see no justification for blaming the mastoid as the primary cause of an acute alimentary intoxication."

Le Mee (1937), discussing Parrot's findings, suggested that the condition was a "post mortem empyema" and the mechanism one of elementary physics. Cooling of the air in a cavity results in a reduction of pressure, and suction of adjacent fluid (in this case from the pharynx) takes place. Consequently if looked for, pus may be found not only in the middle-ear cavities but also in the sinuses of infants. Le Mee thought that "the finding of pus in the middle-ear cavities of infants had not the same significance as in the child." Ebbs (1937) examined at necropsy the ears of 880 children aged up to 14 years who had died from a great variety of medical and surgical conditions. Pus was found in the middle ears of just over half of these patients. His series included 603 infants under 1 year, and 61% of them had purulent otitis media when examined after death. A clinical history of "gastro enteritis" was obtained in 238 infants under 2 years and 81.4% of these had pus in the mastoids. Further, he found at necropsy that 71.6% of 134 so called "primary pneumonias" and 70% of secondary pneumonias had otitis media. Ebbs concluded that "otitis media [as found in his series] had played a very large part as the aetiological, complicating or final cause of death in a great many of these children."

Cooper (1937), investigating infantile diarrhoea clinically in 300 infants, found parenteral infection in 122. Though otitis media was by far the most common infection, "it did not seem to prejudice the outlook." McConkey and Ross Couper (1938) found that of 1,324 infants admitted to hospital, 195 had otitis media or otitis media and mastoiditis, and they thought that the presence of these was responsible for diarrhoea and vomiting in a certain proportion of cases, especially in the toxic groups, caused by "a pent-up infection in the middle ear" and lack of drainage. Campbell and Cunningham (1941), with 574 cases of gastro-enteritis, concluded that "only those parenteral infections found in the early days of illness could be regarded as playing a part in causing the disease."

The question of the association between infantile diarrhoea and vomiting and middle-ear infection has been raised again by Leathart (1943) who believes that "many infants dying from diarrhoea, vomiting, and dehydration have had in addition an unsuspected bilateral mastoiditis two or three weeks before death." He attributes the condition to milk, vomit, or infected mucus entering the Eustachian tube in children either too young or too ill to sit up and accordingly nursed while lying on their

## LATENT MASTOIDITIS IN INFANCY

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The frequency with which pus is found at necropsy in the middle ears and mastoid cavities of infants is now generally recognized, but the exact part it plays in the causation of death is still controversial. The present paper is based on an analysis of 120 consecutive necropsies in which the middle ears were specially examined. It is felt that observations on a comparatively small series might be of value in reaching a solution to what is admittedly a difficult clinico-pathological problem.

## The Literature

The literature is extensive, but the conclusions reached by the various authors on the significance of latent mastoiditis in infancy and early childhood are by no means unanimous.

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backs. He is convinced that all progressive cases require operative treatment.

## The Present Investigation

The patients in this series were mainly infants, and the term "mastoid" is used to include the middle ear and mastoid antrum. Under the age of 2 years there is no sharp division between them, and the mastoid cells are as yet undeveloped.

Except for some patients who died within a few hours of admission to hospital, most survived long enough to allow of full clinical investigation. Careful analysis of the clinical picture revealed no new facts. It is worth noting that 27 of the patients in whose mastoids pus was found post mortem had normal or subnormal temperatures throughout the course of their illness. There was no correlation between leucocyte counts and the presence of mastoid pus as demonstrated after death. Quite low total leucocyte counts were recorded in some cases which had pus in both mastoids. This fact, however, cannot be used as an argument that the mastoid suppuration was "inactive," because total leucocyte counts in infants are often unreliable indices in differential diagnosis.

Many of the "positive" cases had adequate courses of one or other of the sulphonamide drugs, but the clinical course in these patients was unaffected even temporarily. Although sought for in all patients, otitis media was discovered in only 12 patients before death. Pus was found in 71 after death, bilaterally in 38. Of the 120 patients, 115 were under 2 years of age.

TABLE I.—Age Incidence

Age	Pus in Mastoids	No Pus in Mastoids
4 weeks and under ..	4	6
5 weeks to 6 months ..	46	26
7 to 12 months ..	10	6
1 to 2 years ..	9	8
3 years and over ..	2	3
All ages ..	71	49

As a result of the clinical and pathological diagnoses the cases have been divided into four groups, three of which are fairly well defined, while the fourth contains a variety of conditions.

**Group 1: Diarrhoea and Vomiting.**—The 49 cases in this group were diagnosed clinically as "gastro-enteritis," and the other pathological findings, mostly inconclusive as regards inflammatory changes, left one with no alternative than to support the clinical diagnosis. Pus was found in the mastoids of 35 of these.

**Group 2: Respiratory Conditions (Bronchopneumonia, Bronchiectasis, and Atelectasis).**—Of the 30 patients in this group-mastoid pus was present in 17, while in 13 the mastoids were clear.

**Group 3: Marasmus and Athreptic Conditions.**—Six of the 12 cases had pus in the mastoids.

**Group 4: Miscellaneous Conditions.**—There were at least 20 different causes of death in this group of 39 patients, and here 13 had positive mastoid findings.

## Bacteriology

At necropsy each mastoid cavity was swabbed separately and the swabs were examined microscopically and culturally. Attempts have been made by various writers to determine the significance of the bacteriological findings in the pus in cases of latent mastoiditis, particularly so in the symptom-complex diarrhoea and vomiting of infancy, investigation of the aural flora of which so often gives negative results. Floyd (25), Jeans and Floyd (1926), and Marriott (1925) found aemolytic streptococci to be the predominating organisms in mastoid pus in this condition, and Marriott went so far as to suggest that the infantile diarrhoea and vomiting syndrome was probably a specific intoxication due to haemolytic streptococci, which were found in all his cases. Spahr (1929) concluded that where intestinal organisms were found in cultures of the mastoid pus the prominent symptoms were diarrhoea and vomiting, and that other organisms, though frequently met with, did not give rise to these symptoms. The findings in our series are set out in Table II.

It will be seen that the bacteriology was extremely varied, not uncommonly two or three different organisms being present in one mastoid. There were no characteristic findings in any

TABLE II.—Bacteriological Findings in Cases with Mastoid Pus

Organisms Isolated	Group 1. Diarrhoea and Vomiting	Group 2. Respira- tory Conditions	Group 3. Marasmus and Athrepsia	Group 4 Miscel- laneous Conditions
Pneumococcus ..	17	3	2	4
" and Bact. coli ..	2	2	2	
" " Str. haemo- lyticus ..		2		
" " B. proteus ..				1
" non-haemolytic streptococcus, and H. influenzae ..				1
Str. haemolyticus ..	4			
" viridans and Bact. coli ..	1		1	1
Non-haemolytic streptococcus ..	1	1		
Staph. pyogenes ..		1		
" albus ..		1		
" pyogenes and Str. viridans ..			1	
" " " H. influ- enzae ..				1
Bact. coli " " Bact. coli ..	3	2		1
Bact. aertrycke ..	1			
B. proteus ..	2	1		
M. catarrhalis ..		1		1
" and Bact. coli ..	1			
Diphtheroid bacilli ..	1			
No growth obtained on culture ..	2	2		3
Total in group ..	35	17	6	13

group, and our results do not support the conclusions of Marriott or of Spahr (loc. cit.). In none of the groups did streptococci predominate, and in the three larger groups, pneumococci, either alone or along with other organisms, were most commonly found. Pneumococci were four times as numerous as streptococci in the whole series, and in the diarrhoea and vomiting group were present in 54% of the cases in which there was pus. Crooks and Signy (1936) found the pneumococcus to be the most frequent causative organism in nasal sinusitis in childhood. It is interesting to note that pneumococci were seen in the mastoid pus of one patient with tuberculous meningitis and in one case of meningococcal meningitis. *Bact. aertrycke* was present in one case with diarrhoea and vomiting, but was not isolated from the faeces, and *Bact. coli* was present in three cases in the same group.

## Discussion

This investigation was carried out primarily to try to reach some conclusion as to the place "latent mastoiditis" occupies in relation to the diarrhoea-and-vomiting syndrome in infants. Although we have been able to confirm the frequency with which pus is found in the aural cavities at necropsy in these cases, it is almost as common in a wide variety of conditions.

Acute otitis media is one of the commonest diseases of infancy. It is often undetected, sometimes for want of looking, and frequently because the symptoms and otoscopic signs are not as characteristic as in older children and adults. The infant tympanic membrane is tough, and spontaneous perforation is often later in following acute middle-ear suppuration than in older children. Apart from this, however, the anatomy of the infant's aural cavity is such that acute septic processes in it should rarely remain "latent" for long. The otologists teach that, while it is the "chronic ear" in children and adults which develops complications, it is in the acute stage that the infant is most liable to develop local extension of the suppuration. It is generally accepted that acute middle-ear infection in infancy implies involvement of the antrum in most cases. At this age the antrum is quite superficial, and its outer wall may even be deficient where the squamo-mastoid suture lies over it. Subperiosteal abscess should be, and in fact is, a very common complication of mastoiditis in babies. Again, the presence of the unossified petro-squamous suture in the infant presents an easy pathway-direct from middle ear to middle cranial fossa. Extradural abscess and meningitis are ever-present dangers, and not rare complications, of acute otitis media in infants.

We think it is an important point that, except for one case of meningitis due to *H. influenzae*, none of our patients had any of the local complications which might reasonably be expected if the pus found in the mastoids was the result of an acute primary active process, and, moreover, so virulent as to cause death from toxæmia and dehydration. Death did

not occur too soon for complications, because the majority survived for over two weeks.

The clinical records in our Groups 2, 3, and 4, where pus was found in the mastoid after death, do not reveal that diarrhoea and vomiting were a feature of the illness, as might be expected if the association of mastoiditis and diarrhoea were that of cause and effect. Indeed, while the "parenteral" infection is well recognized as often being associated with vomiting and diarrhoea in infants, "gastro-enteritis" is not a common associate with, say, a pneumococcal empyema or a staphylococcal osteomyelitis, even when undrained. Why should the same infection in the mastoid cause such profound results?

The shorter, wider, and more patent Eustachian tube is often evoked to explain how milk-infected mucus, etc., can find its way to the middle ear. It seems to us that the reverse holds—namely, that "pent-up" pus is less likely to be present in the middle ear of infants than in older patients, because some drainage can take place through the tube into the pharynx. In fact, this is possibly one of the reasons why classical drum signs are often absent in infants with acute otitis media.

Infants have fairly well developed antral, ethmoid, and sphenoidal sinuses. While clinically recognizable "sinusitis" is not common in infants, it would seem logical to suspect these also as being the seat of "pent-up" infection. Ebbs (1937) has shown that pus can be found in one or more sinuses at necropsy in a by no means negligible number of patients. In the age group he investigated the findings were positive in 30.6% of 496 cases examined. We agree with Findlay (1932) that the climax of the "focal sepsis" theory was surely reached when Odeneal (1928) stated that the nasal accessory sinuses are infected in 50% of cases of gastro-enteritis, and that if myringotomy and mastoidectomy do not cause improvement in the infant's condition the sinuses should be opened and drained!

The diversity of organisms found in our cases and in other investigations makes it difficult to believe that such a constant syndrome as infantile diarrhoea and vomiting can be the result of such infection. Finally, the highly infectious nature and the mode of spread of gastro-enteritis in infants' wards in hospital form, we think, one of the strongest points against latent mastoid infection being the key to the aetiology of this condition.

#### Summary

In a series of 120 necropsies in infants and young children pus was found in the mastoid cavities of 71.

Though the highest incidence was in patients with a clinical history of "diarrhoea and vomiting," it was found almost as often in a wide variety of conditions.

Clinical, post-mortem, and bacteriological findings suggest that so-called "latent mastoiditis" is not an aetiological factor in the diarrhoea-and-vomiting symptom-complex.

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The Club for Research on Ageing has received from Lord Nuffield a donation of £3,000, which will enable Dr. V. Korenchevsky to continue his gerontological investigations for a period of three years. Clinical trials of the effects of vitamins on aged persons at the Tooting Bee Hospital will be finished at the end of this year. These were rendered possible during the last two years by substantial grants from Lord Nuffield and the Nuffield Foundation. The Club expresses its heartfelt thanks for these benefactions, and is also very much indebted to the London County Council for most valuable co-operation.

## SECONDARY ABDOMINAL PREGNANCY

BY

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Secondary abdominal pregnancy is a well-recognized but uncommon complication of pregnancy, and numerous cases have been described in the past. The case here recorded is of interest in view of the complications which had arisen by the time the patient was brought for treatment.

#### Case Report

On April 22, 1944, a Kanuri woman aged about 30 was brought to the African Hospital, Maiduguri. She complained of twelve months' amenorrhoea, increasing abdominal swelling for the same period of time, and for the last month a purulent discharge from the umbilicus. She did not complain of pain, but on questioning stated that she had suffered from an attack of abdominal pain three months previously, at the approximate time when her pregnancy should have terminated. She did not admit to having had any pain at an earlier period of the pregnancy. On examination the woman was seen to be extremely ill and considerably dehydrated. Her temperature was 99° F. and pulse rate 120 a minute. There was a swelling in the abdomen which appeared to be a pregnant uterus up to the level of 3 in. below the ensiform cartilage. There was a purulent discharge from the umbilicus, from which a portion of a foetal foot was protruding. Traction on this produced the whole foot as far as the ankle-joint. The skin of the foot was somewhat macerated. Over the whole of the left side of the abdomen were well-marked gas crepitations, which extended to well beyond the nipple line. There was a copious and offensive vaginal discharge.

The woman was taken to the theatre immediately, and under light chloroform anaesthesia the small opening in the umbilicus was enlarged upwards and downwards for about 2½ in. each way. This revealed a large cavity full of pus and lined with thick granulation tissue. A macerated foetus was extracted and the cavity washed out with saline, hydrogen peroxide, and finally eusol. There was no umbilical cord attached to the foetus or to any part of the gestation sac, and the foetal umbilicus was closed. The gestation sac was not within the uterus, and there was no opening out of the sac other than that through the umbilicus, which had been enlarged at the operation. The anterior wall of the gestation sac consisted of the anterior abdominal muscles and skin only. The wound was loosely sutured by silk-worm-gut stitches through all the layers, and a large drainage-tube was left in the cavity.

The patient was returned to bed and given anti-shock treatment. Rectal saline was administered several times in the first 24 hours and was retained well. To counteract the general infection and the gas infection of the abdominal wall 20 c.cm. of 10% soluseptamine was given immediately and 10 g. of sulphanilamide daily by mouth for the first two days. Antitetanus serum, 3,000 units, was given on admission, but no anti-gas-gangrene serum was available. The sulphanilamide was reduced to 5 g. daily on the third and fourth days and then to 4 g. daily for a further four days. The cavity was washed out at first thrice daily with hydrogen peroxide followed by eusol, and the vagina was douched twice daily with weak potassium permanganate. Recovery was far more satisfactory than could reasonably have been expected. The toxæmia diminished rapidly and the gas crepitations had disappeared within 48 hours. The tube was removed on the fifth day and the stitches on the eighth. By this time the wound was being syringed out once daily and the discharge had decreased considerably. The vaginal discharge had almost ceased. During this week routine examinations of the blood and faeces resulted as follows. Blood; no malaria parasites seen; haemoglobin 40%. Faeces: ova of *Ancylostoma duodenale* and live *Trichomonas intestinalis* were both present in considerable numbers. Treatment of the anaemia was instituted immediately, and at a later date the ancylostome infection was treated successfully with oil of chenopodium.

Convalescence was naturally slow, for the patient had been very debilitated. On May 1 she developed a bed-sore over the sacrum which took six weeks to heal. The abdominal wound healed slowly and a sinus persisted which required to be laid open and packed with bipp. She was discharged from hospital on June 17, by which date the abdominal wound was healed. The haemoglobin was then 65%, and there was no evidence of hookworm infection.

#### Discussion

Secondary abdominal pregnancy—i.e., continuation of pregnancy within the abdominal cavity following rupture of a tubal pregnancy—is described as being of two varieties—intra-peritoneal and intraligamentary, depending on whether the tube



ruptures into the peritoneal cavity or between the layers of the broad ligament. In the intraperitoneal variety the gestation sac is formed mainly by inflammatory tissue laid down on the outside of the amnion. In the intraligamentary variety, as the sac enlarges it displaces the peritoneum upwards and, if lying anteriorly, will strip the peritoneum from the anterior abdominal wall. The pregnancy may continue for a normal period of nine months, after which time a false labour occurs and the foetus dies. After the death of the foetus, if the sac remains sterile, the foetus will become inspissated and in the course of years be converted into a lithopaedion. Infection of the sac is apt to occur at any time from the bowel, uterus, or vagina. In such cases fistulae may form between the sac and one of these other structures. Infection from the bowel is probably more likely to arise in the intraperitoneal variety, for in this type the bowel is adherent to the sac wall.

In the above case the pregnancy was probably of the intraligamentary variety. Furthermore, it is probable that the infection had come from the vagina; for, although no fistulous opening was seen, it is likely that a small opening did exist. It is almost certain that at the time of the false labour some vaginal interference had been attempted by the patient's friends and relations. Any such interference would have taken place under the most septic conditions. The presence of a vaginal fistula would account for the profuse and offensive vaginal discharge, which cleared up at about the same rate as the discharge from the gestation sac.

### Summary

A case of secondary abdominal pregnancy, complicated by infection of the sac and rupture through the umbilicus, is described.

A short reference is made to the types of intra-abdominal pregnancy and to the ways in which these may terminate.

The case described is classified as the intraligamentary variety, and the probable source of infection is indicated.

## Medical Memoranda

### Gas Gangrene after Amputation under Refrigeration Anaesthesia: A Warning

Many surgeons are adopting the freezing method to anaesthetize a limb before amputation. There is no doubt that in certain cases, notably diabetic gangrene, this has distinct advantages. The following case shows that unsuspected danger may lurk even here.

On July 23, 1944, I performed an amputation of the right leg through the middle third for spreading diabetic gangrene of the second and third toes. The patient was a man aged 75, in good general condition. The operation was performed with routine pre- and post-operative refrigeration technique, and first of all went well. Forty-eight hours afterwards, however, he became very ill, and on examination presented the clinical picture of a well-established gas-gangrene infection of the stump. The condition appeared to be beyond surgical scope, and the patient died 12 hours later in spite of the administration of large doses of anti-gas-gangrene serum. Cultures of the muscles during life showed *Cl. welchii* with typical stormy clot formation. In seeking the source of infection we had the ice examined. A bacillus showing the cultural and biochemical features of *Cl. welchii* was isolated. Subsequent examination, on different days, of two further specimens of ice, taken from the centre of a new block immediately on delivery with strict aseptic precautions, gave the same result.

Numerous amputations had previously been done at the hospital, using ice from the same source, with no untoward result. It thus seems that any surgeon proposing to use the method should first make sure the ice supplied is free from pathogenic bacteria—especially spore-bearing varieties. Most of the ordinary pyogenic bacteria probably succumb to the usual skin-cleansing on the theatre table. Ice may be contaminated from its container or during transit from the factory (although better than in Continental cities, there are still a few open ice-carts about, and still a few horses to enrich the dust of London streets); but in this case the contamination has been proved to be in the ice. The matter is being taken up by the makers and will shortly be put right, no doubt.

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E. KIRZ, M.D. Prague.

## Reviews

### SURVEY OF BIOCHEMISTRY

*Annual Review of Biochemistry.* Vol. XIII. Editor, James Murray Luck; Associate Editor, James H. C. Smith. (Pp. 795. 31s 6d.) California-Stanford University Press; London: H. K. Lewis and Co.

With 90 more pages than the previous volume (reviewed in the *Journal* on July 22, 1944) the new one again presents certain now valued and expected features, along with the pleasant air of novelty imparted by certain of the more specialized chapters. Anglo-American collaboration is, as before, in evidence: three of the chapters are by British experts, one by a Canadian, one by a Puerto Rican scientist, and the others by authors in the United States. The editors have continued their established practice of changing almost all the contributors, even for those subjects that are repeated year by year—a practice that editors of annual reports and reviews elsewhere might bear in mind. Thus D. E. Green and P. K. Stumpf take over biological oxidations and reduction from F. Lipmann; W. Z. Hassid the chemistry of carbohydrates from H. S. Isbell; H. Neurath and J. P. Greenstein the chemistry of proteins and amino acids from L. F. Hewitt, R. A. Kekwick and A. S. McFarlane; E. A. Evans jun. carbohydrate metabolism from H. J. Deuel jun.; R. H. Barnes and E. M. MacKay fat metabolism from G. O. Burr and R. H. Barnes; C. P. Bernt the metabolism of proteins and amino acids from H. Borsook and J. W. Dubnoff; J. C. Keresztesy the water-soluble vitamins from R. J. Williams; W. C. Russell the fat-soluble vitamins from K. Hickman; W. H. Sebrell nutrition from C. S. Lanford and H. C. Sherman; F. J. Richards the mineral nutrition of plants from D. I. Arnon. For a reason that close examination of both texts has failed to reveal, the chemistry of the lipids, discussed last year by S. J. Thanhauser and G. Schmidt, is this year replaced by the chemistry of the lipids from the pen of J. B. Brown. If the two terms are interchangeable, one is superfluous; if they are to be differentiated, perhaps the editorial board would decide and declare how. This year's article, it should, however, be said, is as interesting as last year's. Again, R. A. McCance and E. M. Widdowson have chosen in the present volume to write on "Mineral Metabolism," whereas in Volume XII L. A. Maynard and J. K. Loosli took the same terms of reference under "Mineral Nutrition." "The Chemistry and Metabolism of the Compounds of Phosphorus" is this year contributed by A. A. Green and S. P. Colowick, in place of last year's analogous review of sulphur compounds by J. C. Andrews.

So much for the staple foods: there are as well a number of attractive side-dishes. T. Mann and C. Lutwak-Mann on non-oxidative enzymes; H. S. Loring on nucleic acids, purines, and pyrimidines; D. Burk and R. J. Winzler on the biochemistry of malignant tissue; E. L. Tatum on the biochemistry of fungi; D. Glick on histochemistry—all these provide scientific titillation for those palates with a taste for the theoretical or laboratory side of biochemistry, as does the chapter on steroids by F. C. Koch. (Incidentally, it is good to see this term, first proposed by the British scientists R. K. Callow and F. G. Young, now generally adopted.) Others more concerned with the possibilities of therapeutic application will turn with appetite to "The Alkaloids" by R. H. F. Manske; "Synthetic Drugs—Antispasmodics" by F. F. Blicke; "The Chemistry of the Hormones" by H. Jensen: while the more botanically or agriculturally minded will find satisfaction in C. F. Huffman's and C. W. Duncan's chapter on deficiencies of farm animals, in "Chloroplast Pigments" by H. H. Strain, "Growth-regulating Substances in Plants" by J. van Overbeek, and "Photoperiodism in Plants" by K. C. Hamner.

A feature of interest about the authors of this volume is that they are drawn from all types of scientific institutions—Governmental, academic, and industrial. Naturally the academic workers predominate, even when allowance is made for the fact that the staffs at many State colleges in the United States are, strictly speaking, Governmental employees. It is, however, worthy of note that five of the experts (out of

the 34) contributing to the book are on the scientific staffs of manufacturing companies in the chemical or allied industries. Altogether, as hitherto this review strikes awe and admiration into the reader's heart, awe at the mass of data necessary to establish even the smallest fundamental advance in science, admiration for the energy and enthusiasm of editors and reviewers who provide a running record of the data, with commentary, a process as essential to the advance as the accumulation of the data themselves. This volume is indispensable, like its predecessors.

### AN ADVENTUROUS LIFE

*A Man who Found a Country* By Dr A. Nakashian (Pp 9 12s 6d net.) London: George Allen and Unwin Ltd.

The country which the author of this dramatic tale found is the U.S.A. He reached it after a most adventurous life of strenuous endeavour, imprisonment fleeing from danger, and Armenian massacres. His father was an Armenian carpenter, and at an early age the author came under the Christian influence of American missionaries. They had at that time begun to take a leading part in introducing liberal education in the Near East, especially among the Moslems. Their work among Mohammedans was difficult, death being the penalty for accepting the Christian faith. So the missionaries turned to the Armenians, who were religious by nature and had already an established Orthodox Church. The geographical position of Armenia made it a target for attacks from Persians, Mongols, Romans, Saracens, and Turks. Armenia was the highway between Europe and Asia and the battlefield on which all races had fought for twenty centuries.

Young Nakashian first graduated from an American college and hospital at Aintab, and from there went to the American University at Beyrouth. He became M.D. in 1894 and then had to go to Constantinople to take the State examinations of Turkey before the Imperial Faculty, entailing a further course of five years. His professional career from the time he started medical and surgical practice was one long series of thrills among sheiks, rich merchants, robber chiefs, and Kurdish outlaws. After being imprisoned by the Turks and escaping from the massacres of Armenians, he eventually became a doctor in the Turkish Army in the last war. Finally he left that tottering empire for the United States where he is now settled as a citizen.

The tale is exciting throughout and bears the imprint of truth, even though much of it is stranger than fiction.

### ENDOMETRIOSIS

*A Study of Endometriosis, Endosalpingiosis, Endocervicosis and Peritoneo-Ovarian Sclerosis—A Clinical and Pathologic Study* By James Robert Goodall, M.D., C.M., D.S., F.R.C.O.G. (Pp 140 illustrated 3s.) London: J. B. Lippincott Company.

Twenty years ago few medical students were taught anything about endometriosis. We now know that this condition is one of the more common causes of pelvic disorders requiring major surgery. Though its clinical manifestations are varied and numerous and its pathology is far from fully understood, none the less it is being diagnosed with progressively greater accuracy. Much of this advance in knowledge is due to the work and writings of Dr Goodall, whose new book *A Study of Endometriosis* is assured of a warm welcome in all English-speaking clinics. Dr Goodall gives a comprehensive survey of endometriosis in all its forms, and describes in addition related pathological entities which he terms endosalpingiosis, endocervicosis, and peritoneo-ovarian sclerosis. At this stage of our knowledge it is inevitable that facts and theories should be closely associated, but the author has endeavoured with success to avoid unjustifiable dogma on the one hand and the confusion of facts and opinions on the other. He describes endometriosis, endosalpingiosis, and endocervicosis as invasive diseases of urogenital origin, and subdivides endometriosis into two main groups—mixed and stromatous—either of which may occur within the uterus or as an extra-uterine manifestation. An acute stromatous endometrioma is also described. This would be diagnosed as a sarcoma by most pathologists, many of whom may not be entirely convinced of the error of their ways even after reading the author's views on the cases he presents. The description of extra-uterine endometriosis is particularly good. One small point of criticism is with the

statement that in bowel endometriosis as carcinoma of the bowel there is never any uterine discharge. This is not correct, for an endometrioma of the colon may reveal its presence by periodic rectal bleeding associated with the menses.

In the next edition it is to be hoped that the author will make clearer his views on three important issues. It would appear from his description of endometrial endometriosis that he would include under this heading cases of Schroeder's disease or metropathia. The idea has some appeal, but it would be helpful if Dr Goodall would state his views on this subject more definitely. His description of endosalpingiosis recalls the work of Frankl of Vienna, on the subject of nodular salpingitis following recurrent tubal infection, usually of gonococcal origin. No reference is made to this work, and it would be helpful to know if Dr Goodall is describing the same condition, believing the aetiology to be different from that suggested by Frankl. Finally the reader is left with the impression that all blood cysts of the pelvis are of endometrial origin. King, of Melbourne, many years ago advanced impressive arguments for considering that this was not so. No reference is made to his work, and it would be interesting to know what Dr Goodall's views are on this subject.

Mention must be made of the excellence of the illustrations, which are so good that it is even a pleasure to turn the book upside down to study Plate IV. This book is sure to stimulate much further research, and the author is to be congratulated on the very high standard of his work.

### Notes on Books

MAY and WORTH'S *Diseases of the Eye*, which first appeared as *May's Manual of Diseases of the Eye* in 1900, and of which the present volume is the 9th English edition, is a hardy veteran among the smaller textbooks on ophthalmology. By means of extensive revision the present editor, Mr M. L. Hine, has succeeded in incorporating the more significant modern work in a text that has obviously proved satisfactory. Inevitably there is a certain unevenness in the style, but the volume remains as acceptable as ever as an elementary guide. It is published at 16s. by Baillière, Tindall and Cox.

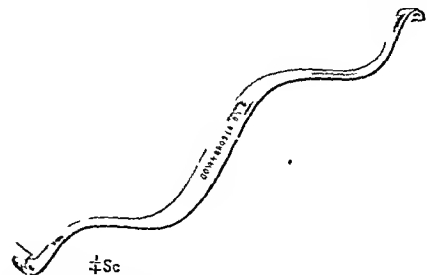
A second edition of *Functional Disorders of the Foot*, by FRANK D. DICKSON and REX L. DIVELEY, has now been published (J. B. Lippincott Company, 30s.). There is very little change from the former issue, one or two new surgical procedures are described—e.g., the Young operation for pes planus, and excision of the digital neuroma in metatarsalgia. There are also two new chapters relating to foot troubles in industry and the Services. The paper is of rather poorer quality than that previously used, probably a wartime measure, in consequence some of the x-ray pictures have failed to reproduce as clearly as in the first edition.

### Preparations and Appliances

#### RETRACTOR FOR PROSTATIC POUCH

Mr CHARLES E. KINDERSLEY, F.R.C.S., surgeon to the Royal United Hospital, Bath, writes:

The retractor illustrated has been made for me by Messrs Down Bros., its purpose being to retract the trigonal area and prostatic pouch so that the pouch can be inspected after the



enucleation of the gland. The curves are adapted to those of the pelvic cavity, and I have found it extremely useful in making the final inspection of the cavity.

## BRITISH MEDICAL JOURNAL

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## THE RISE IN PEPTIC ULCER

It is difficult to say anything fresh about the clinical aspects of peptic ulceration. Except for having learned the risks of alkalosis and avitaminosis we know no more about the aetiology and control than when Sippy introduced his treatment by diet and alkalis in 1915. Since that date however peptic ulcer has grown from a clinical problem to a social problem, owing to a secular change in incidence. A rise was already suggested by the large number of cases of haematemesis which came under study in the decade preceding this war. It was hardly possible to doubt the fact of this rise when the present army was recruited and large numbers of men were found to be suffering from peptic ulcer. It was officially stated in May 1942 that 17% of the total discharges for all diseases from the Army and the Royal Air Force and 13.8% from the Royal Navy were on account of digestive disorders. The majority of these men were suffering from peptic ulcers, and 90% of the ulcers had given rise to symptoms in civil life, before the man joined the Services.<sup>1</sup> In wartime industry men have broken down with peptic ulcer under the strain of long hours or changing shifts, and while the Services can discharge the man with a peptic ulcer the industrial medical officer cannot deal with the situation so simply. No such phenomenon was noted in the last war, either in the armed Forces or in industry, and the only explanation seemed to be a considerable increase in the incidence of peptic ulcer in the years between the two wars. Nor is the increase confined to this country, as is shown by the provision of special dietetic facilities for workers with peptic ulcer in Russian factories and the formation of special units for German troops suffering from digestive disorders.

Nevertheless, in the absence of morbidity statistics, it was still possible for septs to doubt the increase in peptic ulceration and compare it with the loose talk about the increase in cancer which had not been substantiated on careful investigation. An analysis of death rates from peptic ulcer in Great Britain was published this year by Tidy,<sup>2</sup> who came to the conclusion that there was little or no rise between 1912 and 1920, but a sharp rise between 1921 and 1930, the curve then flattened out and remained at the same high level. Tidy thought that the rise was almost entirely due to an increased incidence in males over 40. He found certain differences between England and Scotland, more particularly a rather belated increase in the incidence of gastric ulcer in Scotland. When these results were presented at a meeting of the Association of Physicians<sup>3</sup> they were criticized on the ground that certifi-

cation is liable to be affected by changing fashions and improved diagnostic procedures. This type of criticism has recently been answered by Stocks,<sup>4</sup> who points out that death certification is generally more accurate than certification in life, and that the statistician is interested in long-term trends which are unlikely to be gravely affected by mis-diagnoses and mis-statements. In any event it seems impossible to offer any serious criticism of the factual value of the data on perforation which have been presented by Prof. Illingworth and his colleagues in the article of which the second part appears in our present issue. This is a remarkably thorough piece of investigation which was made possible by the circumstance that the Glasgow region forms a natural catchment area from which practically all cases of perforation flow into a small group of hospitals in the city. It was aided by the high standard of surgical records in these hospitals, which will be the envy of other regions which have tried to compile morbidity statistics. It is clear that perforation of a peptic ulcer was almost unknown in Glasgow until the last decade of the nineteenth century. Since then it has increased in almost exponential fashion to attain a sudden peak in 1940-1, since when the rate has fallen. The main analysis deals with the twenty-year period 1924-43, during which the changes almost entirely concern duodenal ulcer, gastric perforation having remained stationary. The sex ratio has undergone little change, having remained at about 19 males to 1 female throughout. Apart from the rise from a total of 191 perforations in 1924 to 615 perforations in 1941, there are two observations to which we may draw attention. The first is that perforation seems to be related to fatigue, being less common after the summer holiday and the week end, and more common in the late afternoon, the second is that the fatality rate increases sharply with age.

It is difficult to believe that merely the perforation rate has increased in the Glasgow region, and not the total incidence of peptic ulceration. Nevertheless the papers of Tidy and of Illingworth and his colleagues both point to the need for statistics of the total incidence of peptic ulceration in our population and not just of the fraction which perforates or dies. This implies "filling in forms," which is unpopular with men overworked in practice, but it is the only way in which morbidity statistics can be collected. At present it would be fair to say that we do not know how the incidence of peptic ulceration is affected by climate, occupation, or income level. Such knowledge is desirable in view of the two current theories of causation. These may be defined as the psychological and the nutritional, and both ultimately attribute the blame to our so-called civilization. Donnington has described the characteristic diseases of civilization as psychoneurosis, exophthalmic goitre, hyperpiesia, and peptic ulcer. He attributes their increase to the greater emotional strain of civilized life, and the tendency for feelings to be individual rather than communal, and to be pent up rather than exteriorized. He pictures this pent-up emotion welling up, as it were, in the hypothalamus and expressing itself through the autonomic nervous system and the viscera.

<sup>1</sup> Hurst, A. F., *Medical Diseases of War*, 4th ed. London, 1944.<sup>2</sup> *British Medical Journal*, 1944, 1, 677.<sup>3</sup> *Quart. J. Med.*, 1943, 36, 260.<sup>4</sup> *Proc. roy. Soc. Med.*, 1944, 37, 593.

His theory receives support from Wolf and Wolff,<sup>5</sup> who have made careful observations on a man with a large aperture in the stomach. They found that prolonged emotional disturbances, and in particular internal conflict with unfulfilled desire for aggression and fighting back, were accompanied by marked and prolonged increases in gastric motility, secretion, and vascularity, with reddening and engorgement of the mucosa. It would be generally agreed that nervous tension and fatigue at any rate favour perforation and haemorrhage, and the results of Illingworth and co-workers are in harmony with this view. The importance of diet in the aetiology of peptic ulcer has been unequivocally demonstrated by McCarrison<sup>6</sup> both in the field and in the experimental laboratory. Peptic ulcer is very common in the south of India; it is in fact 58 times as common as in the north. On putting groups of rats on the well-constituted diet used by the Sikhs, and on the defective diets used by the poorer classes in Madrassi and Travancore, McCarrison obtained the following results: first group (Sikh diet), nil; second group (Madrassi diet), 11%; third group (Travancore diet), 29% incidence of peptic ulcer. These are remarkable findings, and it is obviously desirable that we should have statistics which would enable us to relate the incidence of peptic ulceration to nutritional status. Many would doubt whether the correlation between peptic ulceration and general poverty of the diet in this country is as close as it appears to be in India. Many would doubt again whether fatigue, nervous tension, and unfulfilled aggression have increased to an extent commensurate with the rise in peptic ulceration.

There are of course other important aspects of peptic ulcer when it is viewed as a social problem. Both water-borne and air-borne infections have been declining as a result of improved social conditions, and developments of chemotherapy have greatly increased our control of bacterial disease. During the last few years virus diseases, like yellow fever and typhus, have yielded to new prophylactic measures, and we can probably look forward with confidence to the eventual conquest of infectious disease. The population is shrinking and ageing, and we are coming to the stage where we are getting rid of acute disease, where our patients live to be older, and where their illnesses by the very fact of age are less tractable and of longer duration. The mortality of both haemorrhage and perforation of a peptic ulcer is directly proportional to the age. Changes in type of disease and in age of population are combining with a real increase of incidence to make peptic ulcer one of the most important diseases in our country. Similar morals could be drawn from a study of rheumatism or mental disease. In planning a medical service and making our hospital provision we must make sure that we are providing for the present war against disease and not the past. There is a tendency in some quarters to speak as if "long-term sickness" could be divorced from general medicine; the lesson from peptic ulcer is that long-term sickness may well be the most important problem of the coming years.

## MEPACRINE AND MALARIA

After the great researches of Ehrlich and his successors which led to the discovery of the various arsenical and other compounds used in the treatment of syphilis and sleeping sickness the progress of chemotherapy seemed to halt, and during most of the nineteen-twenties no further notable advance took place. One fresh product—pamaquin (plasmoquin)—appeared which promised new things in the treatment of malaria and was remarkably effective in the laboratory infections of canaries with *Plasmodium relictum*. When applied in human malaria it proved to have only slight curative action and to be very toxic; its discovery, although encouraging, was of little real value to clinical medicine. A much more substantial contribution to medical science was made about 1932, when from the I.G. Farbenindustrie came an account of the antimalarial action of a new substance first called "erion," then "atebrin," and now officially designated as "mepacrine" in the *British Pharmacopoeia* and as "quinacrine" in the *United States Pharmacopoeia*. Mepacrine is composed of an acridine nucleus with a long side-chain ending in a substituted amino group; it is strongly basic and acts in many ways like a yellow dye, tending to stain the skin that colour when it has been taken by mouth in large quantities. According to the original statement of the manufacturers its action against malaria was as powerful as that of quinine, and this was confirmed during the malaria epidemic of Ceylon in 1935, when mepacrine was first tried out on a large scale. From the experience gained in this epidemic and from field trials organized in Malaya and elsewhere, it became generally accepted that mepacrine was about as effective as quinine in the treatment of acute attacks of malaria. It had an advantage over quinine in that it was less apt to cause vomiting and less likely to be followed by blackwater fever; but, on the other hand, its action was rather slower, and in a small proportion of cases it might cause alarming symptoms resembling those of epilepsy or mania. It also had the disadvantage that its prolonged use tended to stain the skin yellow. In the remaining years before the war each compound had its own champions. Some persons and communities relied almost exclusively on quinine and regarded mepacrine with suspicion, but this may have been due mainly to conservatism and tradition. Other groups vaunted the great superiority of mepacrine; but these were mostly German, and their preference often seemed to be based more upon nationalist than upon medical grounds. In parts of the Tropics such as East Africa, where there were large German settlements, a yellow discoloration of the skin began to acquire the significance of a demonstration of patriotism, apparently without any qualms about the resulting non-Nordic appearance. Among more detached observers the general view prevailed that mepacrine and quinine were about equal in their merits and demerits.

With the coming of the second world war and the Japanese onslaught on Occidental possessions in the Far East and the Pacific the problem of the prevention and treatment of malaria became of the utmost importance. The broadcast of the Australian Premier is now well known in which it was stated that 80% of the Australian Forces

<sup>5</sup> *Human Gastric Functions*, New York, 1943.

<sup>6</sup> *Nutrition and National Health*, London, 1944.

first funded in New Guinea were laid low with malaria, and the importance of disease (50% malaria) in causing far more casualties than the enemy had done was similarly disclosed in Mr. Churchill's description of the recent campaign in Burma. But while the dangers of malaria had grown, the supply of antimalarial drugs had diminished. The world's supply of quinine came almost entirely from Java, owing to the workings of a monopoly, which, for reasons the ordinary person could not understand, was never challenged by the development of alternative sources. And with the capture of Java by the Japanese the supply of quinine was reduced at one stroke to almost negligible amounts. In these circumstances the Allied nations turned, somewhat unwillingly, to mepacrine, and immense efforts were made on the one hand to expand its manufacture and on the other to explore its full capabilities and limitations. The whole story of this aspect of military medicine cannot be told until hostilities have ceased but some of the important conclusions reached are shown in the resolutions which have been adopted by the American and British official bodies for the promotion of research on malaria and its treatment: these are recorded elsewhere in this issue. Both bodies have come to the same conclusion that mepacrine, far from being an inferior substitute for quinine, is in some ways more effective. So far as vivax malaria is concerned the two compounds are about equal in either preventing or treating acute attacks, but neither compound can stop the appearance of relapses after administration of the drug has been discontinued. When employed against falciparum malaria, however, mepacrine if properly used, will completely suppress or cure the infection, the action of quinine in this respect is less certain. With correct administration the toxic effects of mepacrine are not so much greater than those of quinine as to hinder its use. Both American and British bodies therefore declare that, even if quinine were available, its distribution to the armed Forces instead of mepacrine would not be advantageous and might possibly be disadvantageous. Apparently one of the debts we shall owe to dire military necessity will be this realization of the superiority of the synthetic antimalarial over the naturally occurring alkaloid.

The gratification felt at the satisfactory way in which we have met the catastrophic loss of quinine from Java is somewhat marred by the humiliating thought that the solution of the problem lay in taking advantage of German enterprise and persistence. Although the work of Ehrlich showed the great possibilities of chemotherapy, this new branch of science long continued to lack effective support in this country. The war has given the British pharmaceutical industry a big opportunity to embark upon long term projects of research and development. There is no shortage in this country of brilliant workers with a high capacity for original thought, and the material resources are not lacking to give them the support and security they need to bring their thought to fruition. What we want to see is the harnessing of all the energies, mental and material, that will help this country to keep the lead in chemotherapy that penicillin had given it. If we criticize the pharmaceutical industry for its lack of imagination in the past we must also criticize the State for its cheese-paring attitude towards the State-supported Medical Research

Council, which receives from the Treasury an annual grant of £220,000. Unfortunately in a commercial community the State finds it more tempting to subsidize business than to subsidize brains, in the foolish belief that the prosperity of a country depends more upon the former than the latter. If this suicidal policy is continued in the post-war world then we shall find ourselves outstripped by those countries which have a larger vision.

### SULPHONAMIDES AND AGRANULOCYTOSIS

Agranulocytosis is among the rarer complications of sulphonamide therapy, but the risk of such a serious sequel has prompted the general advice to check the white cell count at regular intervals in any patient on sulphonamides for more than one week. It is commonly held that the danger of agranulocytosis is proportional to the total dosage of drug given but the complication has occurred after total dosage of 18 g and an average daily dose of 2.3 g in a collected series of 20 cases.<sup>1</sup> On the other hand, many patients have been given amounts up to 100 g or more without any untoward effect. More important than large dosage is the duration of treatment. Agranulocytosis has rarely been reported in patients who have had less than nine days' treatment, and this observation, together with the relatively small dosage that may induce the phenomenon, suggests that agranulocytosis is an allergic rather than a toxic manifestation of sulphonamide therapy. It would thus take its place among other allergic reactions to the sulphonamides—e.g., drug rash, drug fever, and perhaps renal complications. The best treatment for agranulocytosis is still a matter for controversy, and it is often difficult to say if any particular treatment—fresh-blood transfusions, pentnucleotide, liver extract—has contributed to the patient's recovery. Sternal puncture may be a useful prognostic guide, if many immature granulocytes are found in the bone marrow when none is present in the peripheral blood the chances of spontaneous recovery are good.

A new attack on the problem is suggested by the experience of Nixon, Eckert, and Holmes.<sup>2</sup> Believing that a patient with agranulocytosis may succumb to secondary bacterial infection because of the absence of phagocytes, they recommenced sulphonamide therapy in three patients—one with scarlet fever and two with primary atypical pneumonia—who had developed agranulocytosis after a primary course of sulphadiazine lasting for two weeks or more. Granulocytes disappeared from the peripheral blood between the 15th and 20th days after treatment was begun, and was accompanied by secondary fever and the typical ulcerative throat lesions. After an interval of a few days sulphadiazine was started again in amounts sufficient to give blood levels of 5–10 mg per 100 c.c. (In one case it was at first given intravenously, and the blood concentration of the drug rose to 20–25 mg per 100 c.c.) Within 5 to 10 days granulocytes began to reappear in the blood, pyrexia disappeared, and all three patients made good recoveries. Although other ancillary treatments were used, the authors believe that the second course of sulphadiazine was responsible for the ultimate cure by preventing an overwhelming secondary infection. While this may be true, it is also possible that the second course helped to desensitize the patient to the sulphonamide, for it is now becoming accepted that continuance with sulphonamides may desensitize the patient to specific allergic reactions such as drug rash and drug fever. Another point not appre-

<sup>1</sup> Park, R. G. *Lancet*, 1944, 1, 401.

<sup>2</sup> Nixon, N., Eckert, J. F., and Holmes, K. B., *Amer. J. med. Sci.*, 1943, 205, 713.

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ciated enough is that granulocytopenia resulting from severe bacterial infection is not in itself a contraindication to sulphonamide therapy. Treatment in such cases is often followed by a marked rise in the granulocytes as the infection is brought under control.

## HEALTH SERVICES IN NORTHERN IRELAND

The Northern Ireland Minister of Health and Local Government has appointed the following to be a Health Advisory Committee for Northern Ireland: Mr. William Allen, Mr. Leslie Arndell, M.Sc., Mr. William J. Bailie, Miss M. A. Beaton, Dr. B. R. Clarke, Alderman Thomas L. Cole, Lieut.-Col. John M. Foreman, L.D.S., Lieut.-Col. A. R. G. Gordon, M.P., Councillor James Hamilton, Dr. J. Stuart Hawnt, Dr. J. M. Hunter, Dr. George G. Lyttle, Miss Dorothy Melville, Dr. F. P. Montgomery, Councillor Patrick Murphy, Dr. J. H. McBurney, Mr. H. I. McClure, F.R.C.S., F.R.C.O.G., Mr. Howard Stevenson, F.R.C.S., M.P., Prof. W. J. Wilson, M.D., Mr. C. J. A. Woodside, F.R.C.S. The Council, of which Mr. Howard Stevenson has been appointed chairman, is to advise the Minister of Health upon the general administration of the health and medical services. Mr. John A. Oliver, of the Ministry of Health and Local Government, will act as secretary. The members of the Council have been appointed in their personal capacity to advise the Minister on the strength of their knowledge and experience. Mr. Howard Stevenson is one of the representatives of Queen's University of Belfast in the Ulster House of Commons. He was chairman of the Select Committee on Health Services which reported this year.

## FOOD YEAST

Food yeast, which has recently attracted the attention of the biochemist and nutritionist, has now interested the Colonial Office, who have formed a company, Colonial Food Yeast, Ltd., to grow it on a commercial scale in Jamaica. The object of growing the food yeast is threefold: to provide a cheap source of protein and vitamins for the native populations in the Colonies, to find new uses for sugar and molasses, and to help the sugar industry in Jamaica. The low level of nutrition in the natives of many of our Colonies has long been a scandal, and it is good news to hear that the conscience of the Colonial Office has at last been quickened. The nutritional, research, and commercial aspects of food yeast are set out in a booklet.<sup>1</sup> Food yeast is the dried yeast *Torulopsis utilis*, which for nutritional purposes is preferred to ordinary bakers' or brewers' yeast (*Saccharomyces cerevisiae*) owing to the ease and economy of manufacture and its superior flavour and palatability. It contains a considerable quantity of high-class protein and vitamins of the B complex, of which it is one of the richest sources: 100 grammes or 3½ oz. provide 43 grammes of protein, 2 mg. of vitamin B<sub>1</sub>, 5 mg. of riboflavin, and 40 to 45 mg. of nicotinic acid—more than the daily optimum intake of these three vitamins. Its vitamin B<sub>1</sub> content is much less than that of brewers' yeast, which contains 16 mg. per 100 grammes. This is balanced by its high riboflavin content. Food yeast contains the essential amino acids in kind and proportions similar to those found in a good mixed diet. It contains in particular a large amount of lysine, which is deficient in a diet made up chiefly of cereals. Being much cheaper than animal protein—the cost ex factory is hoped to be 6d. a lb—it offers an excellent means of improving the dietary of populations existing on impoverished diets. Actually

the idea of fortifying food with yeast is not new. The Germans used it in 1914–18 as a source of protein for human consumption, and it is believed that they have been making thousands of tons of it annually in this war.

The source of the carbohydrate for the nutrition of the yeast will be molasses, sugar juice, or raw cane sugar from Jamaica, where the factory for the production of the yeast will be erected. It is hoped that it will thus provide an outlet for the by-products of the Jamaican sugar industry: an output of 12 tons of dried yeast a day is aimed at. Food trials on the nutritive value of food yeast have been made. The proteins appear to be as good biologically as those in milk. In one test a group of school-children receiving a third of an ounce of food yeast a day with school milk showed a greater increase in weight than those of a control group receiving milk but no yeast. Food yeast has distinct possibilities in the field of nutrition at home as well as in the Colonies. Its introduction into soups, stews, gravies, etc., not only would improve their flavour but would considerably enhance their nutritive value. It can also be introduced into bread and would afford a better and cheaper method of "fortifying" white bread than the addition of synthetic vitamins. If food yeast is a success in Jamaica we may hear more of it at home.

## THE HEALTH OF MANCHESTER

A feature of the report on the health of the city of Manchester for 1943 by the M.O.H., Dr. C. Metcalfe Brown, is a table of the vital statistics for Manchester since 1911. During these thirty-two years the birth rate has declined from 26 per thousand of population to 18.66, which itself is higher than for any year since 1926; the infant death rate has fallen from 156 per thousand births to 61, which is the lowest figure on record. There have been conspicuous falls in the death rate from all forms of tuberculosis (indeed, the rate has been halved since 1911), typhoid and paratyphoid fevers, scarlet fever, and all the common infectious diseases, while the death rate from bronchitis and influenza has gone up; that for cancer has doubled, and that for heart disease almost trebled. In tuberculosis the first years of the present war showed a progressive increase to 1.32 deaths per thousand of population in 1941, but the trend has been reversed in more recent years, and in 1943 was 1.07. There was a marked rise in tuberculosis also during the last war. The effect of the great influenza outbreak in 1918 is brought out in this table. The death rate for influenza, which had been about 0.16 per thousand population, rose in 1918 to 3.07, and returned to normal figures two years later.

The report also contains a statement on health centres, and this has been approved in principle by the city council. The city architect and the M.O.H. have planned a typical main health centre. The term must not be taken as meaning the kind of health centre which has figured in recent discussions as a centre for group practice; what is meant here is a centre where the various public health clinics, the maternity and school medical services, the health visiting, and so forth can be administered, though it is felt that if the group-practice centres are eventually set up they should be linked with these public health centres so as to ensure efficiency with economy. Manchester is regarded as conveniently divisible into fifteen units, each containing roughly 50,000 persons, and each having one main health centre and four subsidiary ones. The main health centres are first to be constructed, and the construction of the subsidiary health centres will depend upon the policy ultimately to be adopted for a comprehensive health service. From the drawings which accompany the report the centres appear to be spacious and conveniently planned.

<sup>1</sup> Food Yeast. A Venture in Practical Nutrition. Published by Colonial Food Yeast Ltd. (2s. 6d.)



## Nova et Vetera

## THE PORTRAITS OF WILLIAM HARVEY

In 1913 the Oxford University Press published for the Historical Section of the Royal Society of Medicine a study of the portraits of Dr. William Harvey. The preface and the notes which accompanied the reproductions of the portraits were written by the late Sir D'Arcy Power, who believed his compilation proved "that the undoubted and contemporary portraits of Harvey are more numerous than was expected."

It seems that Sir D'Arcy Power must have approached his task with a somewhat uncritical spirit, for against his statement may be set the opinion expressed to me in 1937 by the present Director of the National Portrait Gallery, Mr. H. M. Hake, that there was only one well-authenticated portrait of Harvey in existence. Long experience of the problems of portraiture could not fail to engender an attitude of scepticism, but Mr. Hake's view may be unduly cautious. Nevertheless, it establishes a firm starting-point for the study of the numerous other claimants to the honour of representing the features of the great Dr. Harvey.

The portrait in question is the three-quarter-length seated figure, kept, until 1839, in the Library at the Royal College of Physicians. This is stated to have been one of three pictures saved from the old premises of the College at the Great Court of 1666, and if this be true it has an incontestable pedigree. Starting with the premiss that this portrait is the best-authenticated picture of Harvey's features to which all other supposed representations must be referred, it is easy to eliminate some of the pictures included in the compilation of 1913, which reproduces sixteen paintings, one engraving, and the bust in Hemstead Church. Of the paintings, two are obvious recent forgeries—namely, that hung in the Secretary's Room at the College of Physicians, and the one possessed in 1913 by Sir D'Arcy Power himself. I believe it is true to say that this fact was afterwards recognized by Sir D'Arcy. Of the remaining fourteen, five are early portraits of other persons at present unknown—namely, one in 1913 at University College, London, at Rolls Park, at Caius College, Cambridge, at the Erich Galleries, and in the

possession of Mr. J. P. Cobbold of Ipswich (a copy of this is at Caius College, Cambridge). This process of elimination leaves nine of Sir D'Arcy Power's list to be seriously considered. One of these, now hanging in the Bodleian Library, Oxford, is clearly derived from the R.C.P. portrait, though it was probably made long after Harvey's death. Three others—namely, those at Merton College, Oxford, in the dining room of the Royal College of Physicians, and at the Aberdeen Medico-Chirurgical Society—appear to belong to a different series of portraits which can now be partly elucidated. In 1936 Dr. Walter Radcliffe, of Wivenhoe, Essex, drew my attention to a portrait apparently representing Harvey which had been in the collection of Dr. Mead in the eighteenth century and now belonged to Sir Arthur Wilmot, Bart., of Alresford Grange. The owner allowed the picture to be deposited at St. Bartholomew's Hospital for investigation, and it is still in the keeping of the Treasurer and Almoners. I soon afterwards learned that there was a related portrait in the Hunterian Collection at Glasgow. This picture, also unknown to Sir D'Arcy Power, represents a doctor with a striking resemblance to Harvey seated in a chair in more or less the same attitude as in the R.C.P. portrait. His right hand, however, rests on an open book, one page of which has drawings of two skulls, and beyond him is a landscape containing many buildings, the two most conspicuous of which can be identified as probably the dome of the old College of Physicians and Trajan's Column.



William Harvey, from the etching attributed to Hollar

Whether the Alresford Grange portrait was copied from this or vice versa it is difficult to determine, but comparison of both with the R.C.P. picture shows among various differences one which could scarcely have occurred if either of them were copied from it or taken from the life. In the R.C.P. portrait the forehead is high and rather narrow. In the Glasgow and Alresford Grange pictures it is wide and rather low. The associated book, or MS., with the skulls, and Trajan's Column seem to have no particular relevance to Harvey, and in Mr. Hake's opinion both pictures represent another, unknown, individual. If this supposition is correct, it eliminates the three last-mentioned pictures of Sir D'Arcy Power's list, as they are evidently derived from the same source.

Only four pictures remain for consideration. One of these is the very pleasing three-quarter-length standing figure in the

possession of the descendants of Dr. Richard Bright at Ditchingham, Norfolk. The face has some resemblance to that of the R.C.P. portrait, but it is not entirely convincing, and Mr. Hake is unable to accept it as undoubtedly representing Harvey. The fact that at one corner are the Harvey arms and William Harvey's *stemma* carries no weight as evidence, since these could have been added at a later date. I am inclined to think that this adverse opinion may be a little too cautious, and would like to accept this picture as a second authentic portrait of Harvey.

Two more of the list—namely, those at the Royal Society of London and at King's Weston, near Bristol—together with a third, unknown to Sir D'Arcy Power and now in the possession of Lord Cottesloe, are partly elucidated by another picture unknown to Sir D'Arcy Power, which has been at the Kent and Canterbury Hospital since 1807. This represents a subject closely resembling the Harvey of the R.C.P. portrait, but more haggard and worried in aspect. The style of the painting is dated to be much later than 1650, so that it is unlikely to have been painted from Harvey during his life. More probably it is a later interpretation of the R.C.P. portrait with variations according to the taste of the copyist, and clearly it is the source of the three other paintings mentioned above.

The sole remaining problem is the picture at the National Portrait Gallery, which was also rejected by Mr. Hake when making his survey. The picture is so badly painted that it would be no great loss to have it eliminated altogether. Recently, however (*Brit. J. Surg.*, 1943, 31, 39), I have drawn attention to the fact that a little-known etching of Harvey, certainly made in the seventeenth century, and attributed, perhaps erroneously, to Hollar, can be accepted at sight as almost, if not quite, the most vivid and life-like representation of Harvey that we possess. Furthermore, the National Portrait Gallery picture is recognizable as derived from the same source, and both have a good deal in common with the Canterbury portrait. I have tentatively suggested that the National Portrait Gallery picture may be the original of the etching spoilt by later, incompetent over-painting. This theory may perhaps be one day put to the test by scientific methods.

The well-known and somewhat idealized engraving by Falthorne, used as a frontispiece in some copies of the first English edition of *De Generatione Animantium*, 1653, seems to have been taken from the R.C.P. portrait. Harvey and Falthorne were acquainted, and the likeness is probably a good one, so that the engraving may provide important evidence for the authenticity of the painting.

The bust in Hemstead Church may have been made from a death-mask, but it is difficult to get from it much idea of Harvey's appearance during life.

To summarize, therefore, it can be stated:

1. That there is one well-authenticated portrait at the Royal College of Physicians, from which are derived Falthorne's contemporary engraving and the later Rodclan copy.
2. That there are the pictures of a somewhat different personality originating in the Canterbury portrait, which may in its turn have been derived from the R.C.P. portrait.
3. That there is the lost or spoiled original of the admirable etching attributed to Hollar.
4. That, lastly, there is the Ditchingham portrait, concerning which opinion is divided.

All other reputed portraits of Harvey so far known have had to be rejected.

GEOFFREY KEMPES.

Ninety years ago, in October, 1851, Florence Nightingale sailed for Scutari, and on Nov. 4, 1911, U.S. Army nursing and medical officers, accompanied by British colleagues, made a pilgrimage to her grave at East Wotton, near Romsey, Hants, to pay their tribute to the pioneer of military nursing. The United States have some special links with Florence Nightingale: her advice was asked and given during the American Civil War, and she inspired Longfellow's poem "St. Ulona." U.S. Army authorities, in co-operation with the British Council, arranged for representatives of the nursing and medical staffs of U.S. hospitals in a wide area of Southern England to attend the ceremony. After short addresses at the graveside and the tying of a wreath, the gathering visited Embley Park, Miss Nightingale's home, and saw mementoes of her career, and then took tea with the Mayor at Romsey Town Hall.

## INDUSTRIAL MEDICINE AND HEALTH

### NOBILFELD FOUNDATION GRANTS TO UNIVERSITIES

One of the primary objects of the Nuffield Foundation is the advancement of health, particularly by the furtherance of teaching and research. In pursuance of this aim the trustees have offered the Universities of Durham, Glasgow, and Manchester grants totalling £150,000 to assist them to carry out schemes which they have submitted for the development, as soon as suitable staffs can be appointed, of teaching and research in industrial health. These grants will be spread over a period of ten years. Manchester, where it is proposed to create a Chair of Industrial Health, will receive £70,000. Durham has been offered £40,000 for the establishment of a department under a University Reader. A similar amount is being allocated to Glasgow for a subdepartment of Industrial Health within the existing department of Social Medicine. The Minister of Labour and National Service (Mr. Ernest Bevin) has assured Sir William Goodenough (Chairman of the Trustees) of his warm approval of the proposal, which he regards as an important contribution to further progress in industrial health.

The maintenance of a healthy industrial population involves the provision of greater facilities for education and research in problems of industrial health. Great Britain has no university department devoted to educational work in industrial health and no facilities for postgraduate training in industrial medicine. In January, 1943, the Select Committee of the House of Commons on National Expenditure on the Health and Welfare of Women Workers drew attention to this lack, stating: "Doctors who are new to industrial work have to learn slowly and painfully by experience many lessons that should and could be taught in courses of preliminary training if such were available." The three university departments which are to be formed should go a long way towards remedying this state of affairs by the direct promotion of teaching and research in industrial health, and should also prove of indirect assistance to the work of the Medical Research Council by creating further opportunities for the carrying out of medical research into specific problems connected with industrial medicine and health.

For the new departments to achieve their objective they will have to maintain close links within their universities with the science and engineering departments as well as with the organization for the teaching of social medicine, because the problems of industrial health are not limited to the field of medicine but relate also to engineering, chemical, and other sciences, and require for their solution the co-operation of both medical and non-medical people in various ways. The staffs of the departments will also have to work in the closest co-operation with such bodies and persons outside the universities as the Factory Department of the Ministry of Labour, the Industrial Health Research Board, local industries, employers, and trade union officials.

## EMPIRE CANCER CAMPAIGN

At a recent meeting the British Empire Cancer Campaign allocated a sum of £39,000 for the continuation of cancer research during the year 1945. This sum compares with grants totalling nearly £36,000 for the present year.

The principal grants are as follows: £10,613 to the Royal Cancer Hospital (Price), including the Chester Beatty Research Institute; £8,000 to the Middlesex Hospital; £3,500 to St. Bartholomew's Hospital; £1,800 to the London Hospital; £2,743 to Mount Vernon Hospital and the Radium Institute; £850 to St. Mark's Hospital, City Road; £1,100 to the Marie Curie Hospital; £120 to the Orvis University Cancer Research Committee; £2,300 to the Cambridge University Cancer Research Centre; £1,740 to the Oxford University Cancer Research Centre; £1,125 to Westminster Hospital; and £5,165 for the expenses of cancer research at the Glasgow Royal Cancer Hospital, Glasgow University, Institute of Animal Genetics of the University of Edinburgh, University College, Nottingham, and St. Thomas's Hospital.

The present allocation for 1945 brings the total amount voted by the Campaign at headquarters during the war to approximately £207,000, and this does not include independent expenditure on cancer research by the autonomous branches of the British Empire Cancer Campaign in Birmingham, Yorkshire, Lancashire, Cheshire, North Wales, Northumberland, Cumberland, and Durham.

D. M. Gibson (*Tubercle*, 1911, 25, 35) records his observations on 283 cases of bone tuberculosis among women and children in Manchester. The disease showed a predilection for the bones of the hands and feet, the long bones, the spine, and ribs in the order named. Single lesions predominated, but multiple lesions were frequent. The diffuse spreading type of osteitis was by far the commonest. The great majority of cases occurred in the first three decades of life, with a preponderance in the second and third decades. Conservative treatment was disappointing, but the results of early and radical treatment of the focus were encouraging.

# RADIOGRAPHY

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## Correspondence

### Arsenic in Malaria

SIR—In his letter in the *Journal* on Oct. 25 Capt Good raises a question of considerable importance. He mentions his experience of the use of arsenic in cases of relapsed malaria (*Plasmodium vivax*). A single intravenous injection of neokharsivan (0.45 g) was invariably effective in terminating the attacks and no relapses occurred. He suggests that arsenical treatment might be tried in cases of malarial relapse acquired, which do not respond to quinine etc.

Some evidence of the effects of arsenicals in such cases of malaria was obtained during the last war. A long series of studies in the treatment of malaria was published, commencing in 1917, by a team of workers in this school. The cases we treated were suffering from long-standing infections which had relapsed frequently in spite of much treatment with quinine. In making our tests with any drugs we provided for an observation period of sixty days with daily examination of the blood, after the end of the treatment this period was not usually completed because most of the cases meantime relapsed. Among the drugs which we employed was arsenic—for example, novarsenobillon alone, liquor arsenicalis alone, and liquor arsenicalis in combination with strychnine or with quinine.

The novarsenobillon dosage employed intravenously was from 0.45 to 0.9 g. The immediate action of novarsenobillon on *Plasmodium vivax* was strikingly good. In this infection the drug was found to be even more rapid in its effect on the parasites than quinine: a single injection of 0.9 g caused the disappearance from the cutaneous blood of all stages of the parasites, usually in about twenty-four hours. The ultimate results, however, were most disappointing. Twenty cases of *P. vivax* were given a single injection of 0.45 g., of these 18 relapsed. Twenty-three cases were given a single injection of 0.6 g., of these 22 relapsed. Twenty-one cases were given a single injection of 0.9 g. of these 19 relapsed. It was noted, however, that a combination of novarsenobillon and quinine was more effective than either novarsenobillon or quinine alone. In *P. falciparum* infections novarsenobillon in the same dosage produced no good effects. Fourteen cases of *P. falciparum* malaria were given single injections of from 0.45 to 0.9 g., the parasites and temperature were practically unaffected. A similar result was obtained in the small number of quartan cases available for treatment. Two patients with *P. malariae* infection were each given 0.9 g intravenously on two occasions with a week's interval between the doses, there was no evident effect on either the parasites or the temperature.

This evidence, so far as it goes, is against the probability of organic arsenic alone, in the form of neokharsivan, proving curative of natural malaria infections which have relapsed after quinine treatment. On the other hand, the use of inorganic arsenic in the form of liquor arsenicalis combined with treatment by quinine gave a very interesting result, as shown in one of our series. The object of this series of observations was to determine whether or not (the disappearance of parasites from the cutaneous blood and the control of symptoms having been ensured by two initial intramuscular injections of quinine bihydrochloride 15 grains) the daily administration of liquor arsenicalis minimis 30 would suffice to prevent relapses (parasitic and febrile). The arsenic was given according to the following plan: two weeks on treatment, one week off, two weeks on, one week off, two weeks on; all cases were able to tolerate this. Continuous administration of 30 minimis daily for longer periods than about two weeks had been found to produce signs and symptoms of arsenical poisoning. In all cases parasites disappeared from the cutaneous blood in from one to four days. Of 31 cases which completed the course of treatment and were then observed for sixty days, only three relapsed during this observation period. Adding and counting

as a relapse one case which became positive during the treatment period, the total failures were 4 (12.5%). In a control series of 30 cases which were treated by two intramuscular injections of 15 grains of quinine bihydrochloride without the arsenic 70% relapsed—I am, etc.,

School of Tropical Medicine, Liverpool

D B BLACKLOCK

### Time of Ovulation

SIR—I beg to offer the following comments on your annotation on ovulation and fertilization (Oct. 21, p. 537). You state that "ovulation in woman usually occurs about 14±1 days before the onset of the ensuing menstrual period," but you add that "its timing is probably subject to considerable variations." This latter caution should be particularly emphasized, since the generalization that ovulation usually occurs at a specified time before the onset of the next menses has led and will continue to lead, to serious errors when applied indiscriminately to individual cases. The frequency of variation in ovulation time was clearly revealed in the excellent review of the literature on this subject by Stein and Cohen (*J. Amer. med. Ass.* 1938, 110, 257). Owing to this variation, postulation that ovulation in a given case occurred 14±1 days before the anticipated onset of the next menstruation is not a reliable method for estimating the age of a young human embryo. For example, Hamilton, Barnes, and Dodds (*J. Obstet. Gynaec. Brit. Emp.* 1943, 50, 241), whom you quote, estimated the age of the pre-villous human embryo described by them to be 10 to 11 days largely on the strength of this postulation. I have submitted detailed evidence elsewhere (*Trans. roy. Soc. Edin.*—in the press) for believing that this embryo is probably 12 days old. This age is consistent with the coital history, and would indicate that ovulation in this case occurred earlier than postulated by the authors.

The earliest pre-villous intra uterine human embryo so far discovered in this country is that described recently by Harding and myself (*J. Obstet. Gynaec. Brit. Emp.* 1944, 51, 225), which was estimated from its histological structure and comparison with other human and with macaque monkey embryos to be 9 to 10 days old. This age, taken in conjunction with the precise menstrual and coital history, provides positive evidence that ovulation in this case occurred on the 9th or 10th day of the cycle, and the patient, an intelligent woman, was insistent that her previous periods for as far back as she could remember occurred every 4 weeks ("every fourth Sunday")—a statement which was accepted with the full knowledge of the variability in the duration of the menstrual cycle which may occur even in the same individual. The specimen and history also suggest that in this case ovulation may have been precipitated by the first copulation during the cycle (on the 10th day). If ovulation time had been postulated as suggested by your article, the embryo would have been calculated to be 5 to 7 days old—an age which is absurdly young in view of the developmental stage reached by the various embryonic elements.

The evidence which you bring to bear on this problem since your previous article (*B.M.J.*, 1938, 1, 344) comprises mainly the discovery of tubal ova, and you state that ten tubal ova have so far been described and that every one of these has confirmed the accepted view as to the time of ovulation. Presumably the ten ova to which you refer are those quoted by Hamilton and his colleagues (above ref.), including the two described by these authors themselves. I would draw your attention to the fact that five other unfertilized tubal ova have been discovered (Miller, Engel, and Reimann, *Growth*, 1938, 2, 381; Reimann and Miller, *Arch. Pathol.*, 1939, 27, 412), to which no reference is made either in your article or by Hamilton. All five of these ova indicated that ovulation occurred 15 to 17 days before the onset of the next menses in these 28-day cycle cases, and, incidentally, it is interesting that one of these ova is claimed by its discoverers (Reimann and Miller) to have exhibited parthenogenetic activities after mechanical stimulation. Further, advice on a "safe period" in a given case, based on the generalization that "ovulation usually occurs etc." is likely to lead to failure in many instances, as is clearly shown in the literature revealed by Stein and Cohen (quoted above).

Finally, you mention a gap in our knowledge of human development in that "no one has yet seen a fertilized human

<sup>1</sup> "Studies in the Treatment of Malaria," Nos. 1-30, *Ann. trop. Med. Parasitol.*, 1917-20, 11-13.

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# CORRESPONDENCE

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ovum undergoing early segmentation or during the morula and free blastocyst stages, when it is still in the tube." I would mention, however, that J. Krafka jun. (*Anat. Rec.*, 1942, 82, 426) described a tubal ovum made up of a solid mass of small cells, 200 to 300 in number, with zona pellucida intact, which he estimated to be 6 to 7 days old.

I hope, Sir, you will bring these facts, which are of both scientific and practical importance, to the attention of your readers so that they may take them into consideration alongside your annotation.—I am, etc.,

Department of Anatomy,  
University of Sheffield.

FRANCIS DAVIES.

## Industrial Dermatitis

SIR,—Dr. G. P. B. Whitwell in his letter (Nov. 4, p. 607) writes that it seems to him "strange that some dermatologists, instead of collecting rare and relatively unimportant skin diseases for exhibition at learned society meetings, have not long before [sic] taken more interest in workaday medicine and gone into the factories to learn something useful." And more in the same strain. Now, although the Section of Dermatology of the Royal Society of Medicine, of which he is a member, is not specifically named by Dr. Whitwell and his shafts are possibly not aimed at it, yet as it holds more frequent meetings for the exhibition of dermatological cases than probably any other society, it must be considered to come within his "target area." As president of the Section for the time being I should like to point out that we had a discussion on industrial dermatitis on May 21, 1942, opened by Dr. Sibyl Horner and Dr. Silcock, thirteen other speakers taking part. Another discussion on diseases liable to be mistaken for industrial dermatitis took place on June 24, 1943, with Dr. H. MacCormac in the chair. This discussion was introduced by Dr. Sibyl Horner, and the present writer showed 84 photographs illustrating about 30 common skin diseases which are liable to be mistaken for industrial dermatitis. One of the referees for industrial dermatitis subsequently told him that he had seen every one of those diseases certified as industrial dermatitis not once but many times. At this meeting Dr. Swanston described the effect on the skin of T.N.T. and tetryl, etc. During the presidency of Dr. Semon three visits to factories for members of the Section were kindly arranged by Dr. Sibyl Horner and were attended by about the maximum numbers that could be accommodated. These included a screw-and-bolt factory, a shell-filling factory, and Woolwich Arsenal, in June, 1942, July, 1943, and September, 1943, respectively. During my own presidency there has been a visit to Woolwich Arsenal in October, 1943, and cases illustrating various industrial skin hazards have been shown at meetings, and discussions on them have taken place as follows:

- 1943 Nov. 18, "Occupational Melanoderma" (Dr. G. B. Dowling).
- 1944 Jan. 20, "Chlorine Acne from Chlorinated Naphthalenes" (Dr. J. E. M. Wigley).
- Feb. 17, "Cheese Itch and Itchy Cargoes," a paper by Prof. J. A. Nixon discussed by seven members.
- May 18, "Occupational Argyria" (Drs. Wigley and Deville).

Dermatologists in this country know that industrial dermatitis forms only a part, though admittedly an important part, of the whole field of dermatology, and it is important that they should keep their perspective and should not neglect the other equally important and much more numerous skin diseases which occur outside the industrial field.

With the very large number of hospital clinics that the educated numbers of dermatologists remaining in this country are now to deal with, the time available for visits to factories is limited, especially as such expeditions always have to be arranged some weeks in advance.

Dr. Whitwell is a member of the Dermatological Section of the Royal Society of Medicine, so these facts should be known to him, but I think they ought to be set down here in case his letter should mislead others. I hope I have made it clear that at all events some dermatologists do not deserve the criticisms of Dr. Whitwell.—I am, etc.,

A. C. ROXBURGH,  
President, Section of Dermatology, R.S.M.

## Artificial Insemination

SIR.—Some of your correspondents have recently raised questions concerning the legal position of doctors, donors, or donees who are parties to the procedure of artificial insemination. Not all of these questions permit of direct and definitive answers, in view of the fact that the subject is relatively new to the lawyers and the issues that emerge have not been examined by the courts or discussed exhaustively in the legal press. While recognizing these difficulties, together with the need to provide guidance and assistance to medical practitioners, the council of the Medical Defence Union has devoted much time and thought to exploring the subject, and has considered the advice of its experienced solicitors. A document dealing with artificial insemination in its several aspects has been prepared and is available for members of the Union who communicate with the secretary requesting a copy.

It must be patent to most of your readers, however, that there are serious hazards lying about the path of any practitioner who undertakes to make available to a patient the procedure of artificial insemination. These hazards may be diminished to some extent by the adoption of certain legal precautions directed towards the protection of the professional interests of the practitioner involved, the observance of professional confidence, and the elimination, so far as is practicable, of prospective litigation.—I am, etc.,

ROBERT FORBES,  
Secretary, Medical Defence Union.

## The Hazard of Anaesthesia

SIR,—I am glad to see that someone with the long experience of Dr. G. Dunderdale in his letter (Oct. 28, p. 578) supports mine of May 6. Both he and I plead for open ether, a good airway, simple armamentarium, and a complete disregard of an impatient surgeon.

I quite agree with his letter, in which he says that only experience can make a good anaesthetist. The present market price of a good resident anaesthetist seems to be about £350 a year: not much attraction for a man of experience! In some hospitals newly qualified men are expected to deal with any emergency; in one I know a man who has never given any anaesthetics has been appointed. In some hospitals the patients are aged and infirm, and if surgical treatment be needed great care is essential when one is dealing with a worn-out heart and chest.

I quite agree with Dr. Dunderdale that tonsil and adenoid operations present great difficulties. In the first place we have to face respiratory obstruction owing to the adenoids, and, secondly, anaesthesia must be induced quickly to avoid nervous shock. After rapid induction, deep anaesthesia must be maintained for a few minutes to enable the surgeon to complete his work.

Whatever agent is used the patient must leave the table with his cough reflexes back, otherwise there is a danger of respiration pneumonia. I get over this problem by using two masks, one soaked in ethyl chloride, the other in ether. The child is under in about two breaths, and deep anaesthesia can be obtained by the ether in a few minutes with the aid of Gamgee tissue over the ether mask. The pupils should be carefully watched, and when two-thirds dilated the child can be left to the surgeon. If one is experienced the child should leave the table coughing. All these and other tricks can be learned only by experience.

Better salaries and full-time experienced anaesthetists is the only answer to this problem.—I am, etc.,

Birkenhead Municipal Hospital, Cheshire.

JOHN H. HANNAN.

## Drugs and the Doctor

SIR,—The letter from the National Pharmaceutical Union under the above title in your issue of Nov. 4 suggests to the casual reader that when the *Pharmacy and Medicines Act*, 1941, was in Parliament the Union was fighting a lone battle against the manufacturers of proprietary medicines, who were supported by the Pharmaceutical Society and defended by the Minister of Health. It further suggests that the Society's opposition to control of proprietary medicines was withdrawn



because it wanted to see certain other sections of the Act become law. Had the late Dr. G. C. Anderson been still with us he would have been able to testify to the laborious work of the Society, together with the B.M.A., in a committee under the chairmanship of Sir G. Elliston, in preparing a scheme of control of proprietary medicines. The proposals of that committee went further than the provisions of the 1941 Act controlling those medicines but the draftsman lifted into the Act many sections from the draft prepared by the committee which met at the Society's house during 1935 and 1936.

In the House of Commons the National Pharmaceutical Union sought at the last moment to secure an amendment which would have confined the sale of new proprietary medicines to chemists. The Society might have desired to support them, but the Bill was an agreed measure between the Government and a number of organizations, and for this reason the Society's hands were tied. The Minister of Health may have "castigated" the Union, but he did so because, rightly or wrongly, he regarded their action as a breach of an agreement. Of the Society he said (*Hansard*, July 16, 1941, col. 688): "When people talk about the National Pharmaceutical Union it might be assumed that they speak for the whole of the chemists. That is not so. There are two bodies, one of them a great professional body, the Pharmaceutical Society, who were a party to all the discussions. There has been no last-minute going back on their agreement on their part. I wish to make that clear."

I am sorry to import the ashes of old controversies into your columns, but the Pharmaceutical Society really cannot allow this imputation upon the part it played in this matter to go unchallenged, and it must invite your readers to compare what the Union now says with what the Minister had to say at the time.—I am, etc.,

The Pharmaceutical Society of Great  
Britain, London W.C.1

HUGH N. LINSTED,  
Secretary

### Rate of Artificial Respiration in Cyanosis

SIR,—As Dr. Eve's letter (Oct. 14, p. 510) would appear on casual reading to cast discredit on my article (Sept. 16, p. 366) it is necessary for me to point out that no such views are justifiable, for his letter is not only unclear and ambiguous in vital parts but is also fallacious in its main arguments.

Dr. Eve is unwise to have presumed that I had embarked upon the precarious course of attempting to improve one small aspect of the long-established teaching of artificial respiration without having fully acquainted myself with all aspects of the subject. My whole article deals only with cases of asphyxia or cyanosis and not at all with cases without cyanosis, except to exclude them. Thus my statement "that an increased rate can do no harm in any case and must in many cases do much good" refers clearly to cases of cyanosis only and not to cases without cyanosis. An increased rate may, of course, produce apnoea in those cases whose respiratory failure is not due to cyanosis, but will not produce it in cyanosed cases (discussed later), hence this irrelevant condition "apnoea" was not mentioned in my article.

Dr. Eve states that my arguments are unanswerable "if one falls into the old error of assuming that the state of a drowned person and his needs are similar to those of a conscious subject. They are quite different." This statement is unclear and ambiguous, and in its present form means nothing definite at all. Does Dr. Eve mean a "conscious normal subject" or a "conscious cyanosed subject"? There is a vast difference between the two, and the statement cannot apply to both. If he means a conscious "normal" subject, such as the subjects of his own investigations in 1933, this assumption is indeed an old error still shared by many. I have, however, dissociated myself from this error, for the whole argument of my article is dependent upon the great difference between "cyanosed" and "normal" subjects. If, on the other hand, he means a conscious "cyanosed" subject (as would appear from the context), he has made a grave error. It is quite incorrect to speak of the subjects of my experiments as "normal subjects." These subjects reproduce almost exactly the state and needs which the drowned person has passed through before losing consciousness, and there is no error in assuming that the state of a drowned person and his needs are similar to those of a conscious

cyanosed subject and that they vary only in degree; the difference being that in the drowned subject the  $O_2$  is fast decreased and the  $CO_2$  correspondingly increased, so that body cells are further affected thereby, and unconsciousness and respiratory failure have resulted. In both cases respiratory exchanges are required to improve the condition and only respiratory exchanges can do so—a further proof of similarity. That Dr. Eve still adheres to the old error is shown by the statement later in his letter that "increasing the rate up to 20-22 per minute increased the ventilation but reduced the  $CO_2$  too much." Naturally it would reduce the  $CO_2$  too much in the "normal" subject, but it would not have done so in the "cyanosed" subject to whom the statement is now freely applied.

Writing of the subjects of my experiments Dr. Eve states: "Combustion is active . . . and  $CO_2$  is accumulating in the blood . . . Respiration has then to be violent to make up for arrears." This increased respiration is necessary because of the cyanosis present. Continuing the quotation: "But in the cold and toneless drowned combustion is in abeyance, the consumption of  $O_2$  is minimal, and very little  $CO_2$  is being formed." Quite true, so far as it goes, but it is here that Dr. Eve makes another serious mistake. He claims that because little  $CO_2$  is now being formed there is little present in the blood, and that increased respiration is no longer required. This is most certainly not the case, and the enormity of such an error is astounding. Has not this cold and toneless subject passed through all the earlier stages of cyanosis leading up to his present condition? What of his "arrears" which required increased respiration (and did not get it) before losing consciousness? Are they not still present, and have they not, in fact, been considerably further increased? Therefore is not increased respiration even more required? And if  $CO_2$  is toxic to nerve cells in *extremis* (as stated in Dr. Eve's letter) is this not a further need for increased respiration? Thus Dr. Eve admits that increased respiration is required in the earlier cyanosis but claims that it is not required later in the deeper cyanosis, which is absurd.

Continuing the quotation: "Hence when cyanosis and errors of  $CO_2$  and  $O_2$  have been adjusted by the first few minutes of artificial respiration, overventilation may then easily wash out too much  $CO_2$  and produce a deficiency of it in the blood (acapnia)." This short sentence covers the whole field of physiological changes which take place in the blood and body cells from deep asphyxia until "presumably" apnoea is produced. It is here that Dr. Eve has made yet another grave error, for somewhere in this gradual scale of improving blood conditions (increasing  $O_2$  and decreasing  $CO_2$ ) is the region in which the subject naturally recovers normal respiratory control and consciousness. Indeed, "when cyanosis and errors of  $CO_2$  and  $O_2$  have been adjusted," be it in few or many minutes, the object of artificial respiration has been achieved, and its performance is discontinued. It is obvious that this stage must be passed through sometime before overventilation could possibly go on to cause apnoea. That there is little danger of the subject being rushed through this stage of fairly normal  $CO_2$ - $O_2$  blood levels into apnoea without regaining respiratory control and consciousness is amply supported by Dr. Eve's statement, on excellent authority, that ". . . in some operations apnoea is maintained by hyperpnoea for 20 or 30 minutes without apparent injury from apnoea."

There would appear to be no danger in the cyanosed subject of the increased rate washing out  $CO_2$  in amounts disproportionate to the amount of  $O_2$  that can be absorbed—as does happen in the normal subject—for in the cyanosed subject the  $O_2$  level is very low and the need is very great, so that the blood would take up  $O_2$  as readily as it would part with its  $CO_2$ . In my experiments it is seen that eight times the normal respiratory exchanges cause no disproportion between the diminishing  $CO_2$  and increasing  $O_2$ ; and as no artificial means can provide more than about four times the normal exchanges there would appear to be no danger whatever in such usage for cases of asphyxia or cyanosis. Indeed "Nature's method" cannot be wrong.

Space does not permit me to comment on minor matters raised in Dr. Eve's letter; but I have, I think, clearly nullified his main criticisms. I therefore maintain that there is no practical danger of apnoea supervening as the result of my

suggested increased rate in cyanosis, and that the result of any such rate would be the earlier resuscitation of the subject.—I am, etc.,

Manchester.

P. R. TINGLEY.

### Atmospheric Conditions and Group Recurrences

SIR,—The interesting note of Dr. G. C. Pether (Nov. 4, p. 608) on three migraine patients having attacks at times of barometric instability opens up a subject dealt with in detail by W. F. Petersen clinically and biochemically (*The Patient and the Weather*, 1934, 2, 53).

Group recurrences are perhaps best seen in neuralgias, fibrositis, and arthritis in relation to moving cyclonic disturbances (S. Weir Mitchell, *Amer. J. med. Sci.*, 1877, 73, 305). But study for some years of about 30 cases of leukaemia suggests that some of those frequently recurring do so in groups, simultaneously or nearly so; also there are indications that some cancer patients recur in groups about the same times. This suggests that external cyclic influences (? atmospheric) raise and lower the patient's resistance. This resistance side of cancer has been much neglected, as was suggested lately by Dr. Thomas Lumsden (*Lancet*, 1944, July 15, p. 91), and if there are indeed group recurrences associated with meteorological factors, this might facilitate the attempts to prevent recurrences, in some cases at least (Webster, *Practitioner*, 1942, 148, 226). The subject is one worthy of further studies.—I am, etc.,

London, W.1.

J. H. DOUGLAS WEBSTER.

### Mistaken Diagnoses in Infectious Fevers

SIR,—Dr. D. F. Johnstone's article (Oct. 28, p. 555) should be very helpful. May I emphasize, even amplify, a few points from fevers hospital and G.P. experience?

1. *Diphtheria*.—Every acute throat seen early should be swabbed before the conventional and useful mist. ferri perchlor. and pot. chlorate is given. To use the antiseptic first is to burn your boats, both clinical and bacteriological. Swabs should be carried in the bag, and the swabbing should be done after all clinical examination is completed, especially in a child. The time spent is negligible, the gain immense. I have never found bacteriologists complain that I send them too many swabs. A negative swab is not necessarily final: if you are asked to repeat, stop local antiseptics for one day before.

2. *Scarlet Fever*.—The most useful clincher in all cases of doubt is a pulse rapid in proportion to temperature. Remember a fevered pulse does not accelerate much from psychic causes, even in a child. A really fast pulse, whether after childbirth or in a child with a rash, should suggest the streptococcus.

3. *Rubella*.—It is amazing how often a fit of sneezing occurs early in the onset. Small hard glands behind the ear, in a child with a clean scalp, are another clincher.

4. *Measles*.—A sick child should not be fussed about, but an examination of the throat should be made at each visit in this disease to exclude intercurrent diphtheria.

5. *Acute Pneumonia*.—The surgeons should supply the obverse of Dr. Johnstone's medallion. Abdominal pain and rigidity often usher in pneumonia, especially if it is a double. It is a worse mistake to operate than not to operate in cases of doubt, whatever the disease.—I am, etc.,

Edinburgh.

A. GUTHRIE BADENOCIL.

### Débridement

SIR.—If further proof were needed, your correspondence columns show that the meaning of "débridement" is not clear to English surgeons. The term first appears in French surgical literature at the time of Paré and was regularly employed by Baron Larrey in his case reports from the Napoleonic campaigns. It signified incision of the superficial and deep tissues to release tension, and is still so understood by the French. The use of "épluchage" in a surgical sense was introduced during the last war. As you say, it means to clean out, and it is descriptive of what we call "wound excision." The word does not come easily to the English tongue, and perhaps on that account has not been generally accepted here.

In view of these facts I would suggest that in the interests of precise statement and corresponding action it would be well

if the use of these foreign terms were abandoned. The procedures in question can be perfectly well described in English, and writer and reader will thereby no longer be left in doubt.—I am, etc.,

Oxford.

C. MAX PAGE.

### "Skiagram"

SIR,—Mr. McAdam Eccles, in appealing for a universally accepted name for the negative image produced by the action of x rays, raises a point which is not without some importance. Those older members of the profession whose youth was, as mine, spent at school, and perhaps also university, entirely in the study of the dead languages, and who retain some reverence for them, will wish to see that the term we use is at least derivatively correct. Mr. Eccles gives a list of 19 names which he says are applied to the product of our labours, and I should have no quarrel with him were it not that in describing what he means by these 19 he adds a twentieth, which is one of the least correct of all—i.e., "a photogram produced by x rays." Now, a photogram means "a thing inscribed by the agency of light," and x-radiation is as far removed from light as is the radiation of "wireless." What frightens the nervous patient when he enters an x-ray room is the belief that a brilliant light is going to flash about him. I would therefore plead for the rigid exclusion of any reference to light which might be implied by the use of such words as "photogram" or the ever less correct "photograph."

About half the terms in Mr. Eccles's list can be deleted at once since they end in "graph" as distinct from "gram." The word "graphie" (I do not expect the *Journal* to produce the Greek script) means writing or drawing in the abstract; the word "gramma" means writing in the concrete—i.e., a thing inscribed. Telegraphy means the art of writing from afar; a telegram is a thing written from afar. The word, then, which we choose should end in "gram" and not in "graph"; and here we are at once at a disadvantage. A radiologist should by radiography produce a radiogram, but a radiogram has by a corruption of two wrongly applied words come to mean the commercially produced noise-box of the drawing-room. There it is firmly implanted, and any attempt to rescue it would result inevitably in confusion. I suggest we leave it alone. What then? Roentgenogram? God forbid. It's German; it's grossly ugly; few of us, probably, can pronounce it correctly; and I, at any rate, after 23 years as a radiologist, am never quite sure about its spelling. Surely we need never use so hideous a word because a German once stumbled on a discovery by accidentally fogging a plate? Any Englishman can fog a plate. No, we can do better than that. There remain, then, in Mr. Eccles's list, for practical purposes, only "shadowgram," "actinogram," and "skiagram." The first goes out at once. It is a childish combination of English and Greek—worse than some of the Latin-Greek combinations of medical nomenclature. Actinogram is incorrect because "aktis" means a ray of the sun, which we do not use. There remains, then, only "skiagram," which is etymologically correct: "skia," a shadow, and "gramma," a thing inscribed. And, what is more, the Greeks themselves combined the two words. Skiagraphéo means "I etch out in light and shade." Personally I do not shudder if I am asked for "an x-ray," though there are no rays about it and x is an unknown quantity. I have got used to it. But if we must have a rather ugly word of classical origins I do not think many radiologists will quarrel with Mr. Eccles and those other distinguished gentlemen who instruct our students if they teach them to ask for a skiagram. But skiagram, please, not the sciagram or skiogram of Mr. Eccles's list. No Greek word ever began "sci"—and our love is feminine, not masculine.—I am, etc.,

Bedford.

H. B. PADWICK.

\* According to Liddell and Scott (6th edition) *γράφω* means "that which is drawn"; and *γράφη*, "properly a representing by means of lines." *γράμμα*, incidentally, also means "a small weight"; hence the French, *gramme*. The *Shorter Oxford* says of *-graph*: "The bulk of the words in *-graph* are of very recent invention, and have the general sense of 'that which writes, portrays, or records.' . . ." For the "shadow which is recorded" we join with Mr. McAdam Eccles and Dr. Padwick in preferring "*skiagram*."—ED., *B.M.J.*

### Mr. Shaw on Doctors

SIR.—Greatly as I enjoyed reading Prof Greenwood's criticism of Mr. Bernard Shaw's new book, *Everybody's Political What's What* (Oct. 28, p. 570), I cannot help thinking that both you and the writer of the criticism take Mr. Shaw too seriously. I have read, and greatly enjoyed in parts, all Mr. Shaw's plays, not to mention the lengthy prefaces, and have seen them acted. There is no doubt that the world of drama and literature would be much poorer without them, but to take them seriously would be a poor compliment to this author, who always writes with his tongue in his cheek. In his old age Mr. Shaw has confirmed that his Socialism is no more than a façade, notably in his pathetic letter recently in the *Times* wherein he complains of the preposterous tax he has to pay on his income of £20,000 a year.

M. Colbourne, in *The Real Bernard Shaw* a book worth reading, deals at length with the attack of pernicious anaemia which Mr. Shaw contracted and for the cure of which he made no bones about taking liver extract. This is a curious renunciation to have had to make for an antivaccinationist, anti-vaccinationist, and anti everything which science has proved to be of value in the practice of medicine. The words "filth" and "poisons" quoted by Prof Greenwood mean nothing to Mr. Shaw when necessity compels him to employ such a remedy for his recovery—I am etc

Norwich

H J STARLING

SIR.—If one may be allowed to criticize is not Prof Greenwood's apology for his profession too ponderous and erudite for most laymen, whereas, in so far as it is designed for his professional brethren, is he not preaching to the already converted? Bernard Shaw has always relied for his effects upon verbal fireworks, paradox, and the denial of the obvious and long-established, and those of us to whom, in our youth, he was a literary idol have, in our middle age, been alienated by those qualities in him which formerly excited our admiration.

The facts of medical science are already, as it were, on the statute book, and need no defence against Bernard Shaw or any other layman.

Does anyone ever take Shaw seriously about anything? Nearly everything he writes has a profoundly irritant effect for the reasons stated above. Need we therefore as doctors be disturbed by his ignorant incursions into medical science?—I am etc,

Hove.

G L DAVIES

### Psychology of the 'Presser'

SIR.—In the answer in "Any Questions?" (Oct. 21) on the psychology of the man who "presses" at golf your contributor says that this is the result of a longing to do superlatively well, and a parallel is drawn with the "pressers" in everyday life, who are always aiming too high. The remedy suggested is simple persuasion or "more intensive psychotherapy."

On the face of it, this sounds the height of common sense, but I wonder in practice how many "pressers" have ever been influenced to change their ways by such methods. As a supporter of the teaching of Matthias Alexander, I agree with him that in practice the solution is never as easy as is suggested, and that it is not enough to rely on persuasion. Alexander, in his rather bizarre terminology, describes what is here called "pressing" as "end-gaining"—i.e., devoting the entire attention to the end result to be attained, at the expense of what he calls the "means-whereby." He has devised a delightfully subtle technique for teaching people to turn their attention from the "end" to the "means," and, by reducing activity down to its basic components, he builds up reaction again with the components in the right order.

A satisfactory explanation of "pressing" can be obtained by referring to the hypothesis of the "total pattern of reaction" and the "partial pattern of reaction," as described by the late G E Coghill in his *Anatomy and the Problem of Behaviour* (Cambridge, 1929). Briefly, Coghill describes how in the developing amblystoma, the wave of neuromuscular excitation arising in response to peripheral stimulation travels cephalo-caudal from segment to segment, so that in the early stages of neuromuscular maturation the excitation which reaches the limb segments is preceded by excitation in the body segments. The response to a stimulus to a limb, early in the life cycle, will produce a "total reaction" in which the trunk

is involved before the limb. However, later on in the life cycle stimulation of the limb segment will produce a separate "partial pattern of reaction," and the limb moves on its own, during its reaction the "total pattern of reaction" in the trunk is maintained undisturbed, but its maintenance is the essential prerequisite of adequate limb reaction. It is Alexander's contention that a condition of mal-coordination such as is manifested in "pressing" is due to the "partial pattern of reaction" in the limb coming to dominate the underlying basic "total pattern," which should be maintained constant throughout activity energy which should be devoted to keeping the "total pattern" constant is misdirected into the "partial pattern." In the well-coordinated organism the wave of neuromuscular activity arising from a stimulus is directed first into the total pattern and then on into the partial pattern, and the problem of "pressing" can never arise, because any increased effort is directed first into maintaining the "constant" of the total pattern, and only secondarily into the partial pattern by means of which the end is to be attained.

I trust that this explanation does not make Alexander's work sound more obscure than ever, but I myself have found it helpful in explaining his method of restoring a constant element to neuromuscular reaction. It also explains why people will persist in a given type of activity long after they have decided that it is valueless, and in spite of their efforts to change. Any increase in effort in these people means that more and more energy is poured into the partial pattern, increasingly at the expense of the total pattern. It is only by teaching such people to cease distorting the total pattern and to work in conformity with it that they can make their efforts to succeed effectual, and can effectively translate good advice into practice—I am, etc

London NW 1

WILFRED BARLOW.

### Association of Municipal Specialists

SIR.—At a meeting held at the Royal College of Physicians on Oct. 26, 1944, it was decided to form an Association of Municipal Specialists, and that the qualification for membership should be "Registered medical practitioners who are specialists principally engaged in clinical work, pathology, or radiology and who are employed whole time by a local authority." It was also decided that the term "specialists" should be defined as those medical men who are looked upon by their professional colleagues as specialists.

I am anxious to get into touch with those who are qualified to become members, and I should be much obliged if medical officers of health would send me, or ask one of their specialists to send me a list of such persons employed by their local authority. We have no other means of getting in touch with them—I am, etc,

12 Manchester Square London W 1

GEORGE F STEBBING,  
Hon. Secretary

### Registration of Specialists

SIR.—The proposals for the registration of specialists which have been accepted by the General Medical Council (Aug. 5, p. 188) have a direct bearing on the future development of the salaried and private medical services of the tropical Empire, and through them on its whole development.

If a register of specialists is prepared solely as a part of the internal administrative machinery of a National Health Service applicable to the United Kingdom alone, it is right and proper that it should be limited to persons domiciled in the United Kingdom, or normally so but temporarily absent on war service. A statutory entry in the *Medical Register* has, however, a significance much wider than this, as the *Register* is used in courts of law and medical services for the assessment of the qualifications and status of medical people in many parts of the Empire other than Great Britain. The absence of an entry showing classification as a specialist against a practitioner's name will ultimately inevitably be taken to imply his lack of qualification to practise or be recognized as a specialist. I therefore notice with concern that the sole provision for the registration of specialists living abroad refers to those people temporarily absent on war service.

Medical specialties are practised and the necessary experience can be gained in many parts of the Empire. If the Far East is to return soon after the war to its previous state of development, and if the entire tropical world is to rise to a properly developed condition, it is imperative that the hygiene and

medical services should be of the highest standard, because the biggest impediment is still disease. Statutory registration of specialists in the United Kingdom and failure to register those abroad will have serious detrimental effects on these services. It will discourage young men from going to parts of the Empire where they could not secure the recognition of their abilities that they could at home; those living abroad will have a reduced incentive to advance themselves because the unregistered specialist cannot hope for the financial reward in any salaried service that would go to a registered one; as a result, people who have in fact qualified themselves abroad may be expected to return to Great Britain to secure recognition and all the material advantages it will imply. Lastly, it is of interest that it is doubtful whether, on their return to England, either Dr. Patrick Manson or Major Ronald Ross, as they were then, or many other distinguished medical men subsequently returning from the Tropics, would have been entitled to practise as specialists.

It may be answered that the position will adjust itself by newly qualified practitioners staying in Great Britain until they have secured specialist status, and then proceeding abroad. Though this would occur to some extent, as a full solution it would be most unsatisfactory. The best specialists are those with previous experience of general practice, but these men could certainly not have had previous tropical experience. Also such a system would divide the medical profession abroad into two classes—the acknowledged specialists, many of them young, and those without hope of acknowledgment, whatever their experience and qualities.

For these reasons a statutory entry in the *Register* should not require any domiciliary condition. It should be obtainable by all registered practitioners, whose sole qualifications should be experience, postgraduate qualifications, and practice of the specialty concerned. These can be acquired in the normal course of a medical career in the Tropics by progressive men, who would not need or ask any relaxation of standard for their recognition.—I am, etc.,

C.M.F.

GEORGE MACDONALD.

### Mental Health Service

SIR,—In reply to the letter under the heading "Asylum Doctors' Pay" it may be stated that the question of salaries and conditions of service of the medical staff in the mental health service is by no means being overlooked. Some useful preliminary work has been done in conjunction with the Medical Superintendents Society, and it is hoped that at the forthcoming annual meeting of the Royal Medico-Psychological Association (Nov. 29) a small but representative committee may be appointed to draw up recommendations. The matter, looked at with regard to the future, is not devoid of complications—e.g., employment of house officers, grading of specialists, tramural duties, etc.—but it is well recognized that an equitable scale of salaries is overdue.—I am, etc.,

W. GORDON MASEFIELD,

Honorary General Secretary, Royal Medico-Psychological Association.  
11 Chardon Street, Cavendish Square, W.

## The Services

Surg. Lieut. J. M. Couchman, R.N., has been awarded the D.S.C., and Temp. Surg. Lieuts. A. C. Smith and T. A. M. Johns, R.N.V.R., have been mentioned in dispatches for distinguished services in operations, carried out in the face of determined opposition from the enemy, which led to the capture of the Island of Elba.

Temp. Surg. Lieut.-Cmdr. J. W. Buchanan has been mentioned in dispatches for good services to the wounded.

Capt. (Acting Major) S. H. A. Gardezi, M.C., I.M.S., has been mentioned in dispatches in recognition of gallant and distinguished services in Sicily.

### CASUALTIES IN THE MEDICAL SERVICES

Wounded.—Capt. P. N. Swift, I.M.S.

Missing at Arnhem.—Capt. C. E. C. Wells, R.A.M.C.

Missing, presumed killed.—Surg. Lieut. Robert Frederick Barlow, R.N.

Reported missing, now reported prisoner of war.—Capt. J. Rutherford, M.C., R.A.M.C.

## Obituary

RAYMOND JOHNSON, O.B.E., F.R.C.S.

Raymond Johnson, consulting surgeon to University College Hospital, died in his sleep in his 83rd year. Entering University College in 1881 as an Exhibitioner he very soon showed his mettle, and by the time he had completed his clinical studies at University College Hospital he was the holder of three gold and six silver medals. In 1886 he added to these by winning two gold medals in the London M.B. He then started seriously on his surgical career by becoming a demonstrator of anatomy before taking the Fellowship of the Royal College of Surgeons in 1888. Four years later he was appointed to the staff of University College Hospital, where he remained for 31 years, retiring before his time in 1923 because he feared that he was standing in the way of his colleagues, who at that time were committed to retirement at the age of 60. He retained his active connexion with the Royal College of Surgeons until 1926, when he finally gave up his professional interests after serving on the Council of the College for eight years and as a member of the Court of Examiners for nine years. At various times he also acted as examiner for the Universities of Birmingham, Cambridge, London, and Leeds.



Raymond Johnson had no doubts as to his place in the profession he had chosen. He had no desire to pose as a research worker or even to lay claim to a great deal of original work. He was content, as well he might have been, with the reputation which he attained as an eminently sound consultant, a skilful surgeon, a lucid teacher, and an ideal colleague. Yet it would have surprised him to know how vividly he is remembered to-day by those who knew him well. His character was in fact a rare one, for he combined with a gentle and rather retiring disposition a surprisingly wide knowledge of human nature and a comprehensive tolerance for its failings. His standards of conduct were very high, but they were for himself, and if others did not live up to them Raymond Johnson would always be their friend but never their judge. His apparent meekness could disappear in a flash when defending the rights of others, and he could be positively disingenuous when occasion arose to cover the faults of his colleagues or his juniors.

Two wars interrupted his career, for he served as surgeon to the Imperial Yeomanry Hospital in the South African War, and again in 1914-18, first as a surgeon rear-admiral, and later, when his naval appointment promised to provide more honours than work, as a captain in the R.A.M.C. Then, as always, he considered first and last his own standards. It would not be true to say that honours meant nothing to him, but they would not have been sweet unless by his own standards they were deserved.

It is good to think that Raymond Johnson, who always preferred gentleness, had twenty years of great happiness after his retirement, enjoying his country home, which he shared with his wife and two daughters.

A. J. G.

GREVILLE MACDONALD, M.D.

Dr. Greville MacDonald, consulting physician for diseases of the throat, King's College Hospital, emeritus professor of King's College, London, and formerly physician to the Throat Hospital, Golden Square, died at Haslemere on Nov. 3.

Greville Matheson MacDonald was born in Manchester on Jan. 20, 1856, eldest son of George MacDonald, LL.D., poet and novelist. Brought up in a literary and musical home he met as a child many leading writers of the day, and after

leaving King's College School, London, he went with his father to the United States in 1872 and there was introduced to Whittier, Longfellow, Oliver Wendell Holmes, and Emerson. He entered King's College as a medical student and won scholarships there, and graduated M.B. Lond. in 1877, with honours in materia medica and pharmaceutical chemistry. During his clinical course at the hospital he became one of Lord Lister's clerks. Greville MacDonald's career in laryngology began as R.M.O. to the Hospital for Diseases of the Throat in 1886, and he was appointed physician soon afterwards. At King's College Hospital he served as throat physician and lecturer on diseases of the throat and nose from 1893 to 1906, when he retired from the active staff and was elected consulting physician. Between qualification and launching out as a specialist he had earned a living in turn as a ship surgeon, as medical officer to a private asylum, and as a doctor in private practice in Florence. His appointment to the Golden Square Hospital was due in the main to an introduction by Sir Morell Mackenzie, whose private work in London he looked after when Morell was in attendance on the Emperor Frederick at San Remo and Charlottenburg.

Greville MacDonald acquired a large practice and ranked high as a lecturer in his specialty. He was vice president of the Section of Laryngology at the Annual Meeting of the B.M.A. in 1895 and president at the Montreal Meeting two years later. His foreign honours included corresponding membership of the Société Française d'Otologie et de Rhinologie, et de Laryngologie, and corresponding Fellowship of the American Laryngological Association. Among his medical publications were *A Treatise on Diseases of the Nose and its Accessory Cavities* (2nd edition 1892) and *Hay Fever and Asthma* (1893). From boyhood he had had many interests outside medicine and he wrote a number of philosophical essays and romances and studies in human personality. He wrote a life of his father and mother in 1924, and *Reminiscences of a Specialist* in 1932.

Dr FREDERICK WALKER, formerly chairman of the Holland Division of the British Medical Association, died at Holbeach Lincs, on Oct. 23. He was born at Wakefield on July 27, 1871, and studied medicine at Leeds, taking the English Conjoint diplomas in 1894. A year later he became senior house-physician and anaesthetist at the Infirmary at Leeds and then practised at Wakefield, where he was assistant honorary surgeon to the Clayton Hospital. He moved later to Holbeach and was appointed medical officer to the Holbeach Institution, the Lincolnshire Joint Board for Mental Defectives and the Isolation Hospital at Fleet. He was also deputy coroner for the Spalding district. Dr Walker joined the B.M.A. in 1896, and in recent years was chairman of the Local War Emergency Committee.

We regret to announce the death of Dr JAMES ALEXANDER DAVIDSON of Montpellier Avenue Ealing, W.5, on Oct. 27, at the age of 61. He was born in Aberdeen, and graduated M.B., Ch.B., at Aberdeen University in 1907 and M.D. in 1909. He was assistant casualty medical officer at Great Ormond Street Children's Hospital. In 1909 he started his practice in Hanwell, and in 1929 he moved to Ealing, and had practised in Hanwell and Ealing for the past thirty-five years. He became medical officer to the L.C.C. residential schools (which work he enjoyed more than any other) and medical officer to the Hanwell Cottage Hospital. In the last war he was a captain in the R.A.M.C. and medical officer to a British auxiliary hospital in Belgrade. After the war he was appointed medical referee for the Mental Treatments Act, 1920, and more recently medical officer to the Associated Equipment Company. During this war Dr Davidson served as medical officer to the Middlesex Battalion Home Guard and physician and chairman of the Medical Recruiting Board. He had been a member of the B.M.A. since 1911, was secretary of the Ealing Division in 1922 and chairman of the West Middlesex Division in 1933-4, representing the latter at three Annual Meetings. He was also a member of the Harveian Society. The following appreciation comes from a former partner. Dr J. A. Davidson was a conscientious and painstaking physician, thorough, calm, and possessing that power which inspires patients with both confidence and assurance. Constantly keeping in touch with current medical literature he was always familiar with the latest methods of treatment. He was a sound diagnostician, dogmatic but willing to see both sides of a question. Dr Davidson was a dearly loved friend to both young and old, and his passing leaves a gap which cannot be filled.

## Universities and Colleges

### UNIVERSITY OF LONDON

Sir Ernest Graham Little, M.P., has been elected chairman of the Council for External Students of London University for the year 1944-5.

### LONDON HOSPITAL MEDICAL COLLEGE

The subject for the next award of the Hutchinson Triennial Prize is "The Value of Local Chemotherapy in the Treatment of Wounds." Every candidate must be a full student of the London Hospital, but not necessarily of the Medical College. He may be qualified, and he is eligible to compete until the expiration of ten years from the date of registration as a student of the hospital. Dissertations must be delivered by Oct. 31, 1947. A printed copy of the conditions may be had from the Secretary of the London Hospital Medical Council, Whitechapel, E.

### UNIVERSITY OF GLASGOW

Four illustrated lectures on the evolution of social medicine will be given by Dr Douglas Guthrie in the Zoology Lecture Room of the University on Mondays and Thursdays, Nov. 27 and 30, and December 4 and 7. The lectures are open to members of the University staff, students, and medical practitioners.

### ROYAL COLLEGE OF SURGEONS OF ENGLAND

The following candidates were successful in the recent Primary Fellowship Examination:

W. P. Cleland, T. H. Cullen, J. S. Davidson, E. W. Graham, J. D. Green, J. W. P. Gummer, J. D. Halliwell, H. O. Jones, P. F. Milne, M. R. Milne, M. R. Ruffell, J. M. Sanderson, D. W. Thomas, Jean K. M. C. Wilson, W. K. Yeates.

## Medical Notes in Parliament

### Penicillin Supplies

Mr KENDALL on Nov. 2 raised the question of penicillin. He said Britain, regrettably, had not started producing this drug until recently. A factory costing £1,000,000 had begun operations that day.

Mr PEAT (Joint Parliamentary Secretary to the Ministry of Supply) intervened to say that was a Press mis-statement.

Mr KENDALL said all information on the manufacture of penicillin and of treatment by it had been given to the United States of America which had done a wonderful job producing it. This production to-day was some 1,200,000,000,000 Oxford units per annum. The supplies they had sent over were represented about 200,000,000,000 Oxford units. Many of our Service men were treated with the drug, which was obtained under Lend-Lease from America. He understood that Germany had been given all the information regarding production of penicillin. Proceeding, Mr. Kendall said bacterial endocarditis was a disease which hitherto had been fatal. Without this drug there was no hope at all. With it lives had been saved here and in the United States. Young people had already been helped in Middlesbrough and Manchester by penicillin. He asked the Ministry of Health to take regionally the few similar cases that would come along. There had not been more than 30 letters asking M.P.s for help. This, Mr. Kendall said, would relieve him from having to try to get penicillin. He neither manufactured nor purchased, but had been allowed to have 4,000,000 or 5,000,000 Oxford units. By regional control the Minister could get doctors trained, through his experts, in the use of penicillin.

Mr WILLIAMS said the matter was of great importance. He was anxious to relieve the anxiety of those who believed there had been undue rigidity or inhumanity in the administration of the supplies. In 1941, 1942, and 1943 the resources of America in penicillin had been hardly less strained than our own. From the beginning of this year, owing to the American supplies provided under Lend-Lease for the armed Forces and civilian air-raid casualties—those were the terms—the Ministry had been able to do a lot for those two classes of people. In the early part of 1944 it became clear that during that vital summer the total supplies, home-produced and imported, would probably be more than sufficient for the needs of the armed Forces. The first allocation for clinical trials under the control of the Clinical Trials Committee of the Medical Research Council had been in January, 1944. By August, 1944, the Ministry was able to provide a general supply on a very restricted basis for the use of civilians. In the three subsequent

At a meeting of the Colour Group of the Physical Society on Wednesday, Nov. 22, at 3.30 p.m. in the Physics Department of the Imperial College, Imperial Institute Road, S.W.7, Mr. E. Willmer of the Cambridge Physiological Laboratory will read a paper on "Retinal Structure and Colour Vision." The spectral sensitivities of the rods and the cones in the human eye, their neural connections, their phylogenetic and ontogenetic development, their behaviour, and their varieties will be discussed in relation to a hypothesis that human colour vision is primarily due to the relative performance of these photo-receptors and not to the performance of the cones only. The peculiar properties of the so-called red free area of the fovea centralis will be examined and the general hypothesis will be considered in relation to the essentially trichromatic basis for colour vision. An informal discussion will follow the paper.

The 103rd annual meeting of the Royal Medical Psychological Association will be held on Wednesday, Nov. 29 at 11, Chandos Street, Cavendish Square, W., under the presidency of Lieut.-Col. A. A. W. Peirce, M.D., F.R.C.P. On the previous day the council and committees will meet at the same address.

Durham University has decided to open the vacant whole-time professorship of surgery at King's College, Newcastle-upon-Tyne, to candidates serving in H.M. Forces. This enlightened decision was made after consultation with the Director General, Army Medical Services. The salary of the chair is £2,000 a year, and Dec. 31, 1944, has been given as the preliminary date by which applications should be received. The University will not, however, fill the appointment until it is satisfied that persons serving overseas have had full opportunity to apply. If the successful applicant is on national service, he will not be required to take up his duties until his release from such service. Applications should be made to the Acting Registrar, University Office, 46, North Bailey, Durham.

Dr. George Walker Hinchliff of Dover has been commended for brave conduct when attending to wounded under shell fire.

## EPIDEMIOLOGICAL NOTES

### Discussion of Table

In England and Wales the incidence of measles, scarlet fever, and whooping-cough continued to rise there being reported respectively 663, 112, and 91 more cases than last week. Returns for acute pneumonia fell by 102, for dysentery by 29, and for diphtheria by 26.

Yorkshire West Riding reported 40 more cases of scarlet fever than last week. The greatest increase in measles was in the north, especially in Lancashire, where returns rose by 267. In Yorkshire West Riding they went up by 66, in Staffordshire by 63, in Durham by 53, in Northumberland by 44, and in Glamorganshire by 41. In contrast to the general trend, Devonshire had 72 fewer cases than last week, and Cheshire 59.

The notifications of dysentery, 362, fell by 29. The largest returns were Lancashire 53, Glamorganshire 41, London 38, Essex 31, Suffolk 29, Yorkshire East Riding 29, Hertfordshire 19, Surrey 16, Gloucestershire 15.

In Scotland there were 56 more cases of measles than last week, and 29 more of diphtheria. During the recent outbreak of gastro-enteritis among infants in Glasgow there were 296 deaths during the eleven weeks from mid-August to mid-October. No specific factor causing the epidemic has been found.

In Eire notifications of diphtheria fell by 25, but were still high—128 cases.

In Northern Ireland scarlet fever rose by 23 cases after the large fall of 46 in the preceding week.

### Diphtheria

According to returns received from all but a few local authorities in England and Wales the number of notifications of diphtheria in 1943 among immunized children was approximately 5,050. According to the same returns, of 1,079 children who died from diphtheria in 1943 42 had been immunized at some time. In the two years 1942-3 the annual rate of incidence of diphtheria among immunized children, based on the estimated time of exposure to risk, was rather more than a quarter of that among those not immunized, and the corresponding mortality ratio was about 1 to 23.

The returns received from medical officers of health in Scotland show that the number of immunized children under age 15 who developed diphtheria during the first six months of 1944 was 827. The information at present available shows that 2 immunized children died during the period.

### Week Ending November 4

The notifications of infectious diseases in England and Wales during the week included scarlet fever 2,149, whooping-cough 1,135, diphtheria 633, measles 4,827, acute pneumonia 520, cerebrospinal fever 42, dysentery 256, paratyphoid 3, typhoid 5, poliomyelitis 14.

## INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended Oct. 28.

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year, for: (a) England and Wales (London included), (b) London (administrative county), (c) Scotland, (d) Eire, (e) Northern Ireland.

Figures of Births and Deaths, and of Deaths recorded under each infectious disease, are for: (a) The 126 great towns in England and Wales (including London), (b) London (administrative county), (c) The 16 principal towns in Scotland, (d) The 13 principal towns in Eire, (e) The 10 principal towns in Northern Ireland.

A dash — denotes no cases, a blank space denotes disease not notifiable or no return available.

Disease	1944					1943 (Corresponding Week)				
	(a)	(b)	(c)	(d)	(e)	(a)	(b)	(c)	(d)	(e)
Cerebrospinal fever Deaths	47	4	15	3		26	3	21	1	—
Diphtheria Deaths	554	9	204	125	25	702	39	166	101	73
Dysentery Deaths	62	35	101	—	—	248	54	66	2	—
Encephalitis lethargica, acute Deaths	3	—	—	—	—	—	—	—	—	—
Erysipelas Deaths	—	—	56	14	—	—	—	67	6	4
Infective enteritis or diarrhoea under 2 years Deaths	37	2	13	37	7	55	4	17	59	12
Measles* Deaths	4,442	65	309	30	95	585	49	74	27	2
Ophthalmia neonatorum Deaths	64	3	19	—	—	75	6	19	—	—
Paratyphoid fever Deaths	14	—	1(B)	—	—	5	—	2	—	—
Pneumonia (influenza) Deaths (from influenza)	538	32	10	2	2	576	32	21	1	10
Pneumonia, primary Deaths	17	1	1	—	—	25	4	14	3	2
Poliomyelitis, acute Deaths	14	—	1	—	—	13	1	2	3	1
Puerperal fever Deaths	—	7	15	—	—	—	4	15	—	—
Puerperal pyrexia† Deaths	162	10	10	1	1	196	11	14	1	5
Relapsing fever Deaths	—	—	—	—	—	—	—	—	—	—
Scarlet fever Deaths	2,238	60	325	51	82	3,623	276	412	50	109
Smallpox Deaths	—	—	—	—	—	—	—	—	—	—
Typhoid fever Deaths	9	—	1	7	2	7	—	3	6	—
Typhus fever Deaths	—	—	—	—	—	—	—	—	—	—
Whooping-cough* Deaths	1,061	52	76	20	10	1,693	105	205	12	1
Deaths (0-1 year) Infant mortality rate (per 1,000 live births)	342	19	55	40	31	304	32	63	43	—
Deaths (excluding stillbirths) Annual death rate (per 1,000 persons living)	4,279	589	551	182	132	4,287	678	596	197	—
Live births Annual rate per 1,000 persons living	6,725	505	933	361	250	5,822	704	879	3	—
Stillbirths Rate per 1,000 total births (including stillbirths)	197	13	29	—	—	203	20	41	—	—

\* Measles and whooping-cough are not notifiable in Scotland, and are therefore an approximation only.

† Includes primary form for England and Wales, London (county), and Northern Ireland.

‡ Includes puerperal fever for England and Wales and Eire.

§ Owing to evacuation schemes and other movements of population and death rates for Northern Ireland are no longer available.



## Letters, Notes, and Answers

All communications with regard to editorial business should be addressed to THE EDITOR, BRITISH MEDICAL JOURNAL, B.M.A. HOUSE, TAVISTOCK SQUARE, LONDON, W.C.1. TELEPHONE: EUSTON 2111. TELGRAMS: *Alitology Westcent, London*. ORIGINAL ARTICLES AND LETTERS forwarded for publication are understood to be offered to the *British Medical Journal* alone unless the contrary be stated.

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### ANY QUESTIONS?

#### Water Testing

Q.—Can you kindly explain how the same water can give such different results as the following?

E.P.H.L.S.	Probable Number of Coliform Bacilli
15/12/43	0
15/8/44	8
15/8/44	70
15/9/44	350
18/10/44	110 (A)
18/10/44	250 (B)
Dr. A. 15/9/44	0
Dr. B. 2/10/44	0

What am I to infer? I have advised it to be boiled. (All samples were collected by the water engineer in sterile (?) bottles supplied by the laboratories.)

A.—The bald inference from the data submitted is that the water supply is unsafe and the questioner's action in advising boiling is justified. This, however, can be only a temporary measure, and the conditions require close investigation. In this connexion it should be made clear (1) whether the samples are of water at the tap or at some other stage before delivery; (2) whether samples from E.P.H.L.S. 15/9/44 and Dr. A. of the same date were taken by the same person and at the same place; (3) whether the sampling officer's procedure is such as to preclude contamination after the sterile bottle leaves the laboratory; and (4) as to the weather conditions at the several dates, especially as regards flooding. The discrepancy between the reports on samples A and B collected 18/10/44 is not of great significance. Before advising his authority on this problem the M.O.H. should discuss these results in detail with the bacteriologist (preferably at the waterworks), who may suggest further experiments to determine what defects exist in the system.

#### Insulin to Increase Weight

Q.—Injections of insulin 10 units t.i.d. a.c. over a period of four or five weeks are said to increase the weight of persistently thin individuals (healthy, non-diabetic). Is there any foundation for this belief, and if so, how does insulin bring about such an increase in weight?

A.—Insulin is sometimes useful in increasing the weight in patients whose appetite is very bad. It does this by producing hypoglycaemia, and it is useless unless pressed to this point. Many patients rendered hypoglycaemic become ravenously hungry and therefore eat more. Unfortunately the method often fails, sometimes because the patient still lacks appetite despite hypoglycaemia and sometimes because the increased intake of food does not cause a gain in weight.

#### Tests for Liver Function

Q.—What are the best tests of liver function? How are they applied and the results interpreted?

A.—The choice of suitable tests depends upon the clinical material and the facilities available. The serum bilirubin estimation, urinary tests for urobilinogen, and the hippuric acid test are the easiest to perform and will often give useful results, particularly in non-jaundiced patients. They will rarely distinguish between obstructive and non-obstructive jaundice, for which purpose more help may be obtained from the flocculation tests—e.g., the serum-collodial-gold reaction and the cephalin-cholesterol test—the serum alkaline phosphatase, modern versions of the galactose-tolerance test using food-galactose estimation, or the serum-protein determination. It is impossible to deal here with technical details, which are described in current articles and textbooks. Two recent numbers of this journal contain accounts of most of the tests mentioned. (Feb. 12, 1944, p. 211, and Sept. 16, 1944, p. 363.)

The interpretation of results needs care because of the possibility of secondary liver involvement in various diseases such as heart disease, acute and chronic infections, anaemias, and hyperthyroidism.

In general it may be said that a suitable combination of tests will materially assist the clinician in the diagnosis of liver disease and in the differentiation of the various types of jaundice. Thus in jaundice due to hepatitis or cirrhosis the flocculation tests are usually positive, the phosphatase moderately raised, galactose tolerance impaired, and the serum globulin may be raised. In obstructive jaundice the flocculation tests are usually negative, the phosphatase much higher, and galactose tolerance and serum globulin may be normal. In subacute and chronic hepatitis the serum albumin has prognostic significance, very low values indicating a poor outlook.

#### Bacterial Enteritis

Q.—We recognize infections of the air passages and call them by the names of the parts affected—e.g., bronchitis. Is there any fundamental reason why parts of the gut—e.g., the colon—should not be similarly the seat of infection? Yet physicians generally doubt such a diagnosis as streptococcal colitis. I know a doctor who developed acute diarrhoea during an epidemic of what G.P.s called gastric flu. But his diarrhoea continued for thirteen months, then stopped. His weight fell, and after a few weeks he sought advice—? neoplasm or other serious cause. Radiological investigation showed an exceptionally hyperactive stomach and long spasmodic contractions in the colon, which was lacking in normal haustrations. A barium meal was voided in less than five hours' time. Examinations of the stools showed large numbers of bacteria, mostly *Strep. viridans*. The percentage of these varied from 80 to 10 and roughly corresponded with the severity of the diarrhoea. Sulphaguanidine was helpful but not curative. One physician's diagnosis of streptococcal colitis was negatived by another's of anxiety neurosis. But the latter seemed to be secondary to the bowel upset and the uncertainty of its cause.

A.—Of course enteritis occurs from bacterial infection—as, for example, tuberculosis, typhoid, and cholera—and pathologists recognize a type due to the streptococcus. To diagnose such a lesion one would require not merely the presence of bacteria in the stools but also signs of inflammation—red blood cells, white cells, a positive test for occult blood, and albuminoid secretion in the stools, together with general phenomena such as fever, leucocytosis, and a raised erythrocyte sedimentation rate. The difficulty about the findings in the present case is that *Strep. viridans* is only feebly pathogenic and is generally supposed to be a mere transient which has been swallowed from foci in the mouth and nasopharynx. The numbers surviving depend largely on the pabulum provided and the rate of passage through the alimentary tract. The number of streptococci in cultures from stools may therefore vary directly with the severity of a diarrhoea, without their having any aetiological connexion with it, and this is probably what is happening in the present case. In the absence of the other signs of infection a diagnosis of enteritis is not justified, and the condition should be treated as a disturbance of motility. Such disturbances are often severe and intractable. Is there any fundamental reason, in fact, why disturbances of intestinal motility should be any less serious than disturbances of cardiac motility?

#### Intravenous Anaesthetics

Q.—I notice that all references to intravenous anaesthesia for a considerable time have specified pentothal. I have always used soluble hexobarbitone under various proprietary names, and have found it quite satisfactory. Will you please say if you consider that pentothal has any definite advantage over soluble hexobarbitone.

A.—Safe general anaesthesia is largely a matter of muscular relaxation achieved at the expense of little respiratory depression. Many consider that pentothal is better than hexobarbitone because it gives a given degree of muscular relaxation with less respiratory depression. Weight for weight pentothal is the more powerful drug. Anyone accustomed to use hexobarbitone will find that he gets approximately equal effect by giving only a little more than half the amount of pentothal.

#### Local Authorities and Dance Halls

Q.—Are there any regulations relating to ventilation of dance halls and to the number of people allowed in a room of a given size?

A.—The control of dance halls is a function of the licensing authority, which, in England and Wales, may or may not be a health authority. For instance, in London and the Home Counties it is usually the county council, but elsewhere the justices of the peace are the authority, unless the power has been otherwise allotted by local Act of Parliament. Licences may be granted subject to terms and conditions, which might include reference to ventilation and other sanitary matters. In practice the licensing authority is primarily concerned to ensure that proper order is kept and precautions are taken for the safety of the public, especially as regards fire. Due regard to health questions is more likely to be taken in those places where the chief constable and the medical officer of health have close liaison in preparing reports for the authority. Regulations have been made by the London County Council and could no doubt be obtained by application to the County Clerk, County Hall, London, S.E.1.

### Rheumatoid Arthritis and B.S.R.

**Q.**—Is it correct that in the presence of a normal blood sedimentation rate treatment of rheumatoid arthritis by gold injection will be of no value?

**A.**—A normal sedimentation rate is so unusual in true rheumatoid arthritis that it raises a doubt whether the case may not be of different pathology. It is also possible that the disease is no longer active. In either case a careful review of the clinical features must be the guide as to whether gold treatment is indicated, and in view of the possible risks it should be avoided unless there is strong evidence for its use. On the whole it would seem unlikely that gold would be of any service in the case in question, possibly before arriving at a final decision it would be wise to have the test repeated, as many circumstances affect it which may not always operate

### Pre-menstrual Psychology

**Q.**—What, if any, is the nature of the endocrine imbalance which produces the change in personality of so many women during the seven days preceding menstruation? Many of these patients complain, not of dysmenorrhoea or of any physical discomfort but of sheer loss of self-control, wickedness, hatefulness and excessive drive which render life almost intolerable for themselves and for their families. I have tried progesterone during this period and in some cases have followed it for a few days after menstruation, by oestrogens, but judging by results I may simply be adding fuel to the fire. Is there any means of determining if the anterior lobe of the pituitary is overactive, and if it is so how can one inhibit its influence? Most clinicians insist that the change is purely psychological, but in women whose menstrual type is irregular this week of anxiety definitely begins earlier or later to correspond with the alteration in the time of onset of each period. This would appear to rule out conditioned reflex as a cause.

**A.**—Mental and physical changes in the pre-menstrual phase have been studied by a number of workers. There is some evidence that disturbances of water balance due to the water-retaining properties of steroid hormones operate unfavourably in individuals of susceptible constitution (Thorn, G. W., Nielson, K. R., Thorn, D. *Endocrinol.* 1938, 22, 155). It has been claimed by J. P. Greenhill and S. C. Freed (*J. Amer. med. Ass.* 1939 112, 1573) that relief of pre-menstrual discomfort may be obtained by administration of ammonium chloride to discharge sodium tension and effect an output of water. Both Israel and Schmidt have reported cases in which insufficient production of corpus luteum hormone appears to be associated with severe mental swings in the pre-menstrual phase, and have suggested progesterone as a possible cure (Israel, S. L., *J. Amer. med. Ass.* 1938, 110, 1721; Schmidt, H. J., *ibid.* 1943, 121, 190). There are certainly several factors involved, and it would be fair to say that an unalterable basic mental constitution is the most important. The extent to which endocrine changes can influence the psychological state is subject to great individual variation. The methods suggested above can be tried, and should prove to be successful where the physical element is the relatively strongest factor. There is obviously no one specific endocrine cure, and no simple functional disturbance of the anterior lobe of the pituitary can be held responsible.

### Treatment of an Epileptic

**Q.**—I should be glad of advice on the treatment of an epileptic girl aged 15 years. She has had fits all her life. They are not very severe; she usually remains unconscious for two or three minutes and has up to three fits a day. She is an intelligent girl and is anxious to become independent of her parents and to earn her own living. For several years she has been on sod bromid gr 15, tinct bellad in 5 t.d.s., together with sod phenobarbitone gr 1 b.d., but the fits have never been reduced to below one a day. Phenitoin gr. 3 b.d. and sodium diphenyl hydantoinate have also been tried with no better result.

**A.**—There are some epileptics whose attacks can never be completely controlled by anticonvulsants in any combination, and the dose of bromide and phenobarbitone that this patient is having is approaching the maximum possible. If sodium diphenyl hydantoinate has not been of benefit alone, it would be well to add it to the dose of bromide and phenobarbitone that the patient is having, and after a few days to drop the bromide, because in some cases luminal and epanutin together are of more benefit than a large dose of each alone.

### Combining Vitamins

**Q.**—What are the limits of compatibility of vitamins? Can vitamins A and D be combined in the same mixture with vitamin C or B using glycerin as a base? By the mixing of the oil- and water-soluble vitamins, is the value lost?

**A.**—There is very little evidence to suggest that fat-soluble vitamins, which are sometimes rather sensitive to acid conditions, and water-soluble vitamins, some of which are easily decomposed by alkalis, cannot exist together when properly combined at round about neutral pH. It is difficult, however, to understand what is

meant by "combining" fat-soluble and water-soluble vitamins, "using glycerin as a base." Pure glycerol is a substance in which the fat-soluble vitamins will certainly not dissolve at all, and it seems unlikely, although there is little experimental evidence on the subject, that it would be a particularly good solvent for water-soluble substances. Thus, an attempt to present fat-soluble and water-soluble vitamins in a glycerin base is most likely to lead to a suspension, of more or less fineness, in which both fat-soluble and water-soluble substances are liable to oxidation, and therefore to destruction. This is, however, not incompatibility in the pharmaceutical sense as usually understood. If the question refers to physiological compatibility it is hardly sufficient to refer to the fact that all the vitamins occurring in food appear to be effective in the presence of one another. Mixtures of synthetic vitamins might quite well behave differently. Evidence that they do is non-existent or at best inconclusive. There are good grounds for accepting the fact that the importance of vitamin E in human nutrition is at least in part due to its anti-oxidant protective action on the  $\beta$ -carotene in the diet, there are also curious reactions between the water-soluble vitamins, probably associated with the fact that we depend to some extent for some of these substances on our gastro-intestinal flora, the nature of which is, in turn, determined by the nutrients in our, the host's, diet. These are causes of compatibility, rather than the opposite. In general, much the best procedure, if it is desired to prepare some multi-vitamin product, is to study the survival therein of the individual constituents by recognized and approved methods, under various conditions of storage, and not to use (or market) such a product until satisfactory proof has been obtained for the stability of all those constituents. Indeed, the recent Pharmacy Act and food-labelling regulations now make it necessary to proceed in this way, whether for medicinal or food products.

### Sodium Morrhuate for Ganglion

**Q.**—Is the treatment of a ganglion with sodium morrhuate or other solution a reliable cure? What is the exact method of using these solutions in this condition?

**A.**—There is no absolutely reliable cure for a ganglion. Rupture by pressure evacuation after puncture by a tenotome, injection of a solution of sodium morrhuate, and excision are all recognized methods of treatment. Any of these methods may cure; none can be guaranteed to cure. Excision gives the best chance. The technique for injection of sodium morrhuate is as follows. The skin over the ganglion is sterilized and anaesthetized by local injection of 1% novocain. A large bore needle is inserted into the ganglion, the contents expressed, and then half a cubic centimetre of a 5% solution of sodium morrhuate injected, the needle is then withdrawn and a sterile dressing applied. The reaction is sometimes unpleasant, but cure has been known to follow.

### Penicillin and Poliomyelitis

**Q.**—I have had an inquiry regarding the possible use of penicillin in late infantile paralysis, and the assertion was made that there was a recorded case of cure and recovery of function. Can you corroborate or refute this, and is there any evidence to show that penicillin or penicillin is of any avail in the treatment of the sequelae of infantile paralysis?

**A.**—It is inconceivable that any chemotherapeutic agent could be of benefit in "late" infantile paralysis—i.e. after the infection has done its damage. It is improbable that penicillin would have any effect even in the acute stage virus diseases in general are insusceptible to penicillin, the only evidence to the contrary of which we know being experiments by Heilman and Herrell (*vide B.M.J.* July 15, 1944, p. 85) showing an effect on orthonosis. We are at a loss to understand how the suggestion that penicillin is of any use for this purpose can have gained currency. The only report on this material which has appeared in a regular medical journal (*T. Crawford, R. S. Handley, and W. H. Hargreaves, Lancet*, June 3, 1944, p. 738) was to the effect that it failed to cure any of 12 cases treated, although they were suffering from conditions due to penicillin-sensitive organisms.

### Pethidine

**Q.**—Pethidine is a drug new to most medical men. What are its uses and abuses? What are the appropriate doses? Is it habit-forming or are people said to have become addicted to it, probably of the type who would abuse almost anything—e.g., alcohol, tea, tobacco, etc.? Would it be indicated for spasmodic contractions of the stomach and colon (as shown by screening and x-ray pictures)?

**A.**—Pethidine is used for relief of pain and the dose is 25 to 50 mg (about 1½ to 1 grain) three times daily. Ampoules are available for intravenous or subcutaneous injection, and when given slowly into a vein it is said to produce prompt relief. It is not as effective as morphine but it is more effective than aspirin. Its chief value is that it does not cause nausea or vomiting as morphine does in many people, and so can be used for these patients. It was recently used successfully

in a patient of this kind who was suffering from inoperable carcinoma with secondaries in the spinal column. It seems to be less effective for traumatic than for neuritic pain. It is advocated for spasm of the intestinal tract and urogenital system, and is described as a spasmolytic as well as an analgesic. It is probably a habit-forming drug, though to a less extent than morphine or even cocaine.

#### Effects of Stilboestrol

**Q.**—Does the administration of stilboestrol stimulate the adrenals and the hypophysis cerebri, causing increased blood pressure, vertigo, and other disturbances resembling the symptoms of arteriosclerosis?

**A.**—In small animals stilboestrol administered in large doses may produce hypertrophy of the adrenal cortex. It appears to inhibit the hypophysis, and large chromophobe adenomas have been produced by continued administration, together with cessation of skeletal growth. In man no evidence of adrenal effect has been clearly indicated, but inhibition of pituitary activity is shown by the diminution or disappearance of gonadotrophins from the urine in menopausal women treated with stilboestrol. Clinically, this results in disappearance of unpleasant vasomotor symptoms, and even a reduction in the increased blood pressure which sometimes occurs at the climacteric. I know of no clinical evidence, and certainly have not observed any, which suggests that "increased blood pressure, vertigo, and other disturbances resembling the symptoms of arteriosclerosis" are ever produced by stilboestrol or other oestrogens as usually administered in woman.

#### Iron and Constipation

**Q.**—Is ferri et ammon. cit. constipating? I have a number of anaemic women who complain they cannot take iron as it makes them feel constipated. What is the remedy?

**A.**—The large doses of iron and ammonium citrate which are prescribed nowadays more often produce diarrhoea than constipation, but if constipation does occur it is well to substitute mistura ferri apertina, N.W.F., which contains ferrous sulphate and sodium sulphate. Freshly prepared Bland's pill is often well tolerated, and if this also fails, colloidal iron may be given in the form of liquor ferri dialysatus, B.P.C., or one of several similar proprietary preparations.

#### Xerodermia

**Q.**—A young woman who has always suffered from xerodermia has one child of about 2 years of age. During pregnancy the skin became almost normal, but now is as bad as ever, and in addition she now gets severe chilblains, deep, painful cracks on the plantar surface of her heels, and swelling of her ankles and legs, especially if she walks any distance. No cardiac, renal, or other cause can be found for the swelling. Calcium treatment has proved of no value. In view of the improvement during pregnancy, do you consider hormone treatment is indicated and, if so, in what form and dosage? Is any other treatment likely to be of any value, and is friar's balsam the most satisfactory local treatment for these cracks as for cracked fingers?

**A.**—It has for long been known that a number of conditions of the skin appear and persist during pregnancy, and that others temporarily clear up, but in our present state of knowledge there are no guiding principles indicating the kind of hormonal treatment suitable for such conditions. Treatment for xerodermia aims at supplying something to counteract the abnormal dryness, such as liquid paraffin, to which a little starch may be added. The painful cracks on the feet call for protection by clastoplast and boric ointment, or possibly friar's balsam. The swelling of the legs and ankles is probably an independent phenomenon arising from other causes.

## LETTERS, NOTES, ETC.

#### Demobilization of Medical Students

**Dr. H. STRATFORD COLLINS** writes: As you have opened the subject of medical demobilization in your columns, may I raise the question of demobilization of medical students. There must be an appreciable number of them in all branches of the Services at present, and many of them have served for some years. They include students who from high motives have abandoned their studies to serve but who may, after Germany is beaten, be ready and anxious to take them up again. There are also students who had their exemptions withdrawn as their tutors did not consider that they were making satisfactory progress. No standard was laid down for this, and it appears to have varied considerably in different schools and even under different tutors in the same school. Some students, having lost their exemption for failure in an examination, passed it while waiting for their call-up, but were not allowed to continue. These men may be the most high-spirited and least studious of their years, but are not necessarily the worst doctors when qualified. Discipline, service, and experience have probably produced a more serious out-

look by now. If they are retained in the Services and sent to the Japanese theatre of war, and the break in their studies is lengthened by two or probably three years, they may well be lost to medicine for good. On qualification, should the war be over, they will be immediately available to help to fill the vacancies in the profession, as they will have completed their compulsory military service. The welfare of these students appears to be nobody's business. They do not seem to be under the jurisdiction of the Central War Board, and are left entirely to the tender mercy of the Ministry of Labour.

#### Diagnosis of Minimal Hyperthyroidism

**Dr. E. C. H. HUDDY** (Truro, Cornwall) writes: The reply to the first question in "Any Questions?" in the *Journal* of Nov. 4 raises a point which is continually giving rise to difficulty—namely, the diagnosis of mild cases of hyperthyroidism. In this connexion the work of J. D. Robertson does not seem to have attracted the attention that it deserves. Quite apart from his demonstration of the fact that the estimation of basal metabolism in ambulant patients is, subject to certain conditions, a perfectly satisfactory procedure (*Journal*, May 6, 1944, p. 617; and see also the impressive letter from I. M. Rabinowitch of Montreal in the *Journal* of July 29 last), he points out that the response of the basal metabolic rate to the administration of iodine constitutes a specific test of very great value in the diagnosis of cases of minimal hyperthyroidism. Robertson refers to one patient with hyperthyroidism who had a B.M.R. of minus 8 falling to minus 27, after administration of iodine, and another such patient in whom these figures were respectively minus 2 and minus 15. He points out also (*Practitioner*, Dec., 1935) that the B.M.R. (subject to certain conditions) is remarkably constant for a given normal individual; the "error" of the B.M.R. is often referred to, but this should apply to the differences between the rates of normal individuals, not the differences between rates given by the same normal person at different times. Admittedly, a high proportion of cases of hyperthyroidism can be diagnosed on clinical grounds alone, but it would appear that the response of the B.M.R. to iodine should be used far more widely than it now is in cases of minimal hyperthyroidism, particularly in those worrying diagnostic problems which are presented by such minimal hypersecretion in women of middle age whose symptoms are cardiac.

In regard to technique, the papers referred to repay close study. The answer to your "question" states that "we have no test for thyroid function." I would suggest that the response of the B.M.R. to iodine may fairly claim to be such a test, for, as Robertson states, the "normal" rate shows no change after iodine, but in hyperthyroidism iodine produces almost invariably a significant fall (rarely a rise) in metabolic rate, and Plummer's demonstration of the value of iodine as pre-operative preparation for subtotal thyroidectomy incorporates this essential fact. Of course, the patient with hyperthyroidism generally responds to iodine with a fall in pulse rate, but this test is not infrequently vitiated by the existence of auricular fibrillation. Consideration of the result of a given test necessarily entails inquiry as to whether the patient has recently received iodine, and it would seem that there may be scope in many cases for carrying out the test and the pre-operative preparation over largely the same period of time.

#### Tobacco Smoking and Nicotine Dosage

**Dr. LENNOX JOHNSTON** (Wallasey) writes: The answer given to questions on the injured man's "fag" (Oct. 28, p. 585) concluded "... there is no reason to withhold a cigarette from an injured man. Nicotine is a central stimulant, but in small quantities is unlikely to have either a beneficial or deleterious effect in traumatic shock." This answer supports the popular view that the dose of nicotine administered by smoking tobacco is infinitesimal or at all events immaterial. Experimental injections of nicotine, however, given to 35 volunteers and to myself indicated that "the cumulative psychic effect of a cigarette inhaled (approximately 12 inhalations) closely resembled that of nicotine gr. 1/50 hypodermically" ("Tobacco Smoking and Nicotine," Johnston, L. M., *Lancet*, 1942, 2, 742). It was also found that nicotine gr. 1/40 and sometimes gr. 1/50 induced toxic symptoms, which included nausea, vomiting, and faintness, in non-smokers. These experiments point the conclusion that the dose of nicotine administered when a cigarette is inhaled to average depth is in the vicinity of 80% of the toxic dose—hardly a "small quantity." The faintness induced by minimal toxic doses of nicotine in healthy subjects suggests that when cardiac action is depressed, as in traumatic shock, cigarettes should be forbidden. Smokers develop a considerable degree of tolerance to nicotine. How far tolerance protects an addict against the toxic effect of his drug is, however, unknown, while it is certain that the withholding of a dose of nicotine, although causing discomfort, will do no harm. Although nicotine is a central stimulant, my experience of over 150 personal doses suggests that stimulation, which usually lasts 15 to 20 minutes following the administration of 1/50 gr. hypodermically, is followed by a similar or even longer period of depression evidenced by psychic depression and lassitude.

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## GENERAL ANAESTHESIA IN SHOCK

BY

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Operations on seriously shocked patients are associated with a notoriously high mortality. This may be due to further loss of blood entailed during the operation, to the stimulus of the operative manipulations, or to the anaesthetic. In the present investigation an attempt has been made to evaluate the relative importance of these factors and to determine if any modifications of the methods in common use can lessen the mortality rate. It has become apparent that the most important single factor has been the anaesthetic, and an examination has therefore been made of the effect of different anaesthetics on the cardiovascular systems of patients with normal plasma volumes who have undergone various operations. These observations have enabled a clearer interpretation to be placed on the effect of these anaesthetics on shocked patients whose plasma volumes were below normal.

A series of 26 patients with normal plasma volumes were examined, of whom 19 underwent various major operations—the majority a partial gastrectomy—and 7 underwent minor operations. In all cases the pulse and respiration rates and the blood pressure were recorded at about three-minute intervals. Determinations of plasma volume (Crooke and Morris, 1942; Morris, 1944) were made and the dye-concentration curves followed at about 30-minute intervals until the end of the operation. The haemoglobin (Rimington, 1942) was also determined at the same intervals. Electrocardiographic records were made in nine cases which underwent major operations.

Changes in the blood pressure were not found to be related to any particular operative manipulation by the surgeon in any of these cases, but they could be produced by alterations in the depth or type of anaesthesia. The effect of increasing depth of different anaesthetics on blood pressure is summarized in the following table.

Anaesthetic	Blood Pressure				
	Rise	Rise, then Fall	Fall, then Rise	Fall	Constant
Nitrous oxide, oxygen, and ether	5	2	2	2	3
Cyclopropane .. ..	7	0	0	1	0
Spinal .. ..	0	0	0	4	0
Sodium pentothal ..	0	0	0	2	0

Fourteen patients who were given nitrous oxide, oxygen, and ether underwent major operations. At some period of the operation a large amount of ether was given in order to obtain very deep anaesthesia, but the effect on the blood pressure was very variable. Two examples are shown in Figs 1 and 2. Eight patients were given cyclopropane, but two have already been included in the group who were given nitrous oxide, oxygen, and ether. In these two the anaesthetic was changed to cyclopropane towards the end of the operation. The blood pressure rose in proportion to the depth of the anaesthesia

(Figs. 2 and 3), except in one of three patients who had only minor operations. In this case the blood pressure fell from an initial level of 195/100 mm. Hg to 145/90 mm Hg. Two of the four patients who had spinal analgesics under-

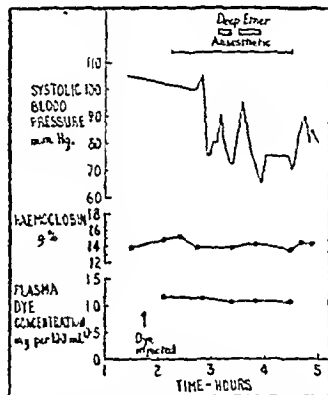


FIG. 1.—Effect of nitrous oxide, oxygen, and ether on blood pressure, haemoglobin, and dye concentration

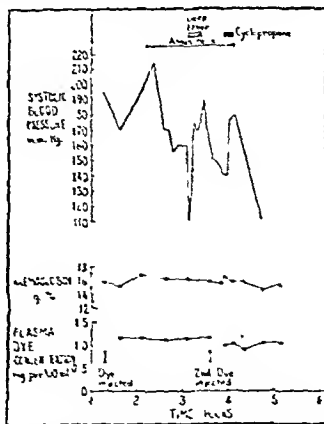


FIG. 2.—Effect of nitrous oxide, oxygen, and ether, followed by cyclopropane and oxygen, on blood pressure, haemoglobin, and dye concentration

went major operations. The blood pressure fell in all of them, and in one the fall was very marked (Fig. 4). Two patients who had minor operations were given sodium pentothal, and the blood pressure fell in both.

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These changes in the blood pressure did not appear to be effected through any changes in the plasma volume, since the dye-concentration curves and the haemoglobin level showed no significant alterations during the operation, as would have occurred if water had been lost from the blood stream into the surrounding tissues. The plasma volume was determined a second time at the end of all major operations in order to measure the haemorrhage. Anomalous dye-concentration curves were obtained in 10 patients, due to the previous injection of morphine or hyoscine (Bowler, Crooke, and Morris, 1944), but 9 patients had good second dye-concentration curves. Two of these showed an increase of plasma volume, three no change, and four a fall, but the changes were probably within the error of the method. In all these cases very great attention had been paid to haemostasis in order to eliminate haemorrhage

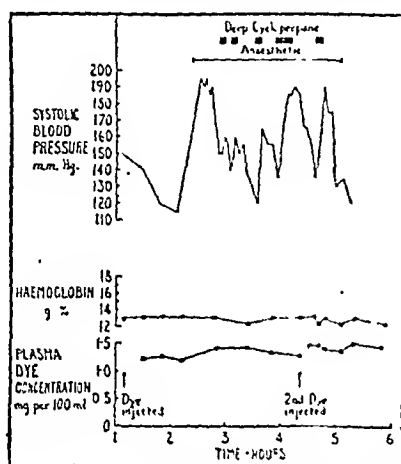


FIG. 3.—Effect of cyclopropane and oxygen on blood pressure, haemoglobin, and dye concentration.

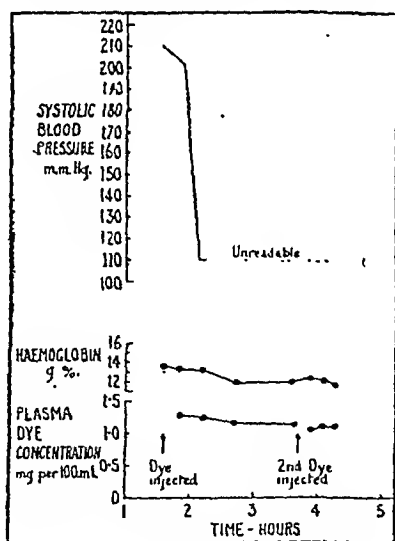


FIG. 4.—Effect of spinal analgesia on blood pressure, haemoglobin, and dye concentration.

as a factor affecting blood pressure, but haemorrhage occurring during an operation can be readily measured, as demonstrated by three other patients who underwent radical operations for carcinoma of the breast. Good dye-concentration curves were obtained, and the plasma volume fell from 3.31 to 2.47 l. in the first, from 2.47 to 2.0 l. in the second, and from 2.87 to 2.73 l. in the third.

The changes in the blood pressure were not effected through the heart, as judged by serial electrocardiograms which were taken in nine cases. Nitrous oxide, oxygen, and ether was given to five of the cases, nitrous oxide, oxygen, and ether followed by cyclopropane to two, cyclopropane and oxygen to two, and a spinal analgesic to one. The three limb leads were recorded in all cases before the operation, and Lead II was then

taken at about 15-minute intervals during the operation, at other times when marked changes in the blood pressure occurred. Although cardiographic irregularities did take place they were never constant. When present they appeared to be related in no way to the changes in the blood pressure when these were as marked as those shown in Fig. 4.

When these anaesthetics were given to patients with traumatic shock whose plasma volume was significantly reduced, there was a greater tendency for the blood pressure to fall. Cyclopropane and oxygen generally caused an increase in the pressure except in very severe cases, but even here the effect was less pronounced than with the other anaesthetics except Nitrous oxide and oxygen with a minimal amount of ether was the next most satisfactory, but an adequate amount of oxygen was essential. Deep ether or ether-and-chloroform anaesthesia caused a marked fall of blood pressure. In this series there are no records of shocked patients being given spinal analgesics, but several had sodium pentothal. Two of these had extensive burns, and the blood pressure fell from 145/80 mm. Hg to an unreadable figure in one and from 145/80 mm. Hg to 80/60 mm. Hg in the other. Induction was given to both patients by an expert anaesthetist, yet the former died on the operating table and the latter caused some anaemia. Examinations of plasma volume were attempted, but the concentration curves were anomalous because the patients received morphine shortly before injection of the dye.

### Illustrative Cases

A number of examples are recorded to show the effect of various anaesthetics on shocked patients whose plasma volume had been determined.

**Case 1.**—A man aged 49 was injured by bomb splinters at 10.15 a.m., and was admitted to a small hospital together with a large number of casualties. He was probably not severely shocked on admission, because the surgeon had left him in order to deal with what he considered to be more serious cases. He had a compound fracture of the lower third of the right radius and ulna with much laceration of the tissues, a compound fracture of the left ankle involving mainly the astragalus with a metal foreign body retained subcutaneously, and a small deep puncture wound of the right forearm. He was given morphine gr. 1/4 at 11 a.m. At 4.15 p.m. he was conscious, quiet, and listless. His skin was ashen grey, cold, and moist. His pulse was 90 and blood pressure 50/45 mm. Hg. An electric blanket was placed over him. A rapid determination of plasma volume was begun at 4.32 p.m. Only two readings were taken, but they agreed closely, and gave a value of 2.54 l., or about 3.1% of body weight (about 13 st.). His haemoglobin was 10.5 g./100 c.cm. At 4.50 p.m. his condition appeared to be unchanged, but the blood pressure was unreadable. An attempt was made to start a transfusion; but there was considerable delay in getting this working, and it was 5.30 p.m. before it began to run freely. At 6.5 p.m. he had already received 686 c.cm. of plasma, and blood was transfused instead. He was now warm, more restless, and in some pain. At 6.15 p.m. his pulse was 70 and blood pressure 65/40 mm. Hg. At 6.45 p.m. he was definitely better and more co-operative, even smiling at the doctors; his blood pressure was 60/40 mm. Hg. At 6.50 p.m. the transfusion was stopped and he was moved to the theatre. He had now received 924 c.cm. of blood, and at 6.56 p.m. his haemoglobin was 9.6 g./100 c.cm. A further reading of plasma volume based on the initial injection of dye gave a figure of 2.9 l., or about 4.7% of body weight. This shows an increase of 1,360 c.cm. in the plasma volume, and agrees fairly well with the estimated water content of the transfusion, which was 1,300 c.cm., for he had obviously been losing some blood from his injuries during this period. At the same time a second injection of dye was given, and induction with a mixture of ether and chloroform was begun by a practitioner. At 6.58 p.m. the blood pressure was 70/50 mm. Hg. It then fell rapidly, being 65/40 mm. Hg at 7 p.m. 60/40 mm. Hg at 7.3 p.m., and then unreadable. The puncture wound of the left forearm was cleaned and sutured, and the wound of the left ankle was cleaned and sutured and the ankle put in plaster. The right forearm was not touched, for the patient died at 7.10 p.m. A sample of blood taken at this time showed a haemoglobin of 9.6 g./100 c.cm. and a plasma volume of 3.9 l. based on the second injection of dye. This is identical with the reading taken at 6.56 p.m. based on the first injection of dye, and confirms the observation that his plasma volume was now within the lower limit of normal. A post-mortem examination made by Dr. Joan Ross on the following day revealed no other injuries than those already described.

**Case 2.**—A man aged 29 was injured by bomb splinters at 12.30 a.m. and was admitted to hospital at 1.45 a.m., when his condition was described as "pretty serious." He was conscious but

drowsy and ashen-coloured. His systolic blood pressure was 60 mm Hg and pulse rate 130. He was immediately given morphine gr. 1/4, followed by gr. 1/6 soon after. There was no obvious haemorrhage, so he was left quiet till 4 a.m., when a fuller examination was made. His systolic pressure had now risen to 80 mm Hg. He had a compound fracture of the middle third of the right radius and ulna, total destruction of the ulnar side of the right carpus, and amputation of the right index and middle fingers. There was a laceration on the dorsum of the left ring-finger, with removal of the nail and exposure of the terminal phalanx. There were superficial abrasions of the abdomen. A two-inch-long penetrating wound was present on the outer aspect of the lower third of the right thigh and several small wounds above it. There was a large T-shaped lacerating wound on the anterior surface of the upper third of the right leg, with several small perforating wounds below it. The arterial supply to the lower two-thirds of the right leg had failed. A blood transfusion was started at 6 a.m., when his systolic blood pressure had risen to 105 mm Hg and the pulse rate had fallen to 100. At 8 a.m. two bottles of blood had been given. At 10 a.m. the systolic pressure had again fallen to 85 mm Hg, and the pulse rate was 120. There was little change until 11 a.m., when a plasma transfusion was started, and at 11.20 a.m. morphine gr. 1/4 was given. At 12.45 p.m. an attempt was made to determine the plasma volume. Two readings of 2.58 and 2.63 l. or about 2.8% of body weight (about 12 st), were obtained. These figures are not very reliable, because morphine had been given only 30 minutes before injection of the dye and a slow transfusion was being carried out at the time. The haemoglobin was 11.8 g/100 c.c.m. At this time his blood pressure was 105/65 mm Hg. Two bottles of plasma were then given, and at 4 p.m. his general condition had improved considerably, and the systolic pressure was 130 mm Hg. At 8 p.m. the systolic pressure was 120 mm Hg, and at 8.40 p.m. a second determination of plasma volume was begun. No more morphine was given until 8.45 p.m., when a reliable curve was obtained, giving a value of 3.6 l., or about 3.8% of body weight. The haemoglobin was 11.4 g/100 c.c.m. Induction with nitrous oxide oxygen and a little ether was begun at 9.31 p.m. The blood pressure was 100/55 mm Hg immediately before anaesthesia was started. It rose to 110/65 mm Hg at 9.35 p.m., and then fell gradually to 80/50 mm Hg at 9.59 p.m. Subsequently it was maintained at 85/50 mm Hg until the operation ended at 10.20 p.m. No ether was given after 9.38 p.m. and no nitrous oxide after 9.52 p.m., but oxygen was continued until the end of the operation. During this time the wounds were cleaned, and dead tissue and a few small fragments of loose bone were removed. The affected limbs were covered with vaseline packs, the right arm up to the hand encased in plaster, and the right leg bandaged. At 10.55 p.m. the systolic blood pressure had risen to 100 mm Hg, and it continued to rise gradually to 140 mm Hg at 8 a.m. on the next day. He was too ill, however, to have his gangrenous leg amputated, and he died at 4.30 p.m.

**Case 3**—A man aged 56 was admitted to hospital at 11.52 a.m. shortly after being injured by a falling chimneystack. He was alert and in considerable pain. His skin was warm, moist, and of fairly good colour. He had a compound fracture of the lower third of the left tibia and fibula, a hematoma of the scalp above the left eye, and pain in the chest, especially on antero-posterior compression. His pulse rate was 47 and his blood pressure 110/60 mm Hg at 12.30 p.m., when he was given morphine gr. 1/4. At 1.50 p.m. a determination of plasma volume was begun. In spite of having had morphine recently, a flat curve was obtained over the next five hours. It showed a value of 3.3 l., or 4.3% of body weight (12 st.) and his haemoglobin was 12.2 g/100 c.c.m. His general condition remained unchanged during the afternoon, and at 5 p.m. his pulse rate was 48 and his blood pressure 130/70 mm Hg. At 5.10 p.m. anaesthesia with nitrous oxide, oxygen, and a minimum amount of ether was begun. His pulse rate increased to 96 and blood pressure to 170/75 mm Hg at 5.20 p.m. The pressure then gradually fell to 140/75 mm Hg at 5.45 p.m. and remained at about this level until the anaesthesia ended at 6.35 p.m. During this time the wound in his leg was cleaned and excised, pins put through the two fragments of the tibia, the fracture reduced, a dressing applied, and the leg and foot put in plaster-of-Paris. Subsequently he made a good recovery.

**Case 4**—A woman aged 38 was admitted to hospital at 11 p.m. semi-conscious and smelling strongly of beer, having been picked up in the street. No further history was obtainable, but she was found to have multiple lacerations of the scalp, and a laceration of the left ankle, with an oblique fracture of the left tibia just above the malleolus and involving the articular surface. She was drowsy but abusive if roused. Her skin was moderately pale and sweating, her pulse rate was 80 and her blood pressure 100/60 mm Hg. A determination of plasma volume was begun at 11.31 p.m. and gave a figure of 2.1 l., or about 3.8% of body weight (about 8½ st). The haemoglobin was 14 g/100 c.c.m. She was given morphine gr. 1/4 at 11.52 p.m. and anaesthesia was begun at 2.3 a.m. Cyclopropane was given first, and the blood pressure, which was 100/65 mm Hg when anaesthesia started, was maintained at about 110/80 mm Hg

until 2.23 a.m. Ether was then gradually substituted and the blood pressure became erratic, eventually falling to 80/60 mm Hg at 2.38 a.m. Ether was then withdrawn, and the blood pressure returned to 100/80 mm Hg at 2.41 a.m. The patient was beginning to come round, and cyclopropane was given again from 2.42 to 2.47 a.m., the blood pressure being maintained at about 100/70 mm Hg. During this time the wounds were cleaned and sutured, the fracture reduced, and the ankle put in plaster. Subsequently she made an uninterrupted recovery.

**Case 5**—A man aged 67 was knocked down in the street by a lorry at 6.30 a.m. and sustained a comminuted fracture of the left femur and a right Colles fracture. On admission to hospital at 7 a.m. he was conscious and in considerable pain. His pulse rate was 45, with many extrasystoles, and his blood pressure 170/80 mm Hg. At 9.20 a.m. his pulse rate had increased to 82 and his blood pressure had fallen to 110/60 mm Hg. His skin was very pale, but warm and not sweating. A determination of plasma volume was begun at 9.30 a.m., and gave a figure of 3.05 l., or about 4.8% of body weight (about 10 st). The haemoglobin was 8.8 g/100 c.c.m. There was no appreciable change in his condition throughout the day. He was given morphine gr. 1/4 at 11.15 a.m. and omopon gr. 1/3 and scopolamine gr. 1/150 at 4.28 p.m. A second determination of plasma volume was begun at 4.32 p.m., but gave an anomalous curve. He was taken to the operating theatre at 5 p.m. and intravenous pentothal was given at 5.22 p.m. There was a rapid fall in blood pressure from 110/70 mm Hg, taken immediately before anaesthesia started, to 85/55 mm Hg six minutes later. Thereafter the blood pressure was maintained at about 90/55 mm Hg until the operation ended at 5.48 p.m. Altogether 0.5 g. of pentothal was used. A Kirschner wire was inserted through the upper end of the tibia and extension applied to the femur. The Colles fracture was reduced and a plaster applied. Subsequently he improved steadily, the blood pressure returning to the original level of 110/70 mm Hg at 7 p.m. Unfortunately, he had to undergo a further operation four days later for malposition of his fractured femur, and afterwards he developed pneumonia and died.

### Discussion

The effect of various anaesthetics on plasma volume and the cardiovascular system has been extensively studied. It has been claimed that some anaesthetics—notably ether—cause a reduction of plasma volume in the human subject (Bonnycastle, 1942). No significant changes were found, however, in the present series of cases even with prolonged anaesthesia for major abdominal operations unless there was appreciable haemorrhage such as occurred with radical operations for carcinoma of the breast.

That the anaesthetics affected cardiac action seems unlikely, because no significant changes were found in the electrocardiograms of patients showing such profound alterations of blood pressure as that revealed in Fig. 4.

It seems likely, therefore, that the main effect of anaesthetics on blood pressure is by the vasomotor system. Most anaesthetics lower the blood pressure, but nitrous oxide, oxygen, and ether may elevate it, and cyclopropane and oxygen nearly always elevate it. In shocked patients all anaesthetics tend to be more depressing, and in patients whose plasma volume is much reduced the effect of depressing anaesthetics may be disastrous. This may apply to severe cases even after the plasma volume has been restored to normal, because the vasomotor system is apparently unstable for some time afterwards. Case 1 is an example of this. A man was wounded in the peripheral parts of his limbs and the bleeding was not checked. His plasma volume fell in the next 6½ hours to 3.1% of body weight, his haemoglobin to 10.5 g/100 c.c.m., and his blood pressure became unreadable. A transfusion during the next 2½ hours restored his plasma volume to 4.7%, which is within the lower limit of normal; his haemoglobin was then 9.6 g/100 c.c.m. There was considerable improvement in his general condition, but the blood pressure was still only 70/50 mm Hg. An operation was undertaken 8½ hours after the injury to clean the wounds and arrest further bleeding. So little was done surgically that it can have had only slight effect on the general condition, but the anaesthetic, a mixture of ether and chloroform, caused a rapid progressive fall in blood pressure and death in nine minutes.

The use of nitrous oxide and oxygen with a minimal amount of ether has a much less depressing effect, as demonstrated by a somewhat comparable patient (Case 2) who sustained severe wounds, chiefly to the peripheral parts of his limbs. Two bottles of blood were given between 5½ and 7½ hours after



the injury, and the plasma volume 12½ hours after was about 2.8% of body weight. The haemoglobin was 11.8 g./100 c.cm. There was a temporary improvement after the first transfusion, but the blood pressure subsequently fell to 85/50 mm. Hg, and two bottles of plasma were given, therefore, between 10½ and 15½ hours after the injury. A second determination of plasma volume 19½ hours after the injury gave a figure of about 3.8% of body weight; the haemoglobin was 11.4 g./100 c.cm. Anaesthesia was begun 21 hours after the injury, and the blood pressure rose from 100/55 to 110/65 mm. Hg in the first 4 minutes and then fell steadily to 80/50 mm. Hg in the next 15 minutes. Ether was stopped after the first 7 minutes. The blood pressure was then maintained at 85/50 mm. Hg until the operation ended 49 minutes after the anaesthetic began. During the next 12 hours the systolic pressure rose to 140 mm. Hg, although eventually the patient died with a gangrenous leg.

In less severe cases nitrous oxide and oxygen with a minimal amount of ether may cause the blood pressure to rise, as demonstrated by Case 3. This patient sustained a compound fracture of the left tibia and fibula. His blood pressure was 110/60 mm. Hg 40 minutes after the accident, and his plasma volume was 4.3% of body weight and haemoglobin 12.2 g./100 c.cm. two hours after. No transfusion was given. When anaesthesia was begun 5½ hours after the accident his blood pressure was 130/70 mm. Hg. It rose to 170/75 mm. Hg in the first ten minutes and then fell gradually to 140/75 mm. Hg in the next 25 minutes, remaining there till the operation ended 50 minutes later.

The best anaesthetic used in our shocked patients was cyclopropane and oxygen. It was employed in Case 4. This patient, who had a crushed foot and lacerated scalp, had a plasma volume of 3.8% of body weight and haemoglobin of 14 g./100 c.cm. 30 minutes after the accident. The blood pressure was then 100/60 mm. Hg. Anaesthesia was begun three hours after the accident, and the blood pressure rose slightly to 110/80 mm. Hg, where it remained for the next 20 minutes. At this time the cyclopropane was gradually changed to ether for the purpose of comparison, and the blood pressure fell during the next 15 minutes to 80/60 mm. Hg. After withdrawal of ether the blood pressure recovered, and it was maintained at 100/70 mm. Hg during the last five minutes, when cyclopropane was given again.

In attempting to assess the depressing effects of anaesthetics on the cardiovascular systems of shocked patients, it is necessary to emphasize that quite severe injuries can occur with little reduction of plasma volume. This may explain why the lowering of blood pressure by an anaesthetic is sometimes less than might be expected. It occurred in Case 5, a man who sustained a compound fracture of the left femur and a right Colles fracture. His plasma volume was within the lower limit of normal—about 4.8% of body weight—his haemoglobin was 8.8 g./100 c.cm., and his blood pressure was 110/60 mm. Hg three hours after the accident. During the next 11 hours his general condition remained about the same and his blood pressure was 110/70 mm. Hg when intravenous anaesthesia with sodium pentothal was begun. It then fell steadily to 85/55 mm. Hg in the next six minutes, and remained at about this level until the anaesthesia ended 25 minutes later.

The chief factors in anaesthetizing shocked patients seem, therefore, to be, first, the use of a minimal amount of anaesthetic—and it is often surprising how little these patients require; secondly, the choice of an anaesthetic which stimulates rather than depresses the cardiovascular system; and, thirdly, an adequate amount of oxygen. It is unfortunate that the two most satisfactory anaesthetics—cyclopropane and oxygen, and nitrous oxide, oxygen, and ether—both require somewhat elaborate apparatus. Fortunately, however, in modern war it is possible for the great majority of patients to be brought back for operations to base hospitals where such apparatus is available.

#### Summary

Plasma volume and haemoglobin concentration were measured repeatedly in 26 patients undergoing various operations under nitrous oxide, oxygen, and ether, cyclopropane and oxygen, sodium pentothal, and spinal analgesics. No significant changes were found, although marked alterations in blood pressure occurred.

Serial electrocardiograms examined in nine patients showed no constant changes even though a marked alteration in blood pressure had taken place.

It is concluded that anaesthetics affect blood pressure mainly through the vasomotor system.

Cyclopropane and oxygen tended to raise the blood pressure; nitrous oxide, oxygen, and ether had variable effects on it; sodium pentothal and spinal analgesics depressed it.

In patients whose plasma volume was reduced by trauma there was a greater tendency for these anaesthetics to depress blood pressure.

Cyclopropane and oxygen was the best and nitrous oxide with adequate oxygen and a minimal amount of ether was the next best anaesthetic for these cases.

We are indebted to Dr. Miles for access to clinical material and to Mr. Whittingham and Dr. Murdoch for their co-operation in the cases undergoing major operations at Oldchurch Hospital Romford. Dr. William Evans kindly examined the electrocardiograms for us.

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## THE USE OF PENICILLIN PASTILLES IN ORAL INFECTIONS

### A PRELIMINARY REPORT

BY

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In July of this year it was decided to attempt to treat various types of oral infection with local penicillin. Previous experience had shown that the use of a spray was unsatisfactory in the treatment of acute tonsillitis, presumably owing to the transient action so exerted, and it was felt in consequence that if any success were to be obtained, a means of maintaining an adequate concentration of penicillin in the mouth would be required.

It was therefore decided to try the effect of penicillin contained in a pastille. For this purpose a slow-melting medium unlikely to cause excessive salivation, approximately neutral in reaction and not containing any penicillin inhibitor, was required. This was found in gelatin. To the gelatin base 0.1% nipagin was added in order to preserve the pastille, though whether this was necessary is doubtful, as pastilles kept over a period of three months do not appear to have deteriorated, apart from a slight hardening of the medium. In the preparation of the pastilles care was taken that the penicillin was not subjected to excessive heat; it was added to the gelatin base at 42°C and stirred in just before the latter was about to set. Pastille were cut to a standard size of approximately 3/8 in. square and 1/8 in. thick to facilitate insertion and retention in the buccal sulcus, and for trial purposes they were made in varying strengths from 1,000 units of penicillin to 100 units in each pastille.

With these pastilles experimental work was then carried out in order to determine: (1) that the penicillin derived from the pastille was present in effective concentration in the mouth, and that this concentration could be maintained; (2) that the incorporation of the penicillin in the pastille base would not interfere with its action, and that the pastille would keep and would remain active after its manufacture; (3) the effect of the pastille on the mouth and throat and their bacterial flora; (4) the required dose of penicillin in each pastille.

The results of these investigations were as follows:

1. A pastille containing 500 units of penicillin was allowed to melt in the buccal sulcus. After 15 minutes the pastille was removed and the penicillin content of the saliva was estimated by the standard technique. Further estimations at 15 and 30 minutes after removal

the presence of haemolytic streptococci after treatment with pastilles had been initiated, and it was possible to show that they were present only by what would by ordinary standards be considered gross over-inoculation. As previously stated, plates in which penicillinase was used were identical with those in which it was not used.

### 3. Chronic Streptococcal Throat Carriers

Twelve patients, all asymptomatic but proved by culture to be chronic carriers, were treated with pastilles given over a period of five days. Since they did not show any symptoms or noteworthy signs, the bacteriological results only will be discussed.

**Bacteriological.**—Of the 12 patients, seven gave negative cultures within 24, three within 48, and two within 72 hours. Two still show no haemolytic streptococci a month and six weeks respectively after cessation of treatment; one who became negative after 48 hours has not been seen again, and the remaining nine became positive within 1 to 15 days after stopping treatment, the average being 6 days. It was evident from these results that carriers could be kept clear while having pastilles, but that in the great majority of patients the organisms returned soon after cessation of treatment.

That the pastilles might be of some value even in carriers was shown by the case of a medical student who was known to be a carrier but who was unwilling to part with his tonsils. The presence of Group A haemolytic streptococci was not compatible with midwifery, and an attempt was therefore made to eliminate the organisms with a course of pastilles. Cultures became negative within 24 hours, but were positive again a few days after cessation of treatment. This result was repeated with a second course of pastilles, and it was decided, in consequence, that although his throat was a potential menace without pastilles, with them it was safe, and he was allowed to finish his course by taking them before and during deliveries.

### 4. Operations in the Mouth and Lesions of the Oral Cavity involving Loss of Surface

Three cases of fracture of the mandible compound into the mouth, two of difficult dental extraction involving considerable trauma, three of ulceration of the mucous membrane unassociated with Vincent's organisms, and three post-tonsillectomy cases have been treated. While these are too few in number for any definite conclusions to be drawn, certain facts are suggestive.

**Fractures of the Mandible Compound into the Mouth.**—All three patients with fracture of the mandible showed fractures at the region of the junction of the ramus and body of the mandible, and in one the fracture was bilateral. They were first seen 2, 5, and 15 days respectively after the original injury, had received no treatment at all, and all showed fractures compound into the mouth with displacement of the posterior fragment, and gross sepsis in the region of the fractures. All had marked external swelling over the fracture area and intense oral fetor, while one seen for the first time 15 days after injury showed a marked ulcerative gingivostomatitis associated with Vincent's organisms dating from the injury. Smears and cultures taken from the fracture line revealed many extremely penicillin-sensitive anaerobes. Within 24 hours of starting treatment the intense fetor had gone and patients stated that the mouth felt "cleaner." Cultures taken from the fracture line at this point were sterile in two cases, and in the third case yielded a small growth of *Haemophilus influenzae* only. Forty-eight hours after starting treatment cultures were negative in two patients and showed coliforms only in the third. The spirochaetes and fusiform bacilli present in the patient with associated ulcerative gingivostomatitis were entirely absent after 48 hours. Fixation and splintage of the mandible was carried out 24 hours after admission. In all patients the external swelling and oedema subsided at the end of a week. Two fractures have united firmly without incident, and the third appears to be uniting, though as only a fortnight has elapsed since the patient's admission the final result is not yet assured. In no case did local abscess formation occur.

**Difficult Dental Extraction with Associated Trauma.**—In two patients in whom lower molar teeth were extracted under regional novocain analgesia carious crowns broke off and

elevators were used for extraction of the roots, causing damage to the bone and tearing of the gum. After the extractions the patients were given pastilles and were forbidden to use mouth washes. In both cases the blood clot remained *in situ* as in an uncomplicated extraction and the gum healed rapidly without sloughing.

**Ulceration of the Oral Mucous Membrane unassociated with Vincent's Organisms.**—Three patients have so far been treated. Two showed large single painful ulcers inside the lip, and one had large multiple ulcers over the area of the uvula, lip, tongue, and cheeks. In the latter the ulcers had recurred over a period of 14 years, the Wassermann and Kahn reactions were negative, and the blood count was normal. Of the first two patients, one had a pure growth of pneumococci from the ulcer and the other a mixed growth of pneumococci and haemolytic streptococci, with the former predominating. In the first two patients cultures were sterile 24 hours after the beginning of treatment. The ulcers were healed in six and eight days respectively. In the third patient haemolytic streptococci and pneumococci were present in large numbers in the ulcerated areas of the uvula, lips, and tongue. No organisms could be demonstrated in any of these areas 24 hours after treatment had begun. During the next 10 days coliforms only were present. With the exception of one small area on the tongue, the ulcers were healed at the end of a fortnight, and coliforms also were found in the cultures of the remaining area for one week after cessation of treatment. The patient was then sent on three weeks' leave. On return, three more ulcerated areas were present, and these proceeded to increase in size until the condition was very much as it was when first seen. Haemolytic streptococci and pneumococci were again present in large numbers.

**Post-tonsillectomy.**—Three patients have been treated. Two the tonsillar beds were sterile after 24 hours' treatment; they then started to show coliforms, *N. catarrhalis*, and *H. influenzae* in the cultures on the third and fifth days respectively. Both healed rapidly, with a reduction in the usual slough. The third yielded a profuse growth of haemolytic streptococci from the tonsillar beds after operation. The were greatly reduced in numbers after treatment for 24 hours and were absent after 72 hours.

### Conclusions

Penicillin included in a pastille under suitable conditions of manufacture is liberated in the mouth in an active form. The concentration in the mouth can be maintained and the pastille kept for a period of at least three months without appreciable deterioration or loss of efficiency of the penicillin. It is simple to use and is well tolerated even by children. (The youngest patient receiving pastilles was aged 5.)

Acute ulcerative gingivostomatitis (Vincent's type) can be treated more simply and more quickly with the use of penicillin pastilles than by any other method. In addition, the loss of tissue caused by the more usual treatments with caustics and escharotics can be avoided. It is not suggested that gingivectomy or other procedures to eliminate the gum pockets at stagnation areas will not be necessary at a later date, since while these pockets and areas remain, the possibility of recurrent infection is always present. The treatment described advocated in the acute stages, and the fact that no recurrence have been seen over a period of three and a half months suggests that immediate recurrence is unlikely. In view of the fact that intravenous arsenicals are still widely employed in the treatment of the disease in spite of much evidence to show that it is ineffective, we consider that it is worth drawing attention to the fact that three of our most severe cases have been undergoing treatment for syphilis with injections of bismuth and intravenous arsenicals.

Patients with acute haemolytic streptococcal tonsillitis, including four with scarlet fever, seemed to respond clinically to treatment with pastilles. The effect on the throat flora appeared to be rapid, but, even so, a larger series of cases is necessary before any final conclusions can be drawn. The early disappearance or reduction in numbers of haemolytic streptococci in the throat after treatment had started suggests that the risk of droplet infection is greatly reduced, and we regard this point as of importance epidemiologically.

The treatment of throat carriers of haemolytic streptococci proved disappointing, as was anticipated. Nevertheless it is of interest that they became negative while undergoing treatment, and, in the case of the medical student described, this fact proved of practical value.

In the small series of patients so far treated it appeared that surgical conditions of the mouth and throat could be kept free from pathogenic organisms during administration of the pastilles, with marked symptomatic relief.

On bacteriological grounds faucial diphtheria should be an indication for treatment with penicillin pastilles. Unfortunately we have as yet been unable to obtain suitable cases but it is hoped to publish these results later in a fuller report.

We would like to express our gratitude to the Penicillin Clinical Trials Committee of the Medical Research Council and Prof. L. P. Jarrow for providing the penicillin which made the investigation possible, and to the latter for his encouragement and helpful criticism. We are indebted to Miss G. E. Root for grouping the streptococci and cheerfully accepting other onerous duties. We could also like to thank Dr. Paion, the matron and staff of the Sisters' Hospital for Infectious Diseases, St. Albans, for their kind co-operation; Lieut.-Col. O'Connor, and Captains Batson, Fairhurst, and Patterson of the Army Dental Corps for their help in referring cases of ulcerative gingivostomatitis to us, and many members of St. Bartholomew's Hospital Staff at Hill End N.S. Hospital, St. Albans, for kindly allowing us to treat their cases. We are greatly indebted to Mr. L. T. Marun, of the dispensary Hill End Hospital, for making the pastilles.

## AN ANALYSIS OF 259 OF THE RECENT FLYING-BOMB CASUALTIES

BY

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THIS is an attempt to present a picture of the recent flying-bomb raids as seen in a small E.M.S. hospital. For those interested in figures I have included tables. We admitted anyone requiring treatment that the rest centres could not provide. The selection was quite varied: by no means all our patients needed dramatic surgery to staunch a sea of blood, and some of our bizarre cases presented interesting problems. At the least was a poor soul who had been blown into a tank of dirty industrial oil and appeared in the midst of a rush of casualties; we used our gas-decontamination centre for the first—and we hope the last—time.

In order to keep on admitting every day, every night—sometimes several times in the same night—we conveyed our patients soon as they were fit to travel. Conveying has its own advantages and disadvantages. The former are obvious in the high turnover possible; the latter only appear later. We came the first cog of a large wheel: we admitted; we provided immediate treatment; we darned and patched and then transferred our patients at the first possible moment, accompanied by only brief notes. Continuity of treatment is hard to suffer, and it is very difficult to estimate the success or failure of one's efforts. This is the great weakness of our service. Some of our cases went as far afield as Wales: their progress we knew nothing until discharge notes—like as brief as ours had been—came trickling in. Later still a few of the patients themselves began to arrive as out-patients for review, but many have fallen by the wayside. There are great gaps in the story—inevitably so; some so great that I wondered if it were possible to hold the interest in our jumbled facts and many loose ends; but I felt that each link in the chain were pieced together—the casualty hospital, the base hospital, the ambulance trains, the distant evacuation centres—the story would be worth while.

In all we dealt with 222 out-patients and 259 in-patients, with 18 deaths. Our story began in June, 1944, when the first large incident occurred near by. Twenty-six casualties were admitted and 12 required theatre treatment. This proportion remained fairly constant throughout the series. Altogether we had 83 theatre cases out of 259 admissions, and had to deal with 35 cases on untreated, most of whom required the theatre. In this first incident no fewer than 16 of the casualties were

due to flying glass. It was noticeable how the proportion of glass injuries dropped as the importance of taking adequate cover was realized while the percentage of crush injuries increased from people being trapped by falling masonry.

In July we admitted 32 patients from a neighbouring hospital which had been hit, only to send them on in a few hours, to the great grief of the nursing staff, who had just succeeded in disentangling prostatic tubes from false teeth and restoring order out of chaos.

A night in July began our peak period. We admitted 24 cases, 6 requiring theatre treatment. Next morning, at 10 o'clock, a flying bomb dropped in a near-by market-place. The incident caused the highest number of casualties of the whole London attack. We admitted 74 to the wards and dealt with over 90 in the casualty department. At one time we had ambulances evacuating the night's casualties, waiting their turn with ambulances bringing fresh wounded. In 24 hours over 100 patients were wards. This is the brighter side of the convoy system. As we could not deal with all the cases in our single theatre in reasonable time we re-evacuated 35 patients after rest, cleaning, and first-aid attention, and 15 more who had had minor operations. The most gravely injured we retained. In the tables T refers to the transferred cases, and any remarks about them are more liable to error since only a clinical diagnosis was made at the bedside and was unsupported by further investigations.

So much for the conditions. It was impossible to obtain complete accuracy when the cause of every death could not be proved by necropsy and some of the cases were whisked away with only a partial diagnosis.

Air-raid casualties may be divided into two great groups: (1) those who require surgical treatment, and (2) those who do not.

### GROUP 1: REQUIRING SURGERY

These cases are best described in reference to the agent which caused the injury. Any patient may fall into more than one such category.

#### A. Flying Glass

This was the most frequent cause of injury, totalling over 100 casualties in all. Many included severe damage to the eyes. It is noticeable that most of the injuries were above the nipple line, chiefly of the face and neck: a large proportion were received when looking out of windows—a modern version of curiosity killing the cat. We had five cases of perforating wounds of both eyes and ten perforating wounds of one eye. The globe was usually completely destroyed. Many of these injuries were avoidable, and therein lay their great sadness.

The penetrating power of flying glass is, in the main, low. It is unusual for it to pierce the deep fascia, usually it lies just under the skin in the fat, but when present in hundreds of pieces it presents a problem which has not yet acquired a satisfactory solution; nor has the condition made its way into the textbooks of war surgery. Often the gashes are also begrimed with earth, wood, and stones, orthodox surgical toilet is an impossibility, or at least ill advised. We had two outstanding examples of this condition, which may stimulate interest and which are quite comparable in that the wounds were of roughly the same intensity and situation and both patients were very bad surgical risks—fat, heavy, and chronic bronchitics.

#### Case I (Miss X., aged 58)

This patient was admitted on June 23 suffering from compound fracture of the medial epicondyle of the left humerus, with surrounding destruction of skin and subcutaneous fat for an area of three-quarters of a square foot on the posterior surface of the arm. There was a similar wound on the posterior surface of the right arm, except that it was without bony injury. Her back was lacerated by flying glass—there were probably 100 cuts in all. On admission she was barely conscious, with a blood pressure of 90/70, and her pulse was scarcely perceptible. She was treated for shock by morphine, rest, hot-water bottles, and hot sweet tea. She was given A.T.S. 3,000 units and A.G.G.S. 4,000 units. An attempt to administer intravenous fluids by the legs failed owing to previous extensive ligation and injections for varicose veins, and her arms were unsuitable for intravenous therapy because of the many cuts. Some six hours after admission her condition had considerably improved; blood pressure had risen to 110/80, and she was quite rational and complaining of pain. She was taken to the theatre.

## C. Masonry

At the beginning of the series these injuries were uncommon. Later they became more frequent as adequate cover was taken, and instead of being killed the victims were buried with varying degrees of trauma. We did not have a single case of crush syndrome with oedema of the injured part, anuria, and uraemia. This is probably due in great measure to the increased speed of the A.R.P. rescue service, and possibly to a lessening in the enthusiasm for intravenous plasma therapy. The injuries tended to be severe, and there was a proportionately high death rate—9 out of 52.

TABLE III.—Masonry (52 Cases)

Description	No. and Remarks	Deaths
Fractures of limbs and pelvis	23 (16 severe; 7 minor) 1 T	3
Fractures of skull	7	6
Dislocations:		
Hips	1	
Tarsus	1	
Shoulder	2 2 T	
Lung injury	1 (with surgical emphysema and haemoptysis)	
Bruising	17 3 T	

## D. Blast

(a) *Affecting the Lungs.*—It was difficult to estimate the number of patients whose lungs were affected by blast and to assess the relative damage caused by blast in contradistinction to the other agents. Three patients, however, presented a clear syndrome not confused by other lesions. They had severe pain in the chest, breathlessness, and traces of blood in the sputum, without any visible lesion of the bony cage in the radiograph. One of these died, and he provides the one certainty.

This man had been repairing a cinema roof when a bomb fell about 100 yards away. He lay down on the tiles, but the left side of his body caught the full force of the blast. On admission he was comatose and irrational; he appeared to be drunk. Later he was taken to the theatre for repair of a facial gash made by flying slate. His confusion increased after the operation, and he died two days later with signs of consolidation of the left lung. At necropsy he was discovered to have: (i) a gross contusion of the left side of the brain; (ii) a gross contusion of the left lung; (iii) a small split in the capsule of the spleen, with a little free blood in the abdomen; (iv) a haematoma over the lateral side of the left femur. Microscopy showed blood cells among the brain tissue and blood cells in most of the alveoli of the left lung. Many of the alveolar walls were torn.

(b) *Affecting the Eyes.*—Again it is difficult to decide on the exact part played by blast in eye injuries. From personal experience of a flying bomb at 400 yards in the open, when lying down, there were a few seconds of smarting and a feeling of pressure on the eyes, comparable to that of the impact when diving 10 ft. into water. There were four hyphaemias, which were not explicable except as the result of blast; in other cases the cause was obscured by the presence of dirt, debris, or perforating wounds of the globe.

(c) *Affecting the Brain.*—Once more there was great difficulty in deciding whether blast had been the sole agent, but the cases recorded in Table IV almost certainly were due to blast alone.

TABLE IV.—Blast Injuries (26 Cases)

Description	No.	Remarks	Deaths
Eyes:			
Hyphaemia	4		
Injured iris	2		
Subconjunctival haemorrhage	2		
Contusions	6		
Lungs	2	1 T	
Cerebral concussion	2		
Cerebral contusion	3	Two cases had blood in C.S.F. One had free blood cells in brain tissue (see above). One had sudden paralysis of left arm	2
Severe bruising	2		

## E. Burns

The number of burns (9) in the series was low (Table V). All these burns appeared to be of partial skin thickness, but it is impossible to tell accurately until they are five days

TABLE V.—Burns (9 Cases)

Description	No.	Deaths
Extensive partial-skin-thickness burns of body	6	1 died a few minutes after admission
Burns of hands and arms	2	
Burns of face	1	

old, owing to tissue coagulation due to heat. Of the three with more than half the body involved, one died shortly after admission and the other two were convalesced a few days later. They were treated initially for shock by fluids, plasma, morphine, etc., and then subjected to a quick clean in the theatre with cetab or half-strength dettol (depending upon the surgeon), taking care not to spend at the outside more than 10 minutes over the toilet. The areas were then dressed with sulphanilamide powder and tulle gras or vaselined gauze roll. The use of any agent which obscures the future view of the wound is unsound. When the dressings required changing the patient was put in a normal-saline bath and the dressings soaked off. The final results, so far as we have been able to determine, have been quite satisfactory.

## GROUP 2: NON-SURGICAL CASES

These fell into five categories:

A.—Cases transferred from other hospitals and requiring food, clothes, and a wash.

B.—These were cases of the crippled and infirm who could not be dealt with by a rest centre. We had several paraplegics, diabetics, etc. In all there were 15 in this category.

C. *Hysteria, Fear, and Other Psychological States.*—Some of these cases were interesting. A man was admitted who had been about 100 yards away from a bomb. For some hours afterwards he continued his work (heavy rescue) and then collapsed and began to count "one, two, three, four, five, six" over and over again. He was quite rational, and complained bitterly of the compulsion to count. He was given a sedative, and next morning appeared to be normal. Another man was admitted in an extreme state of acute fear, with grossly dilated pupils which did not respond to light. We had a second case of paralysis of the pupillary constrictor mechanism through chronic fear.

An intelligent woman (aged 24) was admitted with widely dilated pupils; the right was quite irresponsive to light, and the left contracted only very slightly. There was also marked sweating. In a few days the left eye had improved a little. She was sent away from the bombing to the country, but even then took about six weeks to make a full recovery.

One woman in an acute anxiety state required heavy doses of paraldehyde to keep her at all manageable.

In Table VI it will be seen that I have used the terms "psychological" and "surgical" shock. Psychological shock was a term we coined to cover hysteria, fright, and mental upset requiring only rest and reassurance. Surgical shock was used for patients who had had some physical injury and whose pulse or blood pressure had been affected but who did not need theatre treatment.

D. *Dust.*—Two organs were affected by this agent. Corneal abrasions were very common—so common that they were reported in the notes only if they were severe. The 17 cases in Table VII therefore represent only the more serious lesions. As a routine, any affected eye was irrigated with boric acid, and sulphacetamide drops, 30%, were instilled. Some received atropine drops, 1%, in addition. The respiratory system also suffered from the effects of dust. At operation the anaesthetist remarked time and time again on the dirt in the pharynx and trachea. Unfortunately no record was kept of these cases, but standing out in my memory are two in which the inside of the trachea was quite black and dry with caked dust. Both patients died a few hours later; one almost certainly through the respiratory condition. Of the cases in which the dust lesion was the main injury, in one a severe cough developed in a young healthy male, and he was too ill to convey for several days. In another the dust inhalation precipitated a severe asthmatic attack. I happened to mention these two cases to an

air-raided warden, who told me that several of the dead found by his rescue party had been suffocated by dust—the mouth, nose, and throat being completely blocked, while no other injuries were visible.

E. Oil.—The last physical agent we encountered was oil, and the only problem was to clean the victim up in the midst of a heavy rush of casualties. The gas-decontamination chamber provided a satisfactory answer.

TABLE VI.—Non-surgical (132 Cases)

Description	No.	Remarks	Deaths
Chronic sick transferred from other hospitals .. .. .	32	4 T	
Crippled and infirm .. .. .	15		
Psychological shock .. .. .	39		
Surgical shock .. .. .	28		
Dust:		Eyes affected as well	1
Corneal abrasions .. .. .	17		
Respiratory tract .. .. .	4		
Oil .. .. .	1		

### Conclusion

An attempt is made to review 259 air-raided casualties admitted to an E.M.S. hospital in the recent flying-bomb attacks and to analyse the types of injuries and the agents which caused them. I include three further tables to aid the analysis.

TABLE VII.—Eye Injuries (52 Cases)

Agent	No. and Description	Deaths
Glass .. .. .	20 eyes with perforating wounds 1 conjunctival abrasion. (2 T)	1
Dust* .. .. .	17 corneal abrasions and conjunctivitis	
Blast .. .. .	1 traumatic iritis 1 ruptured iris 2 contusions 3 subconjunctival haemorrhage 4 hyphaemia	
Bomb splinter .. .. .	1 perforating wound of globe	
Fear .. .. .	2 cases of acute dilatation of the pupils, which did not contract to light	

\* It is probable that many of these lesions were due to blast and that the presence of dust was coincidental. In several cases the corneal and scleral epithelium had been wiped off, leaving a denuded circular area of varying diameter, the largest about half an inch.

TABLE VIII.—Fractures (39 Cases)

Agent	No. and Description	Deaths
Masonry .. .. .	23 (mostly severe fractures), 1 T	3
Glass .. .. .	4 minor fractures	
Bomb fragments .. .. .	5 severe 3 minor	1
Cause unknown .. .. .	4	

TABLE IX.—Head Injuries (23 Cases)

Agent	No. and Description	Deaths
Masonry .. .. .	7 cranial fractures 1 cerebral irritation (blood in C.S.F.) 1 unconscious	6
Blast .. .. .	1 paralysis of left arm 1 partial paralysis of left arm 1 mental confusion 3 contusions 4 concussions	
Cause unknown .. .. .	1 unconscious 1 contusion	1
Bomb splinter .. .. .	1 concussed (4 hours' retrograde amnesia) 1 lodged in frontal lobe (now convalescent)	

Guidance to local authorities in England and Wales as to the lines on which proposals to provide temporary housing should be framed is given in a memorandum entitled *Temporary Accommodation* by the Ministry of Health and the Ministry of Works (H.M. Stationery Office; 6d.). This matter, it says, should not be considered in isolation but in relation to the whole housing programme of the authority. The use of temporary accommodation will, the Government believes, make it possible approximately to double the number of dwellings which could otherwise be provided with the limited amount of skilled labour available in the first year after building can be resumed. The temporary scheme must not be allowed to stand in the way of the permanent scheme, and it will be for each authority to whom temporary houses are allotted to ensure that both sections of its programme can proceed side by side without stultifying one another. Temporary houses will be provided and owned by the Government; they will be erected on sites acquired and developed by the local authority.

## MASSIVE SURGICAL EMPHYSEMA DURING THE COURSE OF GENERAL ANAESTHESIA

BY

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Surgical emphysema occurring during the course of endotracheal anaesthesia has been the subject of several reports in the literature, and much experimental work has been carried out to ascertain the cause of the phenomenon. The first mention of the subject was made in 1912 by Woolsey, who reported one case of surgical emphysema. Luke in 1913 recorded a case of gross emphysema due to obstruction of the return airway, and Georg in 1917 suggested that surgical emphysema was likely to occur if the tracheal mucosa had been traumatized during intubation. He also demonstrated the occurrence of emphysema in dogs after the use of insufflation pressures of 25 to 33 mm. Hg. Marcotte *et al.* (1940) found that an intrabronchial pressure of 24 mm. Hg usually produced mediastinal emphysema in dogs, and had seen it occur after 18 mm. In cats, lower pressures of 16 to 20 mm. Hg were sufficient to produce emphysema. Macklin (1937), by the use of very high intrabronchial pressures in experimental animals, has demonstrated exactly how such emphysema could occur in the lungs and mediastinum. He showed that air could break through in small bubbles from overdistended alveoli to the perivascular connective tissue and could track along the course of the arterioles to the great vessels.

We would like to submit the histories of two cases of massive surgical emphysema that have occurred during endotracheal anaesthesia.

### Case I

A girl aged 9½ years was admitted to hospital with a diagnosis of acute appendicitis. The illness had started with generalized abdominal pain about 52 hours previously, and for the last 12 hours this had been localized to the right iliac fossa. The child had vomited on several occasions in the early stage of the illness, when a mild gastro-intestinal upset was considered probable: a dose of castor oil had been administered by the doctor in charge of the case, and the pain subsequently became localized to the right iliac fossa. When she was brought to hospital the signs and symptoms all pointed to a diagnosis of acute appendicitis, with some evidence of local peritonitis. The tongue was dry and dirty; the temperature was 101.4° F., and the pulse varied from 140 to 160 a minute. The only other abnormal physical sign was a loud systolic murmur, which was conducted well into the axilla. The heart was not enlarged. An immediate operation was advised.

*Operation.*—A preliminary injection of atropine sulphate gr. 1/150 was given and anaesthesia induced with gas, oxygen, and ether by means of a Clover's apparatus. The abdomen was opened by a modified Battle's incision and a large gangrenous appendix was removed without difficulty. The inflammation appeared to be well localized to the right iliac fossa. As the abdomen was being closed convulsive twitchings developed which rapidly became generalized. In an effort to deal with the situation the Clover's apparatus was discarded, and an intratracheal tube was passed with a laryngoscope, and through this tube oxygen containing a small amount of CO<sub>2</sub> was liberally administered. Almost immediately the anaesthetist noticed surgical emphysema of the eyelids. The condition spread with great rapidity over the face, neck, arms, chest, and abdomen. The oxygen was shut off at once and artificial respiration started, as the condition of the patient was now desperate. The convulsions continued, and death occurred within about five minutes of the first seizure. At the time of death the patient was quite unrecognizable as a human being. The features were so completely changed by massive emphysema that the eyes could scarcely be distinguished from the nose and mouth: the neck merged directly into the chin. The appearance was reminiscent of a toy balloon made to represent some animal which had been overdistended. The emphysema extended from the head to the legs. In order to improve these unpleasant appearances an attempt, after death, was made, on the operating table, to deflate the tissues by means of multiple small incisions down to the deep fascia, but no air could be expelled.

At the necropsy a tiny abrasion of the pharyngeal mucosa was discovered. The emphysema involved the glottis as well as the whole pharynx, the mediastinum, and the subcutaneous tissues. It was



evident that, apart from the convulsions, which in this case were probably the actual cause of death, the patient had suffered from acute laryngeal obstruction.

The striking features of this case, which occurred in 1934, were the speed with which the emphysema developed and the fact that by the time it was first noticed it was already too late to do much about it, and that the emphysema appeared after the introduction of an endotracheal tube. The whole operation was completed in less than 20 minutes, and the anaesthetic was administered by an experienced anaesthetist.

### Case II

A coloured boy aged 11 years was admitted to hospital with a diagnosis of "bronchiectasis—for investigation," with a view to surgical treatment of the condition. He had suffered from a cough with foul sputum for some years as well as frequent colds of long duration, and two febrile attacks of more severity which were thought to be bronchopneumonia. On admission he was of average size for his age, with early clubbing of the fingers. Clinical examination of the chest revealed showers of rales over the right lung and occasional rhonchi. He expectorated daily 4 oz of foul smelling sputum. The plain radiograph suggested a cystic bronchiectasis in three lobes of the right lung.

In view of the foul sputum, postural drainage was carried out for several weeks, before attempting bronchography, in an endeavour to clear the bronchial tree. When it was finally decided to carry out the examination the sputum had been reduced to 1 oz daily. His age and temperament were considered to be unsuitable for successful bronchography under local analgesia and so a general anaesthetic was given.

On Feb. 22, 1944, he was given morphine gr. 1/12 and atropine sulphate gr. 1/100 as premedication. The child was then anaesthetized with CHCl<sub>3</sub> and oxygen. The induction was not uneventful—sputum proving troublesome and cyanosis difficult to eliminate. A Magill endotracheal tube was therefore passed under direct vision and the anaesthetic continued. Cyanosis was still prominent, and on one occasion the pulse faded, oxygen was liberally administered in an attempt to combat this. About 15 minutes after the induction the anaesthetist considered the patient to be more or less settled, and as the cyanosis had improved he felt that the bronchogram could now be made. It was, however, plain that the condition of the patient was not altogether satisfactory. It had been our recent custom in small children receiving a general anaesthetic for bronchography to inject the lipiodol through a fine Monaldi catheter inserted into the lumen of the endotracheal tube. This catheter was so small that, while allowing a flow of lipiodol, it encroached but little upon the airway. This method has not caused us any anxiety. At the moment when the oil was about to be utilized it was noticed that the child's neck was grossly deformed, there being complete loss of the angle between the chin and the neck, and that the neck was firmly ballooned right down to the clavicles. Palpation suggested deep emphysema, little or no subcutaneous emphysema being observed. The child was again cyanotic, the CHCl<sub>3</sub> was discontinued at once and the oxygen flow increased. A serum needle, which was fortunately lying on the bronchography trolley, was inserted into the left side of the neck about two fingerbreadths above the clavicle. No diminution in the size of the neck occurred, and the child's condition appeared to be critical. A 20-cm. Record syringe was then applied to the needle, but the absolute resistance of the plunger to withdrawal suggested that the needle-point had not reached an air-containing fascial space. The needle was then inserted more deeply until the plunger could be withdrawn with ease. Aspiration was started, the thumb being placed over the hilt on disconnecting the syringe. During the first minute or so there did not seem to be an appreciable reduction in size, but as the plunger's easy withdrawal suggested the continual aspiration of air, the process was continued and the swelling began to recede. At this point a two-way adapter had been procured, the reduction was then more rapid and the aspiration on a better basis. When the contour of the neck seemed almost normal and the condition of the patient much improved, the syringe was disconnected, but the needle was left *in situ*. Within a few seconds the neck ballooned up once again. The process of aspiration was repeated, and the neck returned to reasonable dimensions once more. On disconnecting the syringe a further ballooning occurred. Again aspiration was performed for a period of about 15 minutes, and on this occasion on disconnecting the syringe ballooning did not recur. The oxygen administered in this last 15 minute period was appreciably reduced in amount. It has been estimated that, in all, aspiration was carried out for a full half-hour. While waiting to ensure that no further gross emphysema occurred a radiograph was taken, as the child had been anaesthetized in the x-ray room. The radiograph shows the needle *in situ* and emphysema to be present in the neck—although the neck appeared normal to palpation.

The child made an uneventful recovery from this operation with no further treatment; but a full course of sulphathiazole was given

as a precaution against infection of the fascial planes in view of the foul expectoration.

On examination of the anaesthetic apparatus it was apparent that the expiratory valve was not working at the maximum of efficiency and that the pressure of gases in the pharynx must have been unduly high. The anaesthetic was administered by an anaesthetist of skill and experience in the procedure.

### Summary and Conclusions

Two cases of massive surgical emphysema which occurred during the administration of general anaesthesia are recorded. The common features are the rapid onset of the condition, the alarming rate of spread, and that in both cases oxygen was liberally administered to combat an emergency—convulsions in one and cyanosis in the other. It is suggested that incision or the mere insertion of needles into the superficial tissues is not sufficient to control the emphysema, and that aspiration is necessary, that if the cause remains the emphysema returns with alarming rapidity when aspiration of air is discontinued. Finally, if aspiration is attempted the needle may have to be passed through the deep fascia of the neck.

In both these cases it is probable that the condition was caused by a minute perforation of the pharyngeal mucosa, through which gas, under pressure was forced into the fascial planes of the neck and mediastinum. It is therefore conceivable that, once such a process has been started, it might continue, even after the primary cause has been removed, if the patient develops an obstruction to the airway and struggles for breath.

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## AN UNUSUAL CASE OF GENERALIZED TUBERCULOSIS

BY

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AND

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The following case of generalized tuberculosis seems to us to be well worth recording.

### Case History

An American seaman aged 26 was suddenly taken ill on Nov. 22, 1943, complaining of headache and chills. He ran a continuous fever from the onset to his death in March, 1944. During the course of the illness, which was difficult to diagnose, he developed erythema nodosum. The interest of the case is in the x-ray and post-mortem findings, which are as follows.

**Summary of X-Ray Reports**—23/12/43—Marked increase in left hilar shadow, continuous with a fan-shaped opacity spreading into left mid-lung zone, consistent with a localized area of consolidation and associated glandular enlargement. 30/12/43—No appreciable change. 14/1/44—Increase in size of opacity in left hilum and mid-lung zone, consistent with tuberculous infiltration and glandular enlargement of the type usually seen in children. 20/1/44—Increase in the spread. 9/2/44—Increase in size and density, associated with widening of the mediastinum. The possibility of lymphadenoma or neoplasm, with secondary lung involvement, cannot be excluded. 21/2/44—Slight increase of the glandular enlargement to the right of the midline.

**Post-mortem Examination—Lungs.**—There was approximately half a pint of deep-yellow fluid in the left pleural cavity. There were adhesions at the base on the left side, and a large breaking-down caseous peribronchial lymph gland in the left side of the mediastinum approximately the size of a tangerine. The lower lobe of the left lung was solid, very little caseation being apparent. There were some scattered tubercles throughout the rest of the left lung and also the right lung. The condition in the left lower lobe seemed to be a direct spread from the affected peribronchial gland. Trachea and bronchi were not involved in the disease process. **Heart.**—There was a large amount of fibrous pericarditis. Numerous tubercles (up to 1/4 in in diameter) were present in the pericardium; these did not extend into the myocardium. However, a solitary tubercle (approximately 1/2 in in diameter) was found in the myocardium of the right ventricle. There was healthy myocardium between this tubercle and the pericardium. The valves were normal.



in appearance, as were the aorta and coronary arteries. The liver was enlarged, and was the seat of many tubercles. These varied in size from 1/4 in. to 1/2 in., and showed a surprising lack of caseation. They were in several cases surrounded by necrotic liver tissue and there was little or no fibrosis around the tubercles. The spleen was enlarged to about four times the normal size and was congested. Here again were seen many tubercles similar in size and appearance to those in the liver. There was a fibrinous perisplenitis. The kidneys showed several small tubercles scattered through the organs. The pancreas appeared normal, though there was an enlarged semicaseous lymph gland near the head. The suprarenals were normal. The oesophagus, stomach, and intestines were also normal in appearance. There was little free fluid in the abdominal cavity, and only an occasional small tubercle was present in the peritoneum.

**Microscopical Examination.**—Smears taken from the peribronchial lymph gland and from a tubercle in the liver showed acid alcohol-fast bacilli. Sections of the tubercle in the myocardium revealed a central area of early caseation, surrounded by endothelioid cells, histiocytes, and small round cells. Scanty giant cells of the Langhans type were present. Acid alcohol-fast bacilli were also found.

### Comments

The heart and pericardium are seldom involved in military tuberculosis, and although solitary tubercles in the myocardium have been described, they are quite exceptional. Tuberculosis of the pericardium is not uncommon, and is due in most cases to a backward infection by the lymphatics from a tuberculous gland. To quote Muir's *Pathology* (4th edition, 1940): "At an early stage tubercles are formed, but these soon lead to inflammatory reaction and become covered with fibrin. The disease may thus appear like an ordinary fibrinous pericarditis, and its real nature may be discovered only on microscopical examination." In this case, however, there were, as already described, many large and very obvious tubercles. The lesion in the myocardium (1/2 in. in diameter) was discrete and presumably blood-borne, as no connexion between it and the pericardium could be traced either macroscopically or microscopically. The condition in the liver, too, is very rare. To quote the above author again: "The presence of large almost tumour-like tuberculous masses in the liver has been recorded in a few cases, but the occurrence is very rare."

The disease in this case would appear to have been a bloodstream infection with a ? primary focus in the peribronchial lymph gland. The size of the tubercles and the absence of macroscopic caseation in the tubercles in the various affected organs argue a comparatively high resistance on the part of patient, and in some way account for the lack of clinical which, until within a few weeks of his death, consisted of a persistent pyrexia and the early erythema nodosum.

We wish to thank Col. W. D. Arthur, M.B.E., and Lieut.-Col. W. L. Ackerman for their help and permission to forward this paper.

## Medical Memoranda

### Local Analgesia for Adult Circumcision

No claims for originality are made when a technique of local block for adult circumcision is described; but at the same time the textbooks do not stress this method as being a technique of choice for this operation. Under certain conditions it is definitely the most satisfactory anaesthesia. If a general anaesthetic is employed circumcision in the adult demands a much deeper level of anaesthesia than is often realized. For instance, a "shot of pentothal" will not do; a large dose of this barbiturate is not sufficient in most cases. The advantages claimed for local block are speed for the surgeon in the organization of a clinic, a high degree of haemostasis, and the use of a very small quantity of an inexpensive fluid. And the patient is not subjected to the risks of a general anaesthetic, small though these are.

Recently, local block for adult circumcision was carried out in 41 cases at a military hospital in India, on British and Indian troops. The cases were largely drawn from the venereal disease department, but there were cases of non-venereal balanitis and phimosis also. During this series, admittedly small, no other technique was used, although there were slight variations in the method. Sepsis was not considered to be a contra-indication, and a few of the cases were in such a condition that the operation was confined to a "dorsal slit."

Of course the soldier is the ideal subject for all forms of block analgesia, provided that they are successful. Reports

of incomplete anaesthesia and the consequent suffering very quickly spread round a ward. Patients then arrive at the theatre in the worst possible state of anxiety for a local. Therefore as soon as any pain is felt it is essential for something to be done, and the best is a very light inhalation, open ether being satisfactory. One case in this series was so treated, and the confidence of the wards was not upset.

The patients were sent to the theatre at the same time, and were anaesthetized in a batch if the number on the list did not exceed four. One patient was circumcised after a lapse of an hour, and there was no falling off in the standard of analgesia. The question of premedication is simple in these cases. From this series it was decided that, whether morphine was given or not, the results were the same as regards the analgesia, but a greater tranquillity of mind was present in the premedicated. But we were dealing with trained soldiers, and it is suggested that in the case of a civil clinic all cases be premedicated. In order to cut down the number of stretcher-bearers which would be required—since the ward which provided these cases was a long distance from the theatre—the patients walked to the anaesthetic room. At the beginning of the series all cases were given morphine gr. 1/3 intravenously on arrival. Then the local analgesic was injected, novutox being the agent, and the dose within the limits of 6 to 8 c.cm. A 10-c.cm. syringe fitted with a hypodermic needle was used. The first injection was made into the base of the penis on the dorsal surface in the midline, and the area on each side of this puncture was infiltrated as far as the lateral border of the organ. Approximately 4 c.cm. of agent would be used over this area. A second puncture was then made into the ventral surface in the midline, and this area was similarly infiltrated to meet the lateral boundaries of the first injection. Less solution would be required here, since the previous infiltration had included the lateral borders. But before the needle was removed at least 1.5 c.cm. was inserted into the midline of the ventral surface. This was most important, as in any case of imperfect anaesthesia the frenum is the sensitive structure. After the infiltration was completed a period of at least ten minutes was allowed to elapse before the operation was started. When premedication was abandoned, about half-way through the series, the patients were allowed to walk back to the ward, accompanied by an orderly, and every one arrived there none the worse for the experience.

It has been suggested that the efficient haemostasis provided by the local block might lead to post-operative haemorrhage: this did not happen. No doubt the haemostasis is produced by the mechanical compression of the vessels by the ring of swelling resulting from the infiltration. There were no ill effects.

I am indebted to Major J. D. Wilson, R.A.M.C., surgical specialist to the hospital where these cases were treated, for his interest and co-operation in the anaesthesia.

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Major, R.A.M.C.

### A Case of Sensitiveness to Strychnine

The following record seems worthy of publication not only for its rarity but for the moral lesson it affords.

#### CASE REPORT

A married woman aged 42 came under my care in a busy panel practice recently, already certified as unfit for work on account of rheumatism, of which there was no objective evidence. Thinking that aperient treatment might be of value, I prescribed a bottle of mist. casc. co. Next day I was summoned urgently, to find that after one dose of the new medicine the patient had collapsed, and was pale and pulseless. No definite diagnosis occurred to me, although I toyed with the idea of belladonna poisoning in an aberrant form, since, as some may know, the mist. casc. co. of the 1943 *Formulary* contains the astonishing amount of 12½ minims of the tincture to the dose, whereas the 1939 mist. casc. co. contains only 3 minims, as I found on looking it up.

After some weeks of treatment with iron the patient asked for a tonic, intending to return to work. I prescribed the mist. phosph. & strych., of which the patient warily took only a teaspoonful, and within a few minutes suffered a similar though not so severe attack. On my arrival in haste I had to defend myself against accusations of poisoning. Since the only item common to the two mixtures is strychnine, I was forced to the conclusion that this must be the cause of the attacks, and at the request of the patient obtained another opinion. My colleague rather sceptically injected intradermally 0.05 c.cm. of liq. strych., which caused an immediate wheal followed in a minute or two by a typical anaphylactic attack, which required the injection of adrenaline.

I have now equipped the patient with a written note to be shown to any future doctor. Inquiry among friends and chemists of wide experience has not brought to light a similar case.

D. R. C. SHEPHERD, M.R.C.P.

## Reviews

### A STUDY OF NATIONAL HEALTH INSURANCE

*National Health Insurance: A Critical Study.* National Institute of Economic and Social Research. Economic and Social Studies IV. By Hermann Levy. (Pp. 366. 1s.) Cambridge University Press, 1944.

This is a searching examination of our National Health Insurance system by a staunch believer in the principle of health insurance who has a remarkable acquaintance with the working of similar systems in other countries. It is fully documented. Prof Hermann Levy characterizes our system as "costly, wasteful, and overlapping," and ascribes these defects chiefly to the admission of the approved societies to such a prominent place in its administration. The price paid for their support, which apparently for political reasons could not be avoided, was that it entailed a flat rate of contribution. If an adequate range of medical benefit had been made available, a flat rate would have been actuarially impossible. Its effect was 'levelling down the statutory benefits to cover only the average basic incidence of sickness—the lowest common factor.' Continental systems which adopted the method of aggregation of contributors into regional and occupational groups, with elasticity in contributions and in benefits in accordance with the risks involved, have been able to give a much wider range of medical benefit. Our 'Additional Benefits' he considers to have failed lamentably to fill the serious gaps left in normal medical benefit, and as a consequence "medical benefit is bolstered up by charity and voluntary effort." Medical benefit, in his opinion, plays the vital part in any health insurance scheme. "The more effective the scheme is medically, in physical terms, the less costly it would be financially in terms of cash. He condemns the inequalities imposed upon contributors, for 'it is contrary to conditions of purchase and sale that for the same contribution one purchaser may receive less than another.' By eliminating the approved societies and grouping contributors in regional and occupational groups, he claims, and gives good reasons for his belief, that we should save (a) in administrative expenses, (b) by shortening the duration of sickness through more efficient treatment, (c) by the change from the piling up of actuarial reserves to a yearly assessment of probable liabilities with any consequential alteration of contribution, and (d) by making the Workmen's Compensation responsible for the cost of treatment for injured workmen.

Prof Levy quotes freely the B.M.A. and other critics of our system, but is of the opinion that they have missed the fundamental defects to which he calls attention. He thinks that the doctors are underpaid and that the method of payment is unsatisfactory. He favours a system of payment by attendance, but on this point he is far from definite. He mentions with approval the abandoned Manchester and Salford system of payment, but either does not know, or does not give sufficient weight to, the reasons which led to its abandonment. He has no use for the salaried doctor, and says, "There is no reason to suppose that a State doctor practising for a number of insured persons would be the ideal solution."

In his last chapter the author says the book was written before the Beveridge report (to which he pays generous tribute) was published, but in spite of the glowing prospects held out by that report he does not favour any system which depends on a flat rate of contribution. He ends by saying that the Government will have to decide between (a) a centralized plan with fundamental assumptions and financial implications which are difficult to foreshadow, and (b) one working on clearly assessable risks to be met by integrated local and occupational funds and with variable contributions. He thinks it would be better to organize our system "not from the roof but from the ground." Whatever may happen to the proposed comprehensive health service, the author can congratulate himself on a sound piece of constructive criticism and on having drawn attention to many defects in our present system which ought to have great weight in contemplating a new one.

### MAN, SOCIETY, AND RELIGION

*Man, Society and Religion: An Essay in Bridge-building.* By W. Russell Brain. D.M. F.R.C.P. The Swarthmore Lecture 1944. (Pp. 77. 1s. 6d. cloth covers, 2s. 6d. paper covers.) Published for the Woodbrooke Extension Committee by George Allen and Unwin.

This is a Swarthmore Lecture and so is necessarily concerned with the Quaker attitude. All may not share this point of view, too many do not understand it, but few can withhold admiration for the steadfastness and high motives of the Society of Friends. The text for the lecture is, 'We are members one of another' and here members are not the loose associates of a club but limbs of a body without each of which and without the contribution of each the body cannot function properly. We are each responsible to all. Like the cells of a multicellular organism the individual is essential to the group. It is the business of psychology to guide the interactions of the individual and to define how they may best contribute to the group mind. All too little is known about this, but increased knowledge is essential for the progress of mankind. Altruism does seem to be a natural function of man, but it requires direction. The Quakers have done much as pioneers to direct this altruism, and the story of social progress in the last century has shown how it is gradually leavening the masses, but the possibility and the realities of war show that the bounds of altruism are still far too narrow. Suttie has pointed out that the infant requires to give as well as to take, and so does every adult. Individual independence so much lauded by the generation responsible for the consequences of the industrial revolution, is really quite impossible, and social security must ultimately be based on the recognition of the essential interdependence of all individuals and all classes of society.

So with international security. Force cannot ultimately succeed unless all nations agree to be subject to discipline, as the majority of the citizens of this country agree to be subject to the discipline of the law and the police. Aggression will not be curbed until peoples no longer want to be aggressive. Thus, as most people know, is the Quaker ideal. After a discussion of the Quaker form of worship Dr Russell Brain points out the need for revaluing and revitalizing the inner subjective world which science has done so much to discredit and repress. We must recognize the importance of the inner light in the modern world, and no profession can turn its mind to this conception with greater advantage than can the medical profession, apparently so engaged with the practical scientific aspects of life yet drawing its inspiration from that inner force of altruism and love. We as doctors cannot, therefore, but be grateful for this charmingly written study, so provocative of thought, by a distinguished member of our own profession.

### ELEMENTS OF ANATOMY AND PHYSIOLOGY

*Elementary Anatomy and Physiology.* By James Whillis, M.D., M.S., F.R.C.S. Foreword by T. B. Johnston, M.D. Second edition. (Pp. 250. Illustrated. 15s.) London: J. and A. Churchill, 1944.

*Anatomy and Physiology for Students of Physiotherapy, Occupational Therapy and Gymnastics.* By C. F. V. Smout, M.D. and R. J. S. McDowell, M.D. (Pp. 418. Illustrated. 6s.) London: Edward Arnold and Co.

*Elementary Anatomy and Physiology* by James Whillis, first published in 1938, has now reached a second edition. This, which follows the lines of the first edition, aims at presenting the facts of anatomy and physiology in "broad outline," and is published within the compass of a single volume of 280 pages. The succinctness of the first edition has been maintained in the second, notwithstanding additions, such as examples, with special illustrations, of the action of certain groups of muscles in co-operation with controlling groups of opposing muscles which regulate the action of the primary group—e.g., walking, or standing on one foot. Some sections have been revised and some rewritten, more particularly those dealing with digestion, metabolism, and vitamins. Owing to the limited size of the book the description of some organs and physiological processes may seem to have been curtailed too drastically. By reason of the lack of illustrations showing the histological structure of such organs as the internal secretory glands, and the omission of many of the chemical formulae which form the basis of the organic chemistry concerned in digestion and metabolism, beginners may find difficulty in fully understanding and picturing for themselves the objects and the processes described in the text. The illustrations on the whole

are good, but some are apt to give a false impression because there is no delineation of structural texture. Thus some give no indication of muscle fibres, the muscular tissue being left white while the glistening white tendons are represented black. Considered as a whole the author has succeeded in packing a large amount of essential information into a small space, and the book contains much that the type of student for which it is written should know.

*Anatomy and Physiology for Students of Physiotherapy, Occupational Therapy and Gymnastics* has been written by Dr. C. F. V. Smout, University of Birmingham, and Prof. R. J. S. McDowall, University of London, King's College, to supply a textbook of moderate size, the scope of which will correspond to the syllabus drawn up by the Chartered Society of Massage and Medical Gymnastics—now called the Chartered Society of Physiotherapy. The anatomical section occupies about three-quarters of the book, while the physiological section is comprised in an excellent epitome of this subject occupying rather less than 100 pages. The text is clearly written, and the illustrations, many of which are coloured, are well adapted for the use of students who in general have no opportunity of dissecting for themselves the regions depicted. In a book specially designed for people who will be engaged in treating muscular defects, and deformities such as wry-neck, scoliosis, and kyphosis, one would expect the relations of the muscular attachments to the movements that take place at the joints concerned to be considered in greater detail; one finds, however, that with few exceptions the actions of muscles with respect to leverage, fixation points, axes of rotation, angular movements, and the planes in which gliding movements can occur receive scant attention. This is particularly the case in the description of the action of the sternomastoid muscle and the muscles at the back of the neck, the action of which, in co-operation with the muscles of the suboccipital region, is not mentioned. Nor are the occipito-atlantal and atlanto-axoidean joints specially described. There are also too many mistakes belonging to the categories of incorrect labelling, misprints, omissions, and errors arising from too diagrammatic illustrations. These defects can, however, be corrected in reprints or later editions, and the book may be recommended as giving a good elementary knowledge of anatomy and physiology such as is required by the above-mentioned syllabus.

### Notes on Books

*to Theatre Technique* is a member of the Aids Series written for the nurse in training (Baillière, Tindall and Cox; 4s.). By covering the syllabus of the General Nursing Council this series constitutes a textbook of nursing, but the present book, by MARJORIE HOUGHTON and MARGARET HAROING, is complete in itself and should be a valuable guide to anyone called on to undertake the work of a theatre sister. It is a product of University College Hospital, and it is pleasing to note the reference to the names of past distinguished members of its surgical staff such as Victor Horsley and Wilfred Trotter. The text is clear and concise and the illustrations are good, the many and excellent photographs constituting one of its most attractive features. A few errors are noticeable; thus all Moynihan's forceps had circular ring handles, Halsted (p. 237) is spelt incorrectly, likewise Morison (p. 240). Proof-reading has not been all that it might have been; two misprints occur on page 190 alone, and the index is incomplete. Kocher's thyroid enucleator is so called in one place and in another illustrated as Kocher's plain enucleator. This instrument is, we believe, usually known as Kocher's dissector. The authors and publishers, however, are to be congratulated on producing, particularly at the present time, such a well-illustrated and attractive little volume at such a low price. It should prove very popular with the nurse in training.

Volume LXIII of the *Transactions of the Ophthalmological Society of the United Kingdom* covers the session 1943 and is published by J and A. Churchill at 40s. The contents include papers and discussions at the annual congress, when the main subjects were thyrotoxicosis in relation to ophthalmology and the scientific and clinical aspects of night vision; a report of the joint clinical meeting with the Section of Ophthalmology of the Royal Society of Medicine, with its miscellaneous bill of fare; and a report of the Oxford Ophthalmological Congress, 1943, at which Prof. E. D. Adrian gave the Doyné Memorial Lecture entitled "The Dominance of Vision." The volume also includes transactions of the North of England Ophthalmological Society and of the Irish Ophthalmological Society.

*Polinosis*, by L. HERRAIZ BALLESTERO and J. VICTOR MONTICELLI, is published in Buenos Aires by Librería Hachette S.A. According to a foreword by Prof. C. Jiménez Díaz of Madrid, pollen allergy is particularly common in the Argentine Republic. In this monograph on pollinosis, a physician and a botanist report the results of a joint investigation of pollen allergies as they are seen in Argentina. The book is divided into two main sections, of which the first deals with the regional flora (including atmospheric pollen studies), and the second is concerned with clinical manifestations, diagnosis, and graph on pollinosis a physician and a botanist report the results of this is not a general treatise on pollen allergy; it is concerned solely with the problem as it occurs in Argentina. This necessarily sets a limit upon the interest of the work to readers in other countries. The bibliography, which is singularly weak in any but Spanish-language references, gives details of papers to be published by the same authors on findings in particular regions.

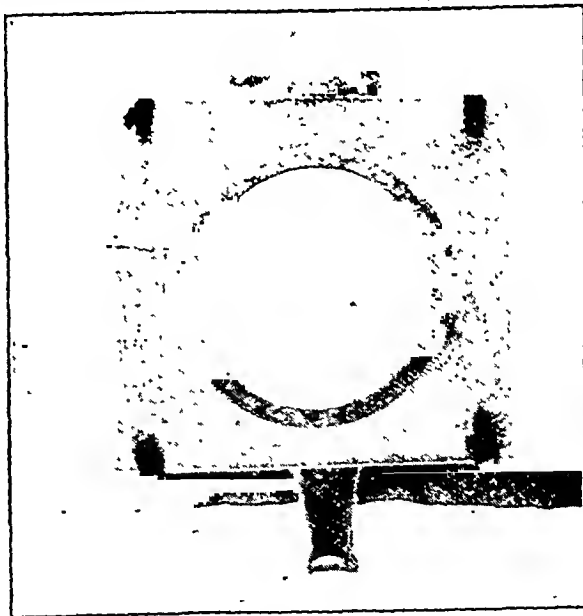
## Preparations and Appliances

### DEVICE FOR SPHYGMOMANOMETRY IN ANAESTHESIA

Dr. A. OWEN-FLOOD, L.R.C.P.I. and L.M., L.R.C.S.I. and L.M. (Crouch End, N.8), writes:

Perhaps I am more unfortunate in my use of adhesive tape than other anaesthetists, but I find it adheres to everything except the patient. The system of attaching the chest-piece of the stethoscope in the conventional position over the cubital fossa by this medium has resulted in my taking the blood pressure of the leg of the operating table, the plaster being unfaithful to the arm as usual.

The illustration shows an "all in one" device for taking pressure by the auscultation method. A plate 2 in. square is cut out to receive a "mica type" chest-piece. The aperture



fits neatly around the thread, and the plate is retained by screwing home the bezel of the chest piece. Convenient holes are drilled in the plate, and it is sewn to the lower angle on the border of the wide part of the fabric containing the inflation bag. The apparatus will thus be applied with the first winding of the inflation cuff, on the medial side of the upper arm over the brachial artery, and will be firmly fixed in position by winding the fabric around in the ordinary manner.

To avoid the trailing of numerous lengths of rubber tubing from the chest-piece to the ear-pieces, and from the inflation bag to the sphygmomanometer, I have connected these tubes by a pair of what is known in the trade as "male and female joints." These joints are routine fittings on the sphygmomanometer of the mercury column type. That connecting the ear-pieces to the chest-piece should be of a calibre not less than 3/16 in.

To use the apparatus all that is necessary is to "plug in" by connecting the joints, and take the pressure in the ordinary manner. This device renders it unnecessary to remove the arm from the side, or otherwise disturb the patient.

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## LOCAL GOVERNMENT IN ENGLAND AND WALES

A recent statement in Parliament by Mr Willink, Minister of Health, reveals that discussions are being held with the associations of local authorities about the structure of local government, and that some measure of reform may soon be introduced. In this connexion it may be recalled that the principles enunciated for health administration by the British Medical Association in 1943, based on the views of the Medical Planning Commission, included the formation of new local bodies covering wide areas and representative of the community served, the local medical profession, and the voluntary hospitals guided by a local medical advisory committee. These were to be regarded as foundation changes to be agreed before other changes in medical practice were initiated. The White Paper fell far short of this idea. It proposed to combine major local authorities in areas less spacious than the Association had in mind, to give the new bodies executive authority only for hospital and allied medical services, which would be exercised, so far as voluntary hospitals are concerned, by contract and not by integral association, and to make the new authorities responsible for the planning only of all the other health services administered by existing councils. An advisory Local Health Services Council was to be created, but neither the medical profession nor the voluntary hospitals were to have any status on the executive authority itself. This proposal is one of the most serious obstacles to acceptance by the profession of the Government's scheme for a comprehensive medical service. It may therefore be hoped that the White Paper is not the Government's last word on the subject, and that the wider review of local government which is impending will embrace the composition of executive and planning bodies.

It is a melancholy fact that the machinery of local government arouses little public interest. The *Times* of Jan 6, 1944, published a special article on the subject, with editorial comment. It stimulated little correspondence, restricted to members of local authorities; a Member of Parliament, and the National Association of Local Government Officers, but there were no comments from disinterested observers. The *Times* returned to the subject on Oct 5, 6, and 7 last, with even less response. Yet its special correspondent put forward a scheme of intermediate planning authorities for all local government purposes which resembles that suggested by the Council of the British Medical Association in the more limited field of public health and medicine, and which might have been thought sufficiently revolutionary to arouse discussion. The scheme envisages a new body compendious in func-

tion—i.e., planning and scheme making—for all local government services which require to be seen from a wider point of view than that of the county or county borough, and federal in composition—i.e., representative of the local authorities and so indirectly of the electorate. It is further suggested that while the bulk of its membership must be made up of representatives of local authorities, there is room for non-elected members who might be nominated by the central Government.

It must be realized that popular local government is deeply embedded in the British Constitution. It has emerged from the long constitutional struggle of our history firmly entrenched as a bulwark against autocracy, ensuring that freedom of the individual and his voice in affairs which is a guarantee of political stability. A similar system has steered the U.S.A. through the quicksands of phenomenal growth combined with racial problems of the gravest complexity. Countries which have failed in democratic local government and sought authoritarian shortcuts to efficiency in the governmental machine are perishing for lack of an instrument to express the people's will and carry its confidence. But the flight from democracy has not been due merely to antipathy to it; its failure has been the result of weaknesses from which we are not entirely immune—the uncompromising struggle between doctrinarianism and conservatism, the outcropping of nepotism and other forms of corruption, and, above all, inefficiency arising from the love of power and vanity of elected persons who repudiate guidance from anyone but the advisers they choose for themselves. The genesis of Fascism and its nemesis both have their lessons for us.

In the nature of things the forms of democracy can never be final. Problems change, knowledge advances, new services emerge, communications improve, and populations shift. Elsewhere in this issue the structure of local government is described, so that the reader may at least see its outlines clearly. In this country it has been recognized since the Middle Ages that local affairs are a local concern, and that the function of central government is to see not only that they are dealt with but also that some degree of uniformity of policy is maintained. The extent of central control has varied greatly and has been exercised in several ways. In the Middle Ages the Crown nominated the county sheriffs, who in turn appointed the bailiffs of the hundreds and were themselves subject to correction by itinerant justices. In Tudor times the power of the sheriffs gradually passed to justices of the peace, also Crown nominees, removable by the Crown. In the eighteenth century the dismissal of local justices fell into disuse, so that the local magistrates became virtually all-powerful for life in the exercise both of justice and of administration. Standing more or less outside this regime were the chartered boroughs, many of which, by the early years of the nineteenth century, had developed their own peculiar form of corrupt autocracy, and were under little or no central supervision. Alongside this system had grown up a rudimentary form of local democracy in the parish, but it too was largely under the sway of the local justices and exercised its functions as to poor relief, roads, and sanitation by unpaid service. This machinery collapsed in face of the clamant problems of the industrial revolution, and was quickly replaced from

1834 onward by elective bodies, manifold in number, each for a special function and far from conterminous in areas of jurisdiction. The principle was established that local affairs should have local popular management. By the end of the century a further principle had been observed—namely, that local authorities should be compendious, and that, so far as possible, *ad hoc* authorities should be abolished. By the middle of the nineteenth century still another principle had been recognized—that local services such as police, education, etc., which are also of national importance, may be subsidized by the central exchequer, with close supervision of the local service by an appropriate Government Department. This practice has been extensively used to foster the personal health services during the time of their greatest growth throughout the past 40 years. It has never been possible, however, to hold firmly to the implications of those principles within the framework of local government for the time being. For hospitals, water supplies, prevention of river pollution, and many other purposes joint boards have had to be set up which are *ad hoc* authorities only indirectly elective. Other functions, such as factory inspection, some forms of public assistance, main highways, the National Fire Service, the health of cattle, and the supervision of the production of milk, have been, or are being, removed from the scope of local to central administration. The Benthamite code of compendious local administration within convenient, not historical, areas has been the model for much local government change; but it has been half-heartedly applied, and no sooner has it approached realization than circumstances have compelled departure from it. The growing conviction that there is no such thing as an area suitable for every phase of local government, and that, even if there were, it would be so large as to destroy local interest, lies behind the alternative proposal for an intermediate planning body over wider regions, into whose schemes the executive authorities would have to fit their services.

Whatever planning, administrative, or executive bodies may be created, their constitution requires the closest consideration. The principles of democracy demand that the elected representatives of the people should handle their affairs, but it does not follow that all the members of these bodies need be so elected. The numerous Acts of Parliament affecting local government provide for committees, containing non-elected members, to which specific matters stand referred. This is usually effected by co-option, limited as to numbers and optional. The power of co-option does not extend to joint authorities, except under the Cancer Act, 1939, which may never come into force. Co-option to education committees on the nomination of other bodies was provided for by the Education Act, 1921, but this method of adding to the members is not mentioned in the Act of 1944, although teachers still remain exempt from disqualification. An interesting exception to the general rule is contained in the Ministry of Agriculture and Fisheries Act, 1919, which empowers the Minister to appoint up to a third of the members of county agricultural committees. Generally, however, the provision for ensuring knowledgeable membership of authorities and their committees is narrow, and it tends to be grudgingly applied. While the constitutional case against its

wide extension may be strong where executive authorities are concerned, these arguments are not valid in relation to planning bodies. Realization that it is unlikely that *ad hoc* executive health authorities, other than joint boards consisting exclusively of local authority members, will meet with acceptance by Parliament, forces us to the conclusion that the Council of the British Medical Association is wise in pressing for a planning intermediate authority on which the profession and the voluntary hospitals will be adequately represented. It is equally necessary that the working committees, at least of executive health authorities, should have an infusion of experienced non-elected members, and that they should be advised by a council truly representative of the medical profession.

### MORE ANTISEPTICS FROM PLANTS

The discovery of penicillin has aroused interest not only in antibacterial substances made by other fungi, but in the occurrence of such substances in the plant kingdom generally. The systematic study of other fungi from this point of view has now embraced many hundreds of species, of which a good number have been found to yield antibacterial substances. Some, indeed, produce several: according to Waksman and Geiger<sup>1</sup> *Aspergillus fumigatus* forms no fewer than four. The same substance may come from different fungi: patulin, for instance, now discredited as a cure for the common cold, is by no means unique, but a product of a number of moulds. Such substances have been given various names before their identity has been demonstrated: patulin itself is the same thing<sup>2</sup> as claviformin, originally described as a product of *Penicillium claviforme* by Chain, Florey, and Jennings<sup>3</sup> in 1942. None of these more recently discovered antibacterial substances offers greater promise as a therapeutic agent than penicillin; some, such as flavacin<sup>4</sup>, seem more or less identical with it. Helvolic acid<sup>5</sup> somewhat resembles penicillin, differing from it in the highly desirable properties of longer persistence in the blood and of stability in the alimentary tract, whence it is absorbed, but suffering the grave drawback of toxicity to the liver, at least in mice. The supreme virtue of penicillin is its freedom from toxicity, and it is perhaps too much to expect that anything with this exceptional property should have a wider range of antibacterial activity. Nevertheless the possibility of such a substance remains. As Dubos<sup>6</sup> has lately pointed out in a general review of naturally occurring antiseptics, the methods employed in wide surveys are unfortunately not such as to detect the more valuable type of agent. If hundreds of materials have to be examined, only simple *in vitro* tests of bacteriostasis are usually employed, whereas the virtues of the true chemotherapeutic agent only emerge in the experimental animal.

These investigations are by no means confined to the products of bacteria and fungi. The higher ranges of the vegetable kingdom are being explored in a tentative way,

<sup>1</sup> *J. Bact.*, 1944, 47, 391.

<sup>2</sup> E. Chain, H. W. Florey, and M. A. Jennings, *Lancet*, 1944, 1, 112.

<sup>3</sup> *Brit. J. exp. Path.*, 1942, 23, 202.

<sup>4</sup> Clara M. McKee, G. Rake, and C. H. Houck, *J. Bact.*, 1944, 47, 187.

<sup>5</sup> E. Chain, H. W. Florey, M. A. Jennings, and T. I. Williams, *Brit. J. exp. Path.*, 1943, 24, 108.

<sup>6</sup> *J. Amer. med. Ass.*, 1944, 124, 633.

with the interesting possibility in view that the supposed medicinal virtues of herbs and roots may prove in some cases to be due to the existence in them of a substance with antimicrobial action. E. M. Osborn<sup>7</sup> has tested extracts of 2,300 species of flowering plants by the agar cup method for substances capable of inhibiting the growth of *Staph aureus* and *Bact coli*. Positive results were obtained in 135 species, the most active being among the *Ranunculaceae*. It is of course known that both essential oils and alkaloids may have a bacteriostatic effect, and until it is clear whether the active substance in a green plant is of this or some other nature, its possible therapeutic usefulness cannot even be conjectured. Another new departure is briefly reported by a team of workers in the University of California,<sup>8</sup> the starting-point of which was the observation that certain algae make something which ultimately inhibits their own growth. From cultures of two species of *Chlorolla* they have extracted in impure form a substance, which they name *chlorellin*, with considerable bactericidal as well as bacteriostatic properties exerted against a wide range of bacteria, including *Bact coli* and *Ps pyocyanea*. This investigation is at far too early a stage to predict its future, but it extends the field of these investigations to a new area. The phenomena of mutual antagonism in the plant kingdom may yet yield up secrets of value to man.

It is now customary, in the American literature at least, to refer to all such substances as "antibiotics". The term is perhaps already too firmly entrenched for any protest to be availing but it may nevertheless be suggested that this word is singularly ill chosen. The broadness of its derivative significance implies a general protoplasmic poison, whereas the only such substances of any interest are those whose action is highly selective. To serve any useful purpose they must poison the microbial cell and leave the cells of mammalian tissues unaffected. A term with this more descriptive significance would be preferable, even if we had to coin a new word. Why not simply "antimicrobics"?

### PENICILLIN IN THE MOUTH

Penicillin production in this country has hitherto amounted to only a small fraction of that in the U.S.A. Outside the Services, which have lately been generously supplied from American sources for the treatment of casualties, the scarcity of the home-grown product has been a handicap. Clinical research on the scale, for example, of studies in the treatment of syphilis recently reported from the U.S.A.<sup>9</sup> has been beyond our capacity. But this handicap has been turned to good account in at least one way: it has forced British investigators to devise economical methods of treatment. Economy in penicillin means local as distinct from systemic treatment, and when this is feasible it has two further advantages: it is far less troublesome to manage and involves the patient in none of the discomfort associated with continuous infusion or frequent intramuscular injections. The success of local treatment depends largely on taking measures to secure continuous action, to this end surgical technique has been modified and new methods of application have been devised. A fresh advance in this direction is reported on

page 686 by A. B. MacGregor and D. A. Long, who have devised a method for treating infections of the mouth and throat. The difficulty in this region is that the constant secretion and swallowing of saliva wash away anything intermittently applied. Penicillin was therefore incorporated in a slowly dissolving pastille, and the patient was instructed to insert another as soon as the previous one had disappeared. By this means the saliva could be kept fully bacteriostatic throughout the day, with a marked effect on its general flora as well as on that of the lesion under treatment. It has previously been noted by Garrod<sup>10</sup> that the great majority of the numerous bacterial species found in the mouth are penicillin-sensitive, with the result that mixed and often predominantly anaerobic infections due to bacteria derived from the mouth are amenable to penicillin treatment. Three examples of such infections are that commonly found in fractures of the jaw compound into the mouth, in tooth sockets after extraction, and in the tonsillar bed after tonsillectomy. Judging from the few cases treated, sepsis in these conditions seems to have been well controlled by the use of penicillin pastilles. Among specific infections Vincent's gingivitis shows the clearest response: symptomatic relief and the disappearance of the causative organisms were both rapid. This is a most troublesome and unresponsive infection to treat by other methods in current use, and if penicillin will indeed relieve and eradicate it so conveniently, this is a minor victory of far-reaching consequence. There appears also to be a distinct effect on acute haemolytic streptococcal infections of the throat, including scarlet fever. This even wider sphere of usefulness evidently calls for further study from the clinical standpoint. The fact of the rapid disappearance of the organism is encouraging, and may, as the authors point out, have a useful epidemiological bearing. It may be significant from the same point of view that the carrier state can be suppressed temporarily. The return observed to the *status quo ante* was only to be expected, since the depths of the tonsils in which the organism lurks must be quite inaccessible to a surface application. This is the simplest form of penicillin treatment yet devised, and embraces very common if not usually very dangerous conditions. If its predicted value should be confirmed the demand for penicillin for these purposes will be an additional embarrassment to those in charge of the present limited supplies.

### TRAINING FOR THE D.P.M.

The second interim report of the Committee on Psychological Medicine of the Royal College of Physicians of London puts forward some fairly precise recommendations which will make the new diploma a much more rigorous and satisfactory achievement than the existing one. The course, it is recommended, should occupy five years instead of the present single year, and the subject matter is to be comprehensive and thorough, including such ancillary medical and social sciences as are relevant to the proper understanding and treatment of psychiatric disorders. The first three years are to be spent in hospitals, clinics, and laboratories. A house-physicianship and also a post in a neurological department are considered essential. Child psychiatry, psychology, and industrial psychology are to be included. A notable arrangement proposed is that after the three years taken to pass the examination the diploma shall not be awarded until two further years of clinical experience have been spent in some special psychiatric field. The committee wishes to abolish the separation between the institutional psychiatrist and the psychiatrist engaged in private practice and also to limit the isolation

<sup>7</sup> *Brit J exp Path*, 1943, 24, 227.

<sup>8</sup> *Science*, 1944, 99, 351.

<sup>9</sup> *J Amer med Ass*, 1944, 128, 63, 67, 7.

<sup>10</sup> *British Med. J. Journal*, 1944, 1, 523.



of "sub-specialists." A central board for examinations and for approving institutions for training purposes is contemplated; and the comprehensive and well-thought-out recommendations include some attention to the difficulty of candidates finding the means to take them through the various stages of the course. It is pointed out that American experience does not suggest that the greater severity of the regulations for the diploma will limit the number of candidates.

### SCIENTIFIC WORK OF THE R.C.S.

A year ago the Scientific Report of the Royal College of Surgeons of England recorded the plans which had been made to obtain material out of which to rebuild the Museum Collections destroyed by enemy action. This year's report shows a generous response of Fellows, Members, and friends of the College to the appeal for specimens. The accession list, however, does not include material being held in store at various centres outside London and abroad ready for transfer to the College when the appropriate time arrives. It is only from a great mass of material that a proper choice of specimens can be made—a process which we hope will take into account the needs of both the expert and the student. The task of selection will be in the capable hands of Prof. R. A. Willis, the newly appointed Collins Professor of Pathology, who will have the good wishes of every friend of the old Museum in his work. Prof. A. J. E. Cave, in his position as Assistant Conservator of the Museum, has performed well the valuable and onerous duty of conserving the surviving specimens of the old Museum and of recording the difficulties under which his work has been carried out. His reports during the past four years have in turn contained the story of loss, salvage, preservation, and now reconstruction. The foundations of the future Museum are being laid with patience and understanding. In spite of shortage of staff the Museum has been able to perform useful service to research workers in many fields.

The Research Laboratories have pressed forward their work on hepatic dysfunction. The relation of diet and of specific dietary components to the rate of recovery from hepatitis is a most important finding which has immediate bearing on recent work on wound healing. It also has a bearing on the question of excessive nitrogen loss after trauma, including simple fractures. The extensive liver damage found in severe infections and after burns has not been given the attention it deserves. If this damage can be repaired or averted, as the report suggests it can, there is a new approach to the treatment of burns and infections. Of interest in the same connexion is the observation that patients with hepatic disease are unable to produce antibody in response to antigenic agents at the same rate as normal individuals. Now that many infections can be controlled by penicillin and the drugs of the sulphonamide group these metabolic problems assume greater significance. Their solution must influence considerably the after-care of surgical patients in the future. The present occupant of the chair of surgery at Johns Hopkins has well said that "the recent decreases in morbidity and mortality rates in surgical patients are due more to advances in pre-operative and post-operative treatment than to any other factor." Experience in this war has shown how important are such abnormalities as dehydration, acid-base balance, and hypoproteinaemia in influencing the recovery and as factors in the production of shock. Without a considerable increase in knowledge of hepatic function our treatment of such abnormalities must remain empirical. The work on carbon tetrachloride poisoning opens up a new approach to the problem of

hepatic dysfunction following anaesthesia. Miller and Whipple<sup>1</sup> demonstrated that methionine could prevent fatal liver damage after chloroform anaesthesia in dogs depleted of protein. This report shows that methionine can exert a curative action after the damage has occurred. Of even greater theoretical and practical interest is the discovery that in renal failure associated with liver damage choline is an effective therapeutic agent. It is obvious that not all cases of renal failure can respond to choline, but the discovery that the type of renal failure described by Griffiths<sup>2</sup> occurs in man and can be treated by choline is of first-rate importance. Work on nerve injuries and regeneration of nerves after suture is being carried on by Dr. F. K. Sanders at Oxford. His recent publications have contained observations of great interest, and in association with Prof. H. J. Seddon and Dr. J. Z. Young he has thrown much light on the mechanism of nerve regeneration after injury and suture. We note with interest the way in which the laboratory staff have made use of clinical material for their study of the fundamental problems recorded above. This is the method used so successfully by what may justly be claimed is the English school of clinical science—the method of Ferrier, Head, and Lewis.

### TUBERCULOSIS WORK IN WALES

We are fortunate in being able to gain through the thirty-second series of annual reports of the Welsh National Memorial Association a bird's-eye view of the tuberculosis work as it can be carried out in a considerable yet varied population. As usual, the reports are lively and informative. Dr. Norman Tattersall (principal medical officer) has a good word to say for the new treatment allowances. The social work for patients is administered through the counties and county boroughs, unlike the dispensary and institutional work, which, in Wales, is directed by the Memorial Association and its branches. Dr. Tattersall thinks that this dual system leads to better understanding between the central organization and the counties. Mass radiography is going ahead, and Wales is the only part of Britain which has a truly mobile apparatus, accommodated in a motor van which is independent of main electrical supplies. Experience accumulated shows that about 5% of the subjects examined have to return for a large x-ray film, and 1% require observation for tuberculosis. Apparently Welshmen are becoming more "x-ray conscious"; there is a tendency for chest films to be demanded on unnecessary or trivial grounds; in Cardiff the welcome change is the patient's desire for more contact examinations. Problems, chiefly nursing and domestic, keep the waiting-lists for admission to sanatorium high, and nowadays the average length of treatment is one year—much longer than it used to be. The old "shyness of treatment" is disappearing, and with the combined influence of the Rushcliffe scales of salaries and help given by the Ministry of Labour, the staff shortages are being slowly overcome. Supported by a special gift from the Davies family, Prof. W. H. Tytler continues his research into the use of promin. The only sad and irrevocable note in these reports is the obituary of the late Lord Davies, the founder, creator, and inspirer of this patriotic Welsh movement since its inauguration 32 years ago.

We regret to announce the death of Sir Robert Kelly, consulting surgeon to the Liverpool Royal Infirmary and emeritus professor of surgery in Liverpool University. A memoir will appear next week.

<sup>1</sup> *J. exp. Med.*, 1942, 76, 421.

<sup>2</sup> *Biological Symposia*, 1941, 5, 193.

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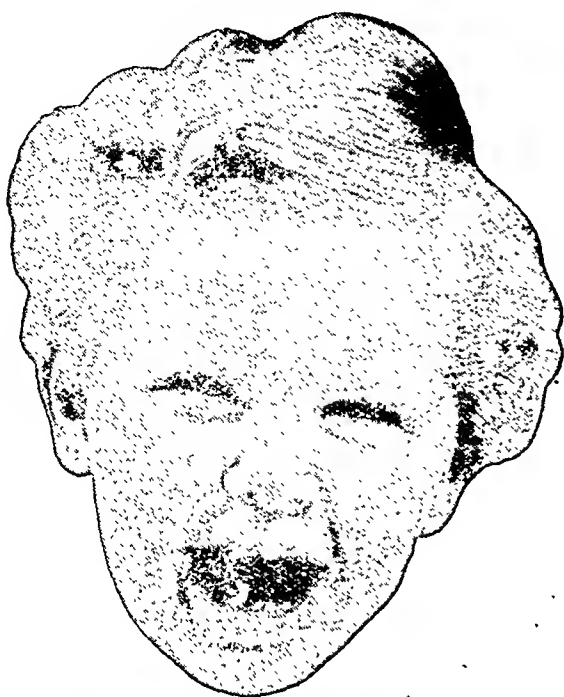
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## LOCAL AUTHORITIES: WHAT THEY ARE

The answer given in an Act of Parliament of 1916 is "any person or body of persons who receive or expend the proceeds of any rate and any other public body which the Ministry of Health may determine to be a local authority." In the Local Government Act of 1933 a local authority is defined as the Council of a County, County Borough or non County Borough Urban or Rural District, or Rural Parish.

The principal local authorities in England and Wales to-day are.

62 County Councils, with populations varying from 18,000 to 1,880,000.

83 County Boroughs, with populations varying from 26,000 to 1,000,000.

29 Metropolitan Borough Councils, with populations varying from 23,000 to 271,000.

309 Non-County Boroughs, with populations varying from 900 to 200,000.

572 Urban Districts, with populations varying from 760 to 188,000.

475 Rural Districts, with populations varying from 1,400 to 135,000.

In addition there are 7,000 Parish Councils and 4,000 Parish Meetings (rural parishes not entitled to elect a Parish Council). There are some 600 miscellaneous authorities created for specific purposes ranging from local fisheries committees to Trustees of London Squares and more than 1,000 joint boards or committees dealing with hospitals, water supplies, sewerage, burials, gas, town planning, etc.

This mass of governmental machinery is perplexing in structure, and there is perhaps no subject affecting so substantially his daily life in which the ordinary citizen displays less interest. The relation between the powers and functions, administrative areas, populations and financial resources of this 'loose hierarchy of elected councils' is illogical and inconsistent. Some authorities with small populations and limited revenues enjoy wider powers and higher status than others with large populations and abundant financial resources. Thus the County Borough of Canterbury, one of the smallest towns in Kent, with a population of 26,000 and a rateable value of £216,000, has comprehensive local government powers, while Harrow, one of the largest urban districts in the country, with a population of 188,000 and a rateable value of £2,110,000, exercises only the restricted powers of a district council. Nearly two thirds of the 1,530 local authorities in the country serve populations of less than 20,000. In 8 non-county boroughs the rateable value exceeds £1,000,000, in 14 it is below £100,000. The product of a penny rate is £448 in one county and £84,000 in another. The rateable value of one town is £3100 and of another £6,000,000.

Although the foundations of our system of local administration date back to the townships, hundreds and shires of Saxon times, local authorities in their present form are the product of the last 100 years or so. Their status and constitution are at present governed by the Local Government Act, 1933. This Act provided that for local government purposes England and Wales (excluding London) should be divided into administrative counties and county boroughs, the administrative counties being divided into county districts—either non-county boroughs or urban districts or rural districts. What are the differences between these local authorities? Broadly, county boroughs are autonomous bodies responsible for all local government functions within their areas, the remaining authorities form component parts of the county. The county council which administers certain services for the whole administrative county, is financed partly by rate precepts upon the borough, urban, and rural district councils, each of which performs local functions in its own area. The county council is charged with the duty of conducting a decennial review of the areas of these district authorities and has certain responsibilities for the organization of electoral areas in the county.

### County Councils

County councils were established by the Local Government Act of 1888. They were elected bodies with mainly supervisory powers, although the Act transferred to them certain administrative business previously undertaken by Justices of the Peace in Quarter Sessions. The 62 county councils of to-day are those enumerated in the Local Government Act, 1933, and

the London County Council. They consist of county councillors elected by the local government electors, and county aldermen elected by the county council from their own number or from persons qualified to be county councillors. The maximum number of aldermen is one third of the county councillors. The aldermen hold office for 6 years, the senior half retiring triennially. The county councillors hold office for three years. A county council is statutorily required (a) to elect annually a chairman and vice-chairman, the former by virtue of his office becoming a Justice of the Peace for the county, (b) to appoint certain officers, including a Clerk, Medical Officer of Health, Treasurer, Surveyor, Analyst, Chief Constable, Clerk of the Peace, Registrars of Births, Deaths, and Marriages, Inspectors of Weights and Measures, and the necessary officers for the administration of public assistance and mental hospitals. The council is empowered to appoint such other officers as it thinks necessary for the efficient discharge of its functions. The meetings and proceedings of county councils are regulated by the Local Government Act, 1933, and by Standing Orders which that Act authorizes. At least four meetings a year must be held.

### Municipal Corporations

Municipal corporations existed long before the Municipal Corporations Act of 1835. Many townships had obtained Charters of Incorporation from the Crown enabling them to be represented in Parliament, to control local trading, to appoint their own officers, and to collect their own taxes. Population or the size of a town was no criterion for the grant of a Charter—some villages had municipal corporations while important towns such as Manchester and Sheffield had no Charter before the 18th century. The Tudor monarchs exercised freely their power of creating boroughs by Charter. Many 'rotten or pocket boroughs' were created during the reign of Queen Elizabeth to enable the Crown to obtain political representation in Parliament. In Yorkshire, Aldborough and Boroughbridge were in the same parish and each returned two members at the time when Birmingham was not represented in Parliament. Until 1835 the boroughs were governed by various close corporations constituted on an oligarchical basis. The right to vote was restricted by Charter to members of the governing body of the borough—usually self-elected and not responsible to anyone for the management of municipal affairs. They existed not primarily for the good administration of the borough but as organizations for returning members to the House of Commons. The extent to which Charter Boroughs had grown is revealed in the Great Reform Act of 1832, by which 56 boroughs in England were disfranchised absolutely, and 31 others each lost one member. In 1835 the principle of popularly elected municipal councils was established. This and subsequent measures to secure a uniform system of municipal government were consolidated in the Municipal Corporations Acts of 1882 and 1883. The municipal boroughs to-day are those named in the Local Government Act, 1933, with the addition of any new boroughs constituted since then.

### County Borough Councils

County borough councils were established in 1888. The Local Government Act of that year constituted a separate administrative class of some 60 large boroughs which were either counties of themselves or had populations of 50,000 or more at the passing of the Act. The creation of a new county borough requires a local act, and a minimum population of 75,000 is now essential before a non-county borough can apply for the higher status. A municipal corporation is defined in the Municipal Corporations Act of 1882 and in the Local Government Act of 1933 as 'the body corporate constituted by the incorporation of the inhabitants of a borough'. In 1888 boroughs were divided into county boroughs and non-county boroughs and by the Local Government Act, 1933, the corporation is given power to act through the borough council, consisting of a mayor (or Lord Mayor), aldermen, and councillors. The mayor is elected annually by the council from its own members or from persons qualified to be aldermen or councillors. During his term of office the mayor becomes a Justice of the Peace for the borough and a Justice of the Peace for the county in which the borough is situated. The mayor is empowered to appoint a deputy mayor. The

aldermen, one-third in number of the councillors, are elected by the latter from their own number or from persons qualified to be councillors. They hold office as aldermen for six years, but the senior half retires triennially. Councillors are elected by the local government electors for the borough and hold office for three years, the senior third of the members for each ward (or for the whole borough if it is not divided into wards), retiring annually on Nov. 1. The number of councillors is fixed by the Charter or other legal measure and distributed among the wards into which the borough is divided for electoral purposes in the proportion of three councillors, or some multiple of three, to each ward.

A borough council is statutorily required to appoint a Town Clerk, Treasurer, Medical Officer of Health, Surveyor, Sanitary Inspector, Auditor(s), Chief Constable (where the borough maintains its own police force), and other officers as set out under county councils, unless the borough is a non-county borough, in which case there is no power of appointment of Analysts, Registrars of Births, Deaths, and Marriages, Poor Law officers, and mental hospital officers.

#### Urban and Rural Districts

The "parish pump" so often criticized to-day has played a prominent part in local government. It was the parish which was taken as the local administrative unit when the first Poor Law was introduced in 1601. Over 230 years later parishes were combined into Poor Law Unions for the administration of poor relief by Boards of Guardians, though some "unions" remained single parishes. In 1848 a Central Board of Health was established, not responsible to Parliament, with power to create local boards of health in urban areas. Under the Public Health Act, 1872, the country was divided into urban and rural sanitary districts; the Poor Law Boards of Guardians were made the sanitary authority in rural areas and the borough councils and local boards of health in urban areas. The rural sanitary district was defined in the Act as "the Poor Law Union taken as an area for sanitary administration." The titles "urban district council" and "rural district council" were first used in the Local Government Act, 1894, under which urban district councils replaced the old local boards of health in urban areas and rural district councils took over the public health functions previously exercised by the boards of guardians in rural areas. The same Act established a parish meeting for every rural parish, and a parish council for every rural parish with a population of more than 300.

The urban and rural district councils of to-day consist of councillors elected by the local government electors for areas and a chairman, elected by the councillors, who in virtue of his office becomes a Justice of the Peace for the county. The district council may appoint a vice-chairman. The term of office of district councillors is three years, one-third of the council retiring annually on April 15 unless the county council, at the request of the district council, has directed that the members of the district council shall retire together in every third year on April 15. For electoral purposes an urban district may be divided into wards, and a rural district is divided into areas which are either parishes, or combinations of parishes, or wards of parishes. Urban and rural district councils are statutorily required to appoint a Clerk, Medical Officer of Health, Surveyor, Treasurer, and Sanitary Inspector.

The qualifications for registration as a local government elector are set out in the Representation of the People Act, 1928. The qualification is based primarily on the occupation of land or premises as owner or tenant. Among those disqualified are persons under 21 years of age and those subject to any legal incapacity, including aliens, persons of unsound mind, and those convicted of treason or felony.

The Medical Society of the London County Council has been formed with the aim of encouraging contact between the medical staffs of L.C.C. hospitals and of neighbouring municipal and voluntary hospitals and general practitioners; and to collaborate with the Clinical Research Committee of the L.C.C. Public Health Department. The inaugural general meeting is to be held in January, 1945. All whole-time medical officers of the medical service of the L.C.C. who have completed at least six months' continuous service are invited to apply for foundation membership to the secretary of the society (County Hall, S.E.1) by Dec. 1.

## Reports of Societies

### GASTRITIS

At a meeting of the Section of Medicine of the Royal Society of Medicine, with Dr. GEOFFREY EVANS in the chair, the subject of discussion was gastritis.

#### Introduction

Dr. T. IZOD BENNETT said that little was known of the aetiology of gastritis, its morbid anatomy was obscure, symptoms were often absent, and prognosis was doubtful. The one thing about which they could speak with certitude was the treatment: there was not any! During the present war articles had appeared on dyspepsia as a source of invalidity in the Services, in which it was shown that this was a common cause of disability; but in the course of a considerable experience he had not once succeeded in definitely establishing a diagnosis of gastritis in any member of the Services suffering from dyspepsia.

An entirely new light had been thrown on the condition by the introduction of a safe and reliable type of gastroscope, and on gastroscopy the diagnosis must principally rest, though even gastroscopic diagnosis must be accepted with reserve. Great care must be taken in drawing conclusions from the observations of the gastroscopists. He mentioned the remarkable studies, to which attention was recently called by the late Sir Arthur Hurst, in a book entitled *Human Gastric Function*, by Wolf and Wolff, which furnished a warning against the extreme danger of drawing conclusions from a single gastroscopic examination of any subject, and if gastroscopy was to be performed at least twice the difficulties of this method of examination were more than doubled.

The advent of fractional gastric analysis had led to the recognition of the relative commonness of the condition named "achylia gastrica." Work which he had done with Ryle on this subject on normal medical students suggested that complete achylia gastrica was present in 3 or 4% of normal healthy young adults. It was to be regretted that the gastroscopists had not yet investigated such cases, but it was certain that they occurred. Why, indeed, should a person with severe gastritis have any symptoms? A considerable proportion of patients after gastrectomy were symptomless, so that it was clear that obvious symptoms might not be produced by the mere destruction of the gastric mucosa.

Dr. Bennett concluded with the remark that an intelligent view of this subject could only be expected after reliable observations had accumulated enabling them to agree that certain data fully justified the diagnosis of a disease that at present was undoubtedly diagnosed with a frequency for which there was no justification whatever. Schindler and his collaborators wrote (*J. Amer. med. Ass.*, 1937, 108, 465) that "chronic gastritis is a very frequent and often a very severe disease." This ridiculous assertion epitomized the literature which had so long misled them in their search for knowledge of this obscure subject.

#### Gastroscopic Pitfalls

Dr. F. AVERY JONES (Central Middlesex County Hospital) discussed gastroscopic pitfalls in the diagnosis of gastritis. The mucosa might be thicker than normal; more uneven, more rugose, giving a pebble-beach appearance. This was commonly called "hypertrophic gastritis," but Rogers and Magnus had failed to demonstrate any inflammatory changes, and Dr. Jones had confirmed this in a number of his own cases. This appearance was a constitutional change and probably within normal limits. A pebble-beach appearance could be produced by inflammatory reaction, but it was much more irregular and associated with patchy hyperaemia and an excess of mucus. Similarly atrophy of the stomach, non-inflammatory but endocrine or nutritional in origin, was liable to be called atrophic gastritis, and here again atrophy did follow inflammatory changes, but the appearance was much less uniform than with simple atrophy. A further pitfall was the change that might occur as an emotional reaction, which had been so well described by Wolf and Wolff.

all the appearances of secondary mucosal gastritis were to be seen also as primary forms, superficial and interstitial, the latter being sometimes hypertrophic and progressing to mammillary, polypoid, or cystic formations. He added that the use of the gastroscope had established the great frequency of mucosal gastritis, particularly after the age of 40, but the utmost care must be exercised in diagnosing a case as gastritis, above all in ascribing symptoms even to obvious disease appearances in the mucosa. In the course of some further discussion Mr. W. E. TANNER expressed his agreement with findings of Dr. Avery Jones and Dr. Hancock, and described the three types—thick, medium, and thin—into which, in his view, the gastric mucosa might be divided. Dr. FLETCHER commented on the fact that it was remarkable to hear a discussion without reference to the appearance in normal individuals. Further research on the normal was greatly wanted.

Dr. HANCOCK finally said a word in defence of Schindler, who had done valuable pioneer work in the early days of the gastroscope, though he had perhaps been carried away by enthusiasm in certain respects.

### NUTRITION OF THE PREMATURE INFANT

At a meeting of the Section of Disease in Children of the Royal Society of Medicine on Oct. 27 the subject of discussion was the nutrition of the premature infant in the first year of life.

Dr. HELEN MACKAY, president of the Section, said that until recently the feeding and care of premature babies had been almost entirely in the hands of midwives, but there had been no systematic teaching, and each midwife and each paediatrician had to learn or fail to learn at the expense of the infants. Incidentally she stressed the importance of body temperature. A baby was much more likely to swallow or to suck if his temperature was between 98° and 100° than if it was between 96° and 98°; the cold baby would not take his food. She exhibited some tables indicating a scheme of feeding for premature babies in the first week of life, all the foods being constructed to provide 20 calories per fluid oz. In the case of the baby whose weight at birth was 3 lb., 30 calories were given on the first day, and this was increased until 150 were given on the seventh, a total for the 7 days of 610. In the case of the 5½-lb. baby, 40 calories were given on the first day, increasing to 270 on the seventh, and making a total for the week of 1,113. Her view was that the quantity of food given was much more important than the balance between protein, fat, and carbohydrates in different types of artificial feeds. The standardization of infant feeding in hospitals was of great value, as it enabled nurses and house officers to become thoroughly familiar with its details, and reduced to a minimum the likelihood of gross errors or sudden changes in food owing to changes in nursing or medical personnel.

Dr. MARY CROSSE (Birmingham) said that the feeding of the premature infant was not always easy. The infant had certain defects due to prematurity, such as feebleness, or sometimes absence, of the sucking and swallowing reflex, extreme liability to regurgitation, immaturity of the alimentary tract, and greater need for fluids. She put in a plea for catheter feeding through the mouth and not through the nose. In very small babies it was extremely easy to injure the nasal mucous membrane and render it infected. In her ward both oesophageal and stomach feeding had been tried out, and she much preferred the former because of less distension with air, and because the oesophageal feeding could be repeated without causing vomiting. In feeding the baby everything depended upon how quickly it tired. A beginning should be made with two-hourly feeds, going on to three-hourly. Nurses loved a spectacular gain in weight. In her hospital, however, it was survival that was stressed, not weight. The babies were weighed on the third, seventh, and tenth days. Little attention was paid if they had not gained on the third and seventh, but it was desired that they should gain by the tenth. It was not possible to get an infant of under 5 lb. to go regularly to the breast. It was always the practice in her ward to raise the head of the cot, and the baby was fed on the right side, thereby causing less cyanosis and distension, probably owing to the fact that the stomach emptied more quickly in that position. She found that a baby of 4½ lb. did not have a good appetite in a hot

humid atmosphere. Accordingly when babies reached 4½ lb they were taken into a cool room, and it was found that their appetites improved markedly. If a small baby had a body temperature of 96° she did not mind, but she did not like it to go below that point. The stabilization of temperature was more important than its elevation.

Dr. J. O'REILLY said that an analysis of feeding charts for a number of premature babies had shown that the feeds must be increased gradually to about 60 calories a day before the majority would show consistent gains in weight. An average gain of 1½ oz. a day over a period was quite satisfactory. In general he found that when the babies were established on milk feeding no effect on the weight or on the condition of the child was produced by giving extra fluid. The fluid content of undiluted milk appeared to be sufficient. Small babies and babies born of toxic mothers were particularly liable to dehydration. Additional fluid in these cases caused an immediate gain in weight, but its continued administration had no effect after the dehydration had been overcome.

Major LAMB, U.S.A.M.S., believed the importance of humidity and the control of temperature had been underestimated. The amount of fluid that could be lost through the skin in a small baby could reach considerable proportions. It must be remembered that the smaller the baby the greater the skin area in proportion to the mass. He never allowed his babies to be weighed for at least a week after birth. The less the premature baby was handled the better. These were babies who still belonged to the uterus, and the more closely that environment could be approximated to the better. Dr. FRASER BROCKINGTON said that on analysing the cases of premature infants he had been astonished at the proportion who did not survive 24 hours, also that the proportion surviving were always very much the same in the same weight groups.

Dr. CROSSE, in reply to a question about the mortality of the premature infant, said that in her series babies weighing less than 2 lb. all died in the first 48 hours. In the case of those weighing between 2 and 3 lb., death might not take place until the next week. Babies of 3 to 5 lb. suffered most from intracranial haemorrhage, but this did not apply to those over 5 lb., from which point there were more deaths from sepsis and fewer from intracranial haemorrhage.

Two complementary papers on cinemicrography were given at the October meeting of the Association for Scientific Photography. Mr. H. Emmett first described the set-up used in one of the I.C.I. research laboratories. The second paper, by R. McV. Weston, entitled "Cinemicrography in Biological Research," dealt with many of the same problems, but described a more elaborate apparatus for higher-power micrography and using a 16-mm. Cine-Kodak special camera to record the images. Owing to the employment of living specimens, a rotating sector shutter was used to prevent overheating, and the whole of the microscope stage was enclosed in an incubator, the controls being outside. The heating elements were two 30-watt carbon-filament lamps shielded to prevent direct rays reaching the object and a chloroform-mercury thermostat next to it. As in the first apparatus the light was provided by a 100-c.p. pointlight lamp. After a full description of this apparatus and its mechanism for time-lapse cinemicrography, Mr. Weston projected a film showing the movement of leucocytes among the red corpuscles of the blood, and higher magnifications showed very clearly the triple nuclei and the movement of the grains within the white blood cell.

At a meeting of the Whipps Cross Hospital Medical Society on Nov. 3, the chairman, Dr. W. E. Joseph, presiding, the following cases were shown: (1) bilateral effusion into knee-joints; (2) cavernous sinus thrombosis; (3) polycystic kidneys; (4) secondary rash; (5) ulcerative colitis; (6) polycythaemia rubra vera; (7) spontaneous pneumothorax. The next meeting of the society will be held at 8.30 p.m. on Dec. 8, when Dr. Keith Simpson, Home Office pathologist, will lecture on "Common Sense in the Detection of Crime." This meeting will be open to non-members.

The following officers (1944-5) of the Association of Anaesthetists were elected at the annual general meeting on Oct. 25: President, Dr. A. D. Marston; vice-president, Dr. C. Langton Hewer; hon. treasurer, Dr. Z. Mennell; hon. secretary, Dr. W. A. Low.



## Correspondence

### Doctors for Germany

SIR,—In your issue of Sept 30 you very kindly gave publicity to UNRRA's probable need for doctors to assist in the control of displaced persons in Germany. At that date it appeared probable that the military occupation of Germany might be imminent; unfortunately it now looks as if we must wait a little longer for the consummation.

By earlier direct application and through the good offices of the Central and Local Medical War Committees we have now the names and records of a considerable number of doctors available for service. Arrangements are being made to interview selected applicants in the near future, and those not selected will be informed that there is either no, or no immediate, likelihood that their help will be required.

I am extremely grateful to the large number of doctors who have expressed their desire to undertake what would be an arduous and possibly thankless task—I am, etc.

ANDREW TOPPING

11 Portland Place, Director of Health European Regional Office, United Nations Relief and Rehabilitation Administration, London W.1

### Episiotomy

SIR,—May I be permitted to comment upon certain aspects of Dr Gaskell's letter (Oct 14, p 511) replying to Dr O'Meara's criticisms (Sept 9, p 353) of his procedure in episiotomy.

The wisdom of giving pituitary extract before the end of the third stage under any circumstances has, of course, been a cause for some difference of opinion for many a day. This Dr Gaskell will doubtless concede, and in spite of his happy experience there are very many obstetricians who will continue not so to use it in the belief that as a general rule it is not sound practice. In this, as to many other instances, it is to some extent a question of deciding from general and personal experience that a particular belief is fundamentally sound and sticking to it. I think Dr Gaskell has perhaps objected to the apparent petulance with which Dr O'Meara says, "He doesn't like it, won't do it, and won't allow it to be done." The truth lies somewhere between, but I cannot help feeling that when Dr Gaskell says he has frequently given pitocin when the head is well down and the os fully dilated, however foolhardy a given practice might be deemed, the conditions here are relatively so well oiled foolproof that Nature would probably lend her aid to enable one to get away with it nine times out of ten. It has been stated "It now seems that parturition begins as a result of the gradual accelerating convergence of a number of factors—structural, humoral, nervous, nutritional, and circulatory. The heightened contractile powers of the uterus under the influence of oestrin and distension require for true labour the intermediation of integrating factors, for if intense contractions of the myometrium alone were sufficient for parturition the administration of an oxytocic drug would hasten the process without real danger of rupturing the uterine wall. This, however, is not the case." I may be wrong, but it seems to me that Dr Gaskell implies the not giving of pituitary extract before the end of the third stage is almost an old wives' tale.

I am equally out of agreement with him regarding some of his remarks on the use of ergometrine. I agree with Dr O'Meara that the giving of it as a practice before the placenta is expelled is not a good thing, so, apparently, does Dr Gaskell, based for the most part on the isolated experience of one occasion when a drastic result followed. Years ago I did some unpublished work on the use of ergometrine before the expulsion of the placenta in a large series of quite unselected cases. I gave it intravenously not once but literally hundreds of times, not wholly in ignorance, nor without thought, and I never had any untoward results, nor did I have to risk my popularity by calling on a large part of the honorary staff to deliver me out of my predicament. I found that the duration of the third stage was on the average definitely shortened, and the amount of blood lost quite appreciably diminished. Present circumstances make it very difficult for me to have access to my figures. My impression was that

ergometrine gave more even less erratic contractions than pituitary extract, though I had no positive proof such as kymographic tracings. In cases of p.p.h. I also felt that while I had locked the door with ergometrine I liked to bolt it with an injection of pituitary extract. This may have been over-caution, but I think even nowadays most obstetricians will forgive me a little of it in dealing with p.p.h. I suppose I used the same kinds of preparation as Dr Gaskell, but, even with my happy experience of the drug, I still don't suggest that it should be used before the placenta is out as a practice, and, also, that if one had gone on using it long enough I feel sure one may well have met the disaster Dr Gaskell relates. Lastly, although I am not in full possession of the facts, I cannot help wondering why Dr Gaskell was using chloroform for a delivery. There are quite a number of very eminent obstetricians who banished chloroform from the delivery room many years ago. Here, again, the truth, I admit, lies not wholly in the extreme, but why not use an anaesthetic less notorious for its relaxing effects upon the uterine musculature? I have always felt that the secret of good obstetrics lies so less in the intelligent anticipation of likely disaster and its judicious avoidance than in skilled manoeuvre if it does occur. It saves me trouble and almost invariably saves the patient trouble too. I agree with what the nurse said, but I wonder if I would agree with the reasons for having to say it—I am, etc.

H. VINCENT CORBETT,  
Major R.A.M.C.

### REFERENCE

Reynolds S.R.M. *Physiology of the Uterus*.

SIR,—The article by Dr J.D.S. Flew (*Journal* Nov 11) gives an excellent account of the technique, reasons for, and risks of this simple operation. I agree with him that the central J shaped episiotomy is the best one to perform, because not only does it avoid the risks of (a) haemorrhage and (b) trauma to Bartholin's duct, but it also prevents severing muscle fibres to the perineal floor. Division of the central tendon is the soundest anatomical and surgical procedure.

One has seen many cases of lateral episiotomies in post natal clinics and in quite a fair percentage of these the vaginal outlet is gaping owing to retraction of the cut muscle fibres which have not been approximated by the repair of their fascial sheath. In a central episiotomy, repair of the central tendon is easy and the result entirely satisfactory. The risk of extension of the central episiotomy into the rectum is avoided by the use of the curved incision, but writers such as Pratt, Hodgkinson, and Kennedy (*Amer. J. Obstet. Gynec.* Feb, 1942), who quote a series of 300 cases of straight central episiotomy, state that the risk of a third-degree extension is greatly exaggerated, and, secondly, that in 10 cases of their series in which it occurred repair of the wound in layers, after the third stage of labour, resulted in complete healing by first intention.

The actual time at which the episiotomy should be performed is, as the writer states, when marked perineal bulging has occurred. Why is this the moment of choice? Because it is only then that one can decide whether or not an incision is necessary, and stretching of the perineum by demarcating the structures in it allows the operator to make the incision in the correct position. It should be stressed when teaching the technique of episiotomy that the actual incision is made during uterine relaxation, fundal pressure on the foetus being the only factor concerned in stretching the perineum.

I do not agree with the author's suggestion that midwives should be taught to perform an episiotomy, in his list of indications for its use a medical officer should be in attendance to deal with the complications mentioned, and it is the duty of the midwife to send for medical aid immediately she thinks any abnormality has arisen.

Lastly, no reference was made in the article to the method of repair or the material used for the repair, although Dr Flew stated that the sutures of a perineal tear are uncomfortable during the 7 to 10 days they are *in situ*. The repair must be done in correct anatomical layers, mass ligation by through-and-through sutures leads to pocketing of blood clot, which readily becomes infected in the perineum. The material used throughout should be No. 0-20-day (chromicized) surgical gut,

the skin layer being approximated by a subcuticular suture. I have repaired many in this way and have found that the results are excellent and the discomfort to the patient negligible.

—I am, etc.,

London, W.1

IVOR HUGHES.

### Aluminium Dust for Silicosis

SIR,—With reference to your leader on this subject (Nov. 4, p. 601) may I point out that the experimental results obtained by Denny, Robson, and Irwin are in no way dependent upon the obsolete theory that "silica exerts its injurious effects upon animal tissues through a slow transformation into silicic acid." Their results are in entire conformity with the modern belief founded upon the work of Sir Lawrence Bragg (and of Leroy Gardner on the experimental side) that silica is at its maximum chemical activity in the aerosol state, provided the particles are small enough. Indeed one of the methods—though by no means the best method—of satisfying the active silica surfaces and rendering them chemically inert is by converting the aerosol into a hydrosol. A better method is to satisfy the active surfaces of the dust particles by coating them with aluminium. This is what Denny, Robson, and Irwin have done. The unsatisfied oxygen atoms of the silicon-oxygen tetrahedra at the surfaces of the particles combine with the aluminium to form a surface layer of alumina. If we are to continue to describe such chemical reactions as "adsorption," then all silicates become "adsorption compounds."

The Americans are very careful, when writing of "solutions" of silica and of "silicic acid," to put these terms between quotation marks. For they know that there are no true "solutions" of silica and that "silicic acid" is a hypothetical or inferential "acid" which is not found in Nature, cannot be demonstrated by any indicator, and cannot be manufactured. What are found are varying suspensions of clumped silicon-oxygen tetrahedra—all characteristically colloidal. True "silicic acid" remains an unrealizable ideal, a ghost that has never materialized.

Pure or "classical" silicosis is a rare condition of the lungs, and is in all probability produced by the direct chemical action of active silica dust particles on the cells which take them up. Such active dust is typically produced by shot-firing or dry compressed-air drilling in quartz, quartzite, or quartzore rock, or by stonemasons dressing such rock with the chisel. The average pneumokoniosis met with in this country is a mixed condition in which silica dust may play a part, but which may be caused by the inhalation of almost any mineral dust, provided that it is in sufficient concentration and the exposure is long enough. Its development is greatly aided by any disease or condition which interferes with the mechanism of dust elimination from the lungs. In these cases the action of the dust is mainly mechanical by lymphatic blockage, and they may be described as "dust retention fibroses." There is little reason to doubt that even aluminium dust in dense concentration might, in time, with prolonged exposure, lead to such blockage, and the German findings may not be so mysterious after all.

One other point: it is frequently assumed that if a large amount of silica is recoverable from lungs on incineration, the victim must have suffered from silicosis. The fallacy of this reasoning has been demonstrated over and over again, notably by Prof. Matthew Stewart of Leeds and his assistants. In classical silicosis of the South African type the amount of silica so recovered may be surprisingly small; but in a retention fibrosis the silica content of the ash may be enormous, with many large particles, although any action exerted may have been merely the mechanical one of blocking up the lymphatic channels.—I am, etc.,

Chichester

PATRICK HEFFERNAN.

### Mass Radiography

SIR,—Dr. Norman Henderson in his letter of Oct. 28 (p. 574) criticizing the present national scheme of mass radiography, makes a number of statements not based on fact. In his first paragraph he writes: "Difficulties of equipment manufacture could be overcome if all x-ray manufacturers were invited to co-operate instead of confining the production mainly to one firm." Several manufacturers were in fact invited to submit designs to a committee of experts nominated by the Medical

Research Council's Committee on Tuberculosis in Wartime. The most suitable design was selected, and if other apparatus eventually comes to be designed and produced which is of equal or better standard there is no reason to assume that consideration would not be given to its approval by the Ministry. The Ministry of course does not "retain mass radiography in their own hands," but has allocated the units to local authorities so that the work can be conveniently linked up with the existing tuberculosis services.

The success of mass radiography depends largely on the discovery of early as well as chronic tuberculosis. Failure to find early cases will cause the public to lose confidence and the number of volunteers to diminish. The detection of early cases is only possible with the most meticulous technique, and the suggestions that girls who cannot get into radiography schools can be trained very quickly for this type of work shows astonishing ignorance of the technical advances made during the past few years. It is possible with one unit, with relays of technicians and a large clerical staff, to examine 3,000 individuals a day if the methods were compulsory and the individuals rounded up by a special force. The anonymous manufacturer quoted by Dr. Henderson presumably has this idea in mind when he suggests that the unit, instead of working in factories, should examine all individuals "in an area of two or three square miles."

Dr. Henderson's advocacy of great speed shows no appreciation of the difficulties of diagnosis of pulmonary tuberculosis. Mass radiography has not made the diagnosis of pulmonary tuberculosis easier—it has, in fact, made it much more difficult by bringing to light latent or subclinical early cases. These cases require great tact and experience and often prolonged observation; many, we know, recover spontaneously. It is not the Ministry's policy to encourage slapdash "Continental" methods without regard for the subsequent care of the individuals found to show deviations from the normal.

Despite the introduction of mass methods into medicine the Ministry is still of the view that medicine is a profession and not a business.—I am, etc.,

London, S.W.1.

PETER KERLEY.

### Ministry of Health and Radiography

SIR,—We cannot congratulate the Ministry of Health on its handling of x-ray diagnosis and early treatment. The official procedure has been: (1) in 1912 to transfer the Bismarck insurance system to Britain, and force it on the people and the doctors; (2) to omit the x rays from the list of benefits, depriving the whole nation for 30 years; (3) to reject (Mr. Neville Chamberlain) the findings of the Royal Commission recommending the x rays for insured persons; (4) to set up mass radiography without accompanying arrangements to provide beds for the cases selectively diagnosed; (5) to monopolize production of mass-radiography machines mainly to one firm (see *Journal*, Oct. 28, p. 574). The Australian Government has trusted the doctors to select the tuberculous soldiers from the majority, and to apply special radiography only to these. By so doing it has saved Australia much expense to the taxpayers, as well as eliminating the unfit.

The House of Commons may vote for social insurance and health regulation; who is to carry these out? Obviously not the present departmental personnel. Federalization of administration to London, Edinburgh, Cardiff, and Belfast is the first step to individual and national reconstruction.—I am, etc.,

Glasgow.

ARTHUR TURNBULL.

### Artificial Insemination

SIR,—While having no practical experience in artificial insemination, I have been asked about it often by sterile couples, and hence have some knowledge of the different feelings which the matter arouses. The subject has been repeatedly referred to in these columns and has been singular, perhaps, for the lack of objectivity of your correspondents. The emotion of some of these writers suggests mainly that they are feeling about the matter as if it were their own problem, or their dogmatism suggests an experience too limited to appreciate how great may be the variation of other people's feeling on the matter.

which the results appear wrongly to justify. These cases, correctly handled, are the most quickly rewarding to all concerned. The following week a smiling mother brings a sleeping baby which has made a gain of anything between 8 and 12 oz. The stools are normal. Not only is the baby completely changed in manner and appearance from a sickly, irritable creature, the potential victim of intercurrent disease, but the mother almost equally so, partly due to relief from worry and restless crying, and partly due to an increased sense of well-being following an ingestion of proteins "for the baby's sake."  
—I am, etc.,

London, N.W. 8

AUGUSTA BONNARD.

### Infantile Diarrhoea and Vomiting

SIR,—It is possible that this condition varies in different parts of the country: it is certain that the features claimed by Dr. Leathart (Nov. 11, p. 637) as common in Birkenhead are uncommon in Sheffield. In the last fifteen necropsies I have performed on infants dying of D. and V. a pathological condition of the middle ears was found only twice, although looked for in all cases. This proportion is not significantly different from that found in infants of the same age group dying from other diseases. I do not quote the very much larger total numbers of necropsies performed on infants dying of D. and V., since the middle ears were occasionally not examined; the proportion showing any inflammatory lesion in this region was similar in those examined to that in the smaller series. Anatomically it seems unlikely that the mastoid could be infected by material travelling up the Eustachian tube without some signs of inflammation being visible in the middle ears.

Twelve of the fifteen infants had notable fatty changes in their livers. I have yet to perform a necropsy on a breast-fed infant who has died of D. and V.—I am, etc.,

Sheffield

H. E. HARDING.

### Sulphapyridine by Ryle's Tube

SIR,—The article by Lieut.-Col. Ransome and his colleagues (Nov. 4, p. 594) interested me greatly. I was in India in 1940 and 1941 and was faced with the treatment of two patients who were extremely ill with lobar pneumonia. Both were vomiting profusely and the only drug available at that time was sulphapyridine. The intravenous form was not then available in our hospital. Sulphapyridine was tried, but this only made the vomiting worse, and both patients seemed to be going rapidly downhill. I had the idea of passing a Ryle's tube as far down as possible and introducing the drug in this way. I first aspirated the gastric contents and washed the stomach out with a weak solution of sodium bicarbonate. I then passed the tube further on, as I piously hoped into the duodenum, and introduced the crushed suspension of sulphapyridine in water. This was repeated at four-hourly intervals, leaving the tube *in situ*. The result in each case was exceedingly gratifying. The temperature came down, vomiting ceased, and the patient started to pick up within twenty-four hours.

That the alimentary canal of dehydrated patients is capable of absorbing large quantities of fluid appears to have been amply demonstrated by your contributors, and if their results are borne out by others then this method should commend itself to us for two reasons in particular: first, that fluid is being introduced into the body in the way that Nature intended it to be, and, secondly, that it has the great merit of simplicity.—I am, etc.,

F. L. DYSON,  
Capt. R.A.M.C.

### Tuberculosis in Kent

SIR,—In a recent issue you published a summarized report of a debate in the House of Commons on a motion by Sir Waldron Smithers concerning the treatment of tuberculosis in Kent, and the circumstances regarding the admission of a certain patient to hospital when, in addition, strong criticism of myself as administrator of the tuberculosis work in Kent is implied. In order that this matter may be properly understood, I would be extremely grateful if you would allow me to comment briefly on this report, because, while criticism of my behaviour is of no interest to your readers, important principles, which concern all whose duty it is to carry out

public health administration, are involved. The facts which I shall give are not in dispute.

A patient was sent by his doctor to hospital for an x-ray of his chest. The doctor was told that the appearances were suspicious and consequently referred him to a tuberculosis officer on my staff. Pulmonary tuberculosis was diagnosed and the patient was placed on domiciliary treatment and his name put on the usual waiting-list for admission to sanatorium. Unfortunately, at the present time, owing to the length of the waiting-list, a long delay is unavoidable. During this period neither the patient's wife nor the doctor had asked the tuberculosis officer to call upon the patient. After about six weeks Sir Waldron Smithers, M.P., in whose constituency the patient resides, asked me for information as to the position, since the patient's wife had complained to him. I gave Sir Waldron Smithers a very full report, but it transpired that after having visited the patient he himself had succeeded by direct telephone contact in getting the patient forthwith into a London voluntary hospital.

Here it should be noted that the same hospital on three separate occasions previously had refused formal application from me for reception of tuberculous patients but had placed the patients on the waiting-list.

In addition to this interference with normal procedure, Sir Waldron Smithers took the unusual and, in my opinion, regrettable course of entering into correspondence with me, and also, unknown to me, with one of my tuberculosis officers at the same time in regard to the same patient. In the House of Commons Sir Waldron Smithers quoted from my letters, one or two sentences apart from their contexts, suggesting that I had little sympathy with the sufferings of the tuberculous and allowed officialdom to interfere with the prompt treatment of patients because I had referred to the fact that a tuberculosis officer dealing with one particular area would not be in a position to speak on the council's policy regarding tuberculosis in the county as a whole. In general, a more accurate and fairer statement of the facts of the case was given by Miss Horsburgh in her reply to Sir Waldron Smithers.

The facts as regards tuberculosis in this county have been frequently and fully reported to the Public Health Committee. The Ministry of Health is aware of the position, and, to the best of my belief, everyone concerned has done everything possible to alleviate a situation which is everywhere recognized as deplorable. It is, however, a national problem, not in any way confined to this county, and until young women can be persuaded to come forward to be trained as tuberculosis nurses long waiting-lists will continue, and, owing to delay in isolating the infectious, the circumstances will be likely to deteriorate.—I am, etc.,

Maidstone, Kent.

CONSTANT PONDER,  
County Medical Officer.

### Spontaneous Rupture of the Spleen

SIR,—I read with great interest Mr. Lionel Jones's paper on spontaneous rupture of an apparently normal spleen (Oct. 28, p. 561), and I would like to record a case in which much local discussion failed to elucidate the cause of the splenic rupture.

A married woman aged 33 was admitted to hospital on June 12, 1942. She gave this history: For two years she had had occasional attacks of fever and upper abdominal pain similar to the present attack. Between attacks she did not suffer from indigestion. The present attack began one week previously with pain in the hypochondrium on the right side, stabbing in character, passing through to the back and towards the right groin. Some nausea but no vomiting; normal bowel action and no micturition symptoms. Menses normal and no chest symptoms. Appendicectomy 1929.

On examination: T. 100.2°, P. 120, R. 26. General condition good but rather obese. Tongue moist and clean. In the abdomen there was tenderness all over the epigastric region but maximal in the right hypochondrium. Murphy's sign positive. A diagnosis of acute cholecystitis was made and the patient watched. Her symptoms became worse, and seven hours later following a sudden collapse a laparotomy was performed; the tentative diagnosis was a ruptured empyema of the gall-bladder. At operation the peritoneal cavity was full of blood due to a ruptured spleen. Splenectomy was begun, but after ligation of the pedicle the patient's condition was so poor that the peritoneum was closed with drainage. The spleen was not abnormally mobile. The patient died one hour later.

At post-mortem the gall-bladder and other organs were normal except for a small subleural haemorrhage at the base of the left lung, and the spleen which measured 8 by 5 in. The enlargement was due to a large subperitoneal haemorrhage which had burst into the peritoneal cavity. Histologically it was reported as a subacute *serpiginous* splenic with a rupture and a suggestion of a myeloid reaction, which was not supported by the findings in the other organs. Leukaemia was therefore not considered as the diagnosis. The liver

During the war of 1914-18 Dundas-Grant was otologist and laryngologist to the King George Military Hospital, to Lord Knutsford's Hospitals for Officers, to the New Zealand Military Hospital, and to the Russian Hospitals for Officers, among others. He also busied himself as a lecturer at the College of Ambulance founded by Sir James Cantlie. He himself was a surgeon-major in the Rifle Volunteers and principal medical officer of a brigade of the London Division of the National Reserve. In 1917 he became specialist on the Aural Board and director of the special aural clinics of the Ministry of Pensions, a post he retained until 1920, when he became senior consultant to the Ministry and was created a Knight.

Another of his offices in which he took special delight was that of surgeon to the Royal Academy of Music and the Royal Society of Musicians. He was himself an enthusiastic musician, and his chosen recreation was orchestral conducting. He was also keenly interested in science and was a vice-president of the Royal Institution.

Dundas-Grant had many international contacts. He was an honorary member of the American Laryngological Association and the American Interstate Postgraduate Association, also of the societies of otologists and laryngologists in France, Belgium, Italy, and Austria. He was an excellent society man, eager to share with his colleagues any unusual clinical experience and equally eager to learn from them. One of his special interests was in research on asthma; he advocated operation to correct nasal disorders for the relief of spasmodic asthma, also the operation of shortening an elongated uvula as a cure for cough. He had been president of the Section of Laryngology and Otology of the British Medical Association, of both the Otological and Laryngological Section of the Royal Society of Medicine, of the British Laryngological Association, and of the Hunterian Society. There was no more respected and well-liked figure among those who had "passed the chair."

#### DUNCAN M. BLAIR, D.Sc., M.B., F.R.F.P.S.

We regret to announce the death on Nov. 10 at his residence in the University of Prof. Duncan MacCallum Blair, who had held the Regius Chair of Anatomy in Glasgow University for the past nine years.

He was born on July 22, 1896, only son of the late Dr. Alexander Blair of Ashington, Northumberland, and Cinan, Argyll, and received his medical education at the University of Glasgow, where he was awarded twenty first-class certificates of merit in the various classes of the course. He graduated M.B., Ch.B. (with honours) after serving as surgeon sub-lieutenant, R.N.V.R., for two years during the last war. In 1919 he was invited by Prof. T. H. Bryce to join his staff in the department of anatomy at Glasgow University, where he remained for eight years as demonstrator and lecturer. In 1927 he came to London to succeed Prof. Barclay Smith in the university chair of anatomy at King's College, and in 1935 was appointed Dean of the Medical Faculty of King's.

Returning to Glasgow as successor to Prof. Bryce. While in London Prof. Blair acted as John Hunter lecturer in applied anatomy at St. George's Hospital Medical School and was also an examiner in his subject for the University of

Aberdeen and Sheffield and for the Royal College of Physicians of London. He was a Fellow of the Royal Society of Edinburgh and of the Royal Microscopical Society; a member of the Anatomical Society of Great Britain and Ireland, of the American Association of Anatomists, and of the Society of Experimental Biology; he became a D.Sc. of London University in 1935, and the Royal Faculty of Physicians and Surgeons of Glasgow elected him a Fellow in 1938. He was the author of the section on arthrology in the sixth and seventh editions of *Cunningham's Textbook of Anatomy* and of papers and memoranda printed in the *Journal of Anatomy*, the *British Journal of Surgery*, and in these columns. For two of his papers, published in the *Journal of Anatomy* in 1921 and 1923, he was bracketed with A. B. Appleton (now professor at St. Thomas's Hospital Medical School) for the Symington Prize for anatomical research.

Prof. Blair had taken during the past two years a prominent part in the organization of the training of naval cadets at Glasgow as commanding officer of the University Naval Division. From boyhood he was devoted to sailing, and spent many holidays off the West Coast of Scotland. His death at the age of 48 is a loss to the country as well as to the branch of science for which he has done so much as teacher and research worker.

## Medical Notes in Parliament

### Workmen's Compensation

Mr. HERBERT MORRISON on Nov. 8 moved that the House welcomed the intention of the Government to replace the present system of workmen's compensation by a new scheme of Industrial Injury Insurance. He said the proposals made on this subject in a recent White Paper were a revolutionary advance in the structure of workmen's compensation administration. The Employers Liability Act of 1897 imposed a liability on the employer to pay compensation. That system was necessarily complicated and had been overlaid by complex case law. A Royal Commission on Workmen's Compensation under Sir Hector Hetherington was appointed in 1938 and collected evidence useful in the building up of the White Paper scheme. The Government plans in the White Paper were not final, but he asked the House to endorse the main principles. The new scheme transferred to the community as a whole the responsibility for the casualties of industry, administered by the new Ministry of Social Insurance. There would be contributions from everyone with a contract of service and also flat-rate benefits with supplements for family responsibilities. Commutation of pensions would not be allowed. Industrial pensions would be assessed by a medical board and based on the degree of disablement resulting from the injury, compared with a normally healthy person of the same age and sex.

Mr. TOM BROWN pointed out that of those killed in industry almost half were in the mining industry. Silicosis, pneumoconiosis, dermatitis, and nystagmus should be kept in mind during the consideration of the legislation which would follow the White Paper. Mr. QUINTIN HOGG said that under the existing law it was difficult to assess incapacity. The Government proposed another system whereby a doctor could scribble a certificate to say what percentage of incapacity was to be granted.

Sir WILLIAM BEVERIDGE remarked that compensation had hitherto been based on inability to earn. So long as it was so based it was a discouragement to earn. Mr. ISAACS said the insurance companies had been making profit out of compensation and did not care how they made it. Men received postcards calling them to submit themselves to examination by a doctor. If they did not turn up their wages were stopped. The medical referee under the Workmen's Compensation Act, who sat alone and gave a final decision, had more power than the House of Lords. The Labour Party suggested that in future the final arbitrator should be chairman of a board of three. Mr. FOSTER suggested that the basis of entitlement in the Royal Warrant for War Pensions should be followed. Men in the pits or in industry should be compensated if the conditions of their employment caused or aggravated a disability.

Dr. HADEN GUEST said he had worked as a doctor in workmen's compensation insurance cases and knew that the object of the society was to pay the least possible money to the insured. There were companies who employed doctors for the purpose of bullying their clients into accepting payments which were unfair. He had been employed by an organization which expected him to make the people who came to consult him return to work before they, in his opinion, were really fit to do so, and to accept lump-payment compensation when that was not right. After a short experience he and that organization parted company. He had heard they had since improved.

## Medical News

The Royal Society has awarded one of its two Royal Medals to C. R. Harington, Ph.D., F.R.S., for his work in the analysis and synthesis of thyroxine, and in immunological chemistry. Dr. Harington has been director of the National Institute for Medical Research, Hampstead, since 1942, when he resigned the chair of chemical pathology in the University of London, which he held at University College Hospital Medical School.

The next meeting of the Medical Society for the Study of Venereal Diseases will be held to-day (Saturday, Nov. 25) at 2.30 p.m., at 11, Chandos Street, Cavendish Square, W., for a discussion on the social aspects of venereal disease.

At a meeting of the Paddington Medical Society on Tuesday, Nov. 28, at 9 p.m., in the Board Room of St. Mary's Hospital, Dr. C. C. Worster Drought will give a lecture on recent advances in neurology.

## Universities and Colleges

### UNIVERSITY OF SHEFFIELD

At a meeting of the University Council held on Nov. 10 the following appointments were made: Dr. C. H. Bosenberg, registrar of the Children's Hospital, as temporary lecturer in diseases of children; and Dr. Andrew Wilson, as temporary lecturer in medicine for dental students.

### ROYAL COLLEGE OF SURGEONS OF ENGLAND

At an ordinary meeting of the Council held on Nov. 9, with Sir Alfred Webb-Johnson, President, in the chair, Mr. V. Zachary Cope, Mr. C. E. Shattock, Mr. E. W. Riehes, and Mr. W. H. C. Romanis were re-elected, and Mr. V. C. Pennell and Mr. A. J. Gardham were elected Members of the Court of Examiners. The Hallett prize was awarded to John Davis Green, B.M., B.Ch., of Oxford University. Mr. L. E. C. Norbury was nominated as representative of the College on the Central Council for District Nursing in London for a further period of three years. Dr. D. H. Tompsett was appointed Prosecutor to the College.

Diplomas of Membership were granted to R. A. Allen, and to the candidates whose names were printed in the report of the meeting of the Royal College of Physicians of London published in the *Journal* of Nov. 4 (p. 612).

### ROYAL COLLEGE OF PHYSICIANS OF EDINBURGH

At a quarterly meeting of the College held on Nov. 7, with Dr. A. Fergus Hewat, President, in the chair, Dr. W. F. Haultain, O.B.E., M.C., was elected a Fellow.

### ROYAL COLLEGE OF PHYSICIANS OF IRELAND

At a meeting of the President and Fellows of the College held on Nov. 3 the following were admitted Licentates and Members:

Violet K. St.G. Breakey, M.B., E. de Valera, M.B., S. P. O'Toole, M.B.

### ROYAL FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW

At the annual meeting of the Faculty held on Nov. 6 the following officers were elected for the ensuing year: President, Mr. William A. Sewell, Visitor, Dr. Geoffrey B. Fleming; Honorary Treasurer, Mr. Walter W. Galbraith; Honorary Librarian, Dr. W. R. Snodgrass, Representative on the General Medical Council, Mr. Andrew Allison.

## The Services

Temp Surg Lieut D G Thompson, R.N.V.R., has been mentioned in dispatches. This name appears in a list of awards for gallantry, courage, skill, and determination in pressing home a successful attack on the Japanese naval base at Sabang.

Acting Surg Cmdr C. P. Collins, R.N., has been awarded the D.S.C., and Acting Surg Cmdr R. D. Bradshaw, Temp. Acting Surg. Lieut.-Cmdr. D. W. Burnford and G. D. Channell, and Temp Surg Lieuts R. G. G. Evans, G. C. Haywood, and D. A. Maiever, R.N.V.R., have been mentioned in dispatches for gallantry, skill, determination, and undaunted devotion to duty during the landing of Allied Forces on the coast of Normandy.

The *London Gazette* has announced the award of the M.C. to Fl. Lieut. R. N. Rycroft, R.A.F.V.R. The citation reads as follows:

Fl Lieut Rycroft was the only medical officer on one of the beaches of Normandy on "D" Day. Owing to the intense bombardment, it was not possible for him or any member of his unit to move off the beach for six hours. He worked for 48 hours tending casualties among the personnel of his unit and also aided some 75 American wounded. He was himself slightly wounded, but his efforts on behalf of others were untiring. He set an example of great courage and devotion to duty and was responsible for saving many lives.

### CASUALTIES IN THE MEDICAL SERVICES

Previously reported wounded and missing at Arnhem, now known to have been shot dead while attending the wounded.—Capt. Gareth Fitzalan Howard Drayson, R.A.M.C.

Previously reported missing at Arnhem, now known to be a prisoner of war.—Capt. C. A. Simmons, R.A.M.C.

Missing at Arnhem, believed prisoner of war.—Lieut. P. S. Allenby, R.A.M.C.

Wounded.—Lieut. J. T. S. Buchan, War Subs Capt. L. G. Harper, M.C., Temp. Major R. H. C. Manifold, Temp. Lieut.-Col. J. J. Myles, R.A.M.C.

## Letters, Notes, and Answers

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### ANY QUESTIONS?

#### Treatment of Menopausal Menorrhagia

Q.—What is the modern treatment for menopausal menorrhagia?

A.—It is not possible to give a simple answer to this question, since haemorrhage from the genital tract is so very common at the time of the menopause and may be due to such a variety of conditions.

In the case in which there is a true menorrhagia—that is, an increase of the loss of blood at normally occurring menstrual period—and provided the pelvic organs are clinically normal, both on bimanual examination and on inspection of the cervix with a speculum, it may be possible to tide the patient over the menopause, which may last for no more than a few months. Anaemia should be combated by adequate doses of iron (18 gr. exsiccated of ferrous sulphate daily). It must be remembered, however, that many diseases of the pelvic organs are especially liable to occur at this time. These include metropathia haemorrhagica and, above all, malignant disease of the uterus. Every case in which there is severe haemorrhage or where the haemorrhage is prolonged or occurs at other times than at the normal menstrual periods should be submitted to examination under anaesthesia and curettage. Any gross pathological lesion, such as carcinoma or a uterine fibroid, should receive the appropriate treatment.

Opinion is divided on the best treatment for functional uterine haemorrhage, including metropathia haemorrhagica, at the time of the menopause. Many cases are cured by curettage of the uterus, and it is often worth while observing the effect of this simple and relatively safe procedure. If bleeding still continues there are two possibilities. An artificial menopause may be induced, and radium, radon, or x rays are all used for this purpose. Alternatively, the uterus may be removed either by the abdominal route or, especially in a parous woman, by vaginal hysterectomy. The advantage of this more radical treatment is that the danger of carcinoma of the uterus is for ever dispelled, and some ovarian tissue can usually be left so that the patient does not experience the severe general symptoms of the artificially induced menopause. The risk of carcinoma of the uterus after an artificial menopause is not negligible, and as I have seen three cases of rapidly spreading carcinoma of the uterine body after radium menopause in recent years, it is believed that removal of the uterus is usually preferable provided the patient's general condition is good. The disadvantage of the more radical procedure of hysterectomy is that the period of disability is longer, and the risk of death which a patient who undergoes a major operation has to face. Hormones, while of acknowledged value for the treatment of menopausal symptoms such as flushing, are disappointing for the treatment of menopausal haemorrhage.

#### Raspberry-leaf Extract

Q.—There is a demand among pregnant women in this district for tablets of raspberry leaves, or they drink an infusion of raspberry leaves to stop pregnancy vomiting. What are the pharmacology and toxicology of these leaves? Martindale and all my reference books give no information. Are there any dangers?

A.—It has been shown by Burn and Withell (*Lancet*, 1941, 2, 1) that raspberry leaves contain an active principle which causes relaxation of uterine muscle. It is presumably because of this principle that infusions of raspberry leaves have been found to give relief in painful menstruation, where the pain may be due to contractions of the uterus attempting to drive blood clots through a too rigid cervix. Similarly, infusions of raspberry leaves taken late in pregnancy may have the effect of making dilatation of the cervix an easier process when labour begins. There is no suggestion that raspberry infusions have any effect on pregnancy vomiting. There is no evidence of the presence of toxic substances in raspberry-leaf infusions, so that the practice of taking them is devoid of risk. (See also article in *British Medical Journal* by Sir Beckwith Whitehouse, Sept. 13, 1941, p. 370; and letter by J. H. Burn, Sept. 20, 1941, p. 418.)



pituitary. When the thyroid is removed it is possible that the basophilic cells are stimulated into activity in an attempt to overcome the thyroid deficiency. Should there be an increase in both trophic hormones, the ovaries of some women may be so stimulated as to keep the blood oestrogen too high for uterine bleeding to occur. Another hypothesis regards the thyroid secretion as necessary for the healthy function of the ovaries.

The case notes given do not suggest acromegaly, but this condition could be excluded by a radiograph of the skull. Though no great reliance should be put on them, a B.M.R. and blood cholesterol done on her present intake of thyroid would help to decide whether she is having enough. These investigations can be done in "out-patients." The matter of the amenorrhoea really requires an endometrial biopsy for its elucidation, but it is not usual in this country to do this except on in-patients. As she is so difficult about investigations, it might be worth while to try giving 60 mg. of chlosterone by mouth for five days and repeating this at intervals of a month. Any treatment given without the most complete investigation is bound to be of the "hit-or-miss" variety.

#### Micturition Habits of Men and Women

**Q.**—Does the reason for the comparative, and at times embarrassing, infrequency of micturition in women lie in a greater bladder capacity? What is the incidence of nocturnal enuresis in females compared with the figures for boys and adult males?

**A.**—The larger pelvis of the female may be a factor in allowing tolerance of a full bladder, though there is no evidence that its capacity is normally greater than in the male. The relative infrequency of micturition in the female is probably chiefly due to habit, the opportunities for micturition being somewhat restricted under the conditions of so-called civilized life. Other factors of importance are that most women take a smaller volume of fluid than men do, and that they are less susceptible to cold, probably owing to more subcutaneous fat—as evidenced by their ability to wear scantier clothes, and when bathing to remain in the water longer than men—and are therefore less subject to the resulting diuresis.

Nocturnal enuresis is generally considered less common in little girls than in boys, and this will be found to be the experience of those who have charge of clinics where treatment is sought for this condition; but it should be noted that Still records 200 cases under his care as being made up of 102 boys and 98 girls. It is a relatively uncommon condition in adult males and very rare in adult females.

#### Arteriosclerosis

**Q.**—What are the present-day views about the cause of arteriosclerosis? Do dietary factors or alcohol or tobacco play a definite part? Is the condition reversible in its early stages? (atherosclerosis?) I seem to remember that Aschoff said it was. Is a normal blood pressure common with it, and are those with it and a normal b.p. more likely to develop coronary thrombosis than those with a raised b.p.?

**A.**—Arteriosclerosis is an omnibus name which includes at least three conditions.

(1) Atherosclerosis is a patchy, intimal fatty change. A superficial resemblance to this condition has been produced in rabbits on a diet containing large amounts of cholesterol—a diet so unnatural that the conclusions cannot be applied with advantage to the human disease. Another recent view is that the atheromatous lesions occur as the result of invasion of the intima from the blood stream by phagocyte cells carrying lipid. Other views stress factors such as local mechanical stress, increased wear and tear, local anoxaemia, intimal haemorrhage, chronic toxæmia, and metabolic disorders. There is good reason to believe that the intimal fatty streaking associated with severe toxæmia is reversible.

(2) Monckeberg's degeneration is a senescent change which may occur prematurely and is then most frequently associated with diabetes mellitus. The degeneration is a necrosis and calcification of the media of medium-sized arteries.

(3) Arteriosclerosis is the name applied here to the ageing change which appears in arteries as a medial fibrosis and intimal-cellular hyperplasia; and in arterioles as a diffuse hyaline thickening. It is commonly, but not always, associated with essential hypertension. When it occurs with essential hypertension the picture is modified by a difference in distribution and an increase in severity of the changes. Neither Monckeberg's degeneration nor arteriosclerosis in this narrower sense is believed to be reversible.

There is no real evidence that dietary factors, alcohol, or tobacco play a part, but anything which hastens the coming on of age may reasonably be expected to hasten arteriosclerosis. Present-day views add little to Clifford Allbutt's conclusion that "it cannot be supposed that the stealthy hours carry away no qualities of tissue, no quantities of energy." A normal blood pressure is quite common with atherosclerosis. It is uncommon with severe arteriosclerosis, because, first, the aorta becomes less elastic in severe cases and there is a corresponding increase in the pulse pressure, mainly as the result of a rise in the systolic level; and, secondly, essential hyper-

tension is frequently associated with severe arteriosclerosis. There is very little correlation between the condition of the coronary arteries and that of the peripheral vessels, and it would seem that the patient with a raised blood pressure and cardiac hypertrophy is actually more likely to develop coronary thrombosis than the patient with arteriosclerosis of the peripheral vessels and a normal blood pressure.

#### Deamination of Amino Acids

**Q.**—Can you tell me where amino acids are deaminated? The theory was that it was done by enzymes in the liver; but several writers mention that it takes place in the kidneys as well. If deamination occurs in liver only, then excess of ammonia would indicate error in liver function; but if it occurs in kidney, this would not be so, and the ammonia/urea coefficient would have a different meaning.

**A.**—Amino acids are deaminated in the liver and in the kidney. In both these organs specific deaminizing enzymes can be demonstrated. It is possible that deamination subserves different functions in these two sites. Hepatic deamination is primarily concerned with the liberation of the non-nitrogenous residue of amino acid for energy purposes and the nitrogenous fraction is converted to urea. The renal deamination is essentially concerned with the acid/base balance and the excretion of ammonium salts in the urine. The ammonia/urea coefficient is more an indication of renal than hepatic function and its interpretation is complex. Further information may be obtained from J. P. Peters and D. D. van Slyke, *Quantitative Clinical Methods*, Vol. 1.

#### Perspiring Feet

**Q.**—Do you know any cure for perspiring feet?

**A.**—There is no satisfactory cure for perspiring feet. Some relief may be obtained with dusting powder containing 3% salicylic acid (without starch for obvious reasons); or with weak formalin solution, provided no dermatitis is thereby set up. In several cases sympathectomy has been carried out, but the benefit is temporary. In the writer's view x-rays are undesirable because in obtaining an effective result the skin may be damaged. Scrupulous cleanliness is required, and if the socks after washing are soaked in saturated boric acid solution and allowed to dry some of the unpleasant effect of the excessive sweating are considerably modified.

#### Growth on Ear

**Q.**—A hard "warty" growth appeared on the tip of the ear over one year ago. Usual wart treatment applied (salicylic acid and cannabis indica); no effect. Later radium and direct-contact ray applied at different times; again no effect. Microscopical examination reveals excess fibrous tissue, epithelial cells, necrosis, no neoplasm. Site painful on pressure, showing signs of "wear and tear." What may be the exact nature, and any remedy or remedies?

**A.**—The original condition may have been a wart or a new growth with modifications in the tissues following radiotherapy. If the extent of the condition and the degree of "wear and tear" are considerable some form of surgical treatment may be required.

## LETTERS, NOTES, ETC.

#### Lung Complications after Operation

Dr. W. J. YOUNG (Cambridge) writes: May I, as an old G.P. who has himself been in Mr. Bowen's hands, be allowed feebly but sincerely to say "ditto" to him in this important matter of the proper freedom of respiration after abdominal operations (Oct. 28, p. 573). I know how grateful and comforting it felt to be able to draw a deep breath.

#### Rest-breaks for Nurses

A scheme of rest-breaks was devised some time ago for women in industry, and now there are nine rest-break houses in being for industrial women workers. Thanks to the generosity of the British War Relief Society of the United States the first rest-break house for nurses and midwives has been made available. It is situated at Buxton in Derbyshire, in what is known as the Bedford Hotel. The Minister of Health has circularized local authorities and voluntary hospitals and other employers of nurses drawing attention to this provision. The idea is to give the tired nurse or midwife a complete change and rest for a period normally of a week or a fortnight. The charges will be two guineas a week for qualified nurses and midwives, and 25s. a week for student nurses and pupil midwives. The Minister expresses the hope that governing bodies of hospitals and other authorities employing nurses will do all that is possible to release those of them who are in need of such a change. He adds that the rest-breaks must not be confused with ordinary holidays or convalescence, and that those who are ill and in need of medical and nursing care are not eligible for these particular facilities. The Council for the Provision of Rest-breaks Houses for Nurses and Midwives, which is administering this first house, has its office at 179, Windsor House, Victoria Street, S.W.1.



## "GROWTH" AND THE DIABETOGENIC ACTION OF ANTERIOR PITUITARY PREPARATIONS

## II. GROWTH AND EXPERIMENTAL INSULIN-SENSITIVE DIABETES

BY

F. G. YOUNG, D.S., PH.D.

(From the National Institute for Medical Research, London and St Thomas's Hospital Medical School)

In the previous paper in this series (Young, 1941) it was shown that, when treated daily with a dose of crude anterior pituitary extract greatly in excess of that required to produce diabetes in adult dogs, puppies respond with an increase in growth rate and fail to exhibit any symptoms of diabetes. It was then reported that when one puppy had been treated daily for nearly five months he ultimately became intensely diabetic, and then stopped growing despite continuation of pituitary treatment.

The present paper describes investigations into the relationship between growth and the diabetic condition of this and other similar animals.

## Methods

**Animals.**—Normal adult dogs, normal puppies and adult dogs which had been rendered permanently diabetic by a short period of treatment with anterior pituitary extract (Young, 1937) were used. They were weighed daily and the urine excreted over 24-hour periods collected. Their diet was meat and vitamin concentrates, and unless otherwise indicated, they were allowed to eat *ad libitum* the amount of food consumed being determined daily.

**Anterior Pituitary Extract.**—This was the Seitz-filtered crude alkaline extract of fresh ox anterior pituitary lobe previously described (Young, 1941). The concentration was such that 1 ml contained the material extracted from 2.0 mg of fresh anterior lobe tissue. It was injected subcutaneously.

**Estimations.**—Urinary sugar was determined by Benedict's method, and urinary ketones by the method of van Slyke. The nitrogen contents of food, urine, and faeces were all estimated by the Kjeldahl method. Blood sugar was determined by the method of Hagedorn and Jensen.

**Insulin Sensitivity.**—The available carbohydrate of the food consumed was computed from the formula  $G + 0.38P + 0.1F$ , where  $G$  = preformed carbohydrate,  $P$  = protein, and  $F$  = fat content of the diet. The figure for the daily intake of available carbohydrate minus the amount of glucose excreted in the corresponding 24-hour period gave the amount of carbohydrate utilized. When the diabetic condition of the animals had been controlled or almost controlled, by the daily subcutaneous administration of insulin, the available carbohydrate utilized was divided by the dosage of insulin given. In our experiments this quotient (g of available carbohydrate utilized per unit of insulin administered) has not differed significantly if two doses of ordinary insulin are given with two separate meals, or one dose of PZI administered and the animals allowed to consume the food over the whole 24-hour period. We have taken this quotient as an index of the insulin sensitivity of the diabetic animal (cf. Faltz, 1936), and although it may vary from animal to animal it is usually substantially constant from time to time in any given diabetic dog (cf. Marks and Young 1939).

## Results of Prolonged Treatment of Puppies with Diabetogenic Extract

Five puppies were treated daily with the crude extract for a period of 100 days or more and in every case they grew about twice as fast as control animals. Dogs 124 and 126 received a brief period of treatment with doses of extract when rose from 5 ml to 20 ml/day during the first four weeks of the experiment and then fell to and remained at 5 ml/day. The other animals received 5 ml/day throughout the experiment. A brief summary of the history of these animals is as follows.

**Dog 124** (male black-and-tan terrier, initial weight 2.44 kg) became diabetic after 131 days of treatment (weight 20.20 kg), but the diabetic condition disappeared shortly after pituitary treatment ceased. Details of this animal's history are given later in this paper.

**Dog 125** (male cross-spaniel, initial weight 1.73 kg) became diabetic after 239 days of treatment (weight 13.40 kg), and the diabetic condition persisted after pituitary treatment ceased.

**Dog 126** (female fox-terrier, initial weight 3.71 kg) developed an enlarged thyroid gland after about 80 days of treatment (weight 14.15 kg). The enlargement persisted until the animal was killed, without having developed diabetes, after 329 days of treatment (weight 29.10 kg).

**Dog 134** (male black-and-tan terrier, initial weight 1.87 kg) became mildly diabetic after 126 days of treatment (weight 15.40 kg), but continued to grow for a time, and then became sugar-free again for a brief period. But a return of glycosuria, with a rise to nearly 20 g/day on day 157 (weight 19.70 kg), led to cessation of growth, and the animal was killed on day 166, daily injections of extract being still in progress (weight 19.30 kg).

**Dog 137** (female black and tan terrier, initial weight 2.34 kg) died in her sleep from no obvious cause after 119 days of treatment, a diabetic condition had not then developed. When she died this animal weighed 15.80 kg at a time when her litter-mate control male weighed 8.85 kg.

Thus it will be seen that of the four dogs surviving 150 days of treatment three ultimately became diabetic the date of appearance of diabetic symptoms varying between 126 and 239 days. The puppies were all 2 to 3 months of age at the beginning of the experiment and by the time they had become responsive to the diabetogenic action of that dose of pituitary extract which initially exerted a growth-promoting and not a diabetogenic action they were 6 months of age or more—i.e., they had become dogs rather than puppies. All three animals which became diabetic ceased growing after severe diabetes had developed, but dog 126, which developed an enlarged thyroid gland early in the experiment and did not become diabetic even after pituitary treatment lasting nearly 11 months, continued to grow throughout the experiment. Although the growth subsided somewhat towards the end, at post-mortem examination the thyroid gland was found to be 10 to 20 times the size of that for a normal dog of similar weight, and it is

probable that this dog persistently suffered some degree of thyroid deficiency after the goitre had developed. It is possibly relevant that thyroidectomy diminishes somewhat the intensity of pancreatic diabetes (Dohan and Lukens, 1938), and of the diabetogenic action of anterior pituitary extract in the hypophysectomized-depancreatized toad (Houssay, Biasotti, and Rietti, 1934).

#### Histology of the Pancreatic Islets in the Long-treated Puppies

Dr. H. Hughes, of the Department of Anatomy, St. Thomas's Hospital Medical School, kindly examined histologically the pancreatic material from these animals, and his report will be published in full elsewhere. With his permission the following summary of his findings is given.

*Dog 124.*—Pancreas not grossly abnormal, though many  $\beta$  cells contained only a few specific cytoplasmic granules.

*Dog 125.*—Gross destruction of  $\beta$  cells, with some reduction in the number of  $\alpha$  cells. Vacuolation of duct epithelium marked (cf. Richardson, 1940).

*Dog 126.*—Substantial increase in the number of  $\beta$  cells, some islets consisting solely of such cells. No vacuolation of duct epithelium observed.

*Dog 134.*—Intense hydrops of  $\beta$  cells observed, with apparent increase in number of islets and total amount of islet tissue. The number of  $\alpha$  cells was possibly abnormally low.

The histological findings are in general agreement with the metabolic observations.

#### Influence on Growth of Simultaneous Treatment with Diabetogenic Pituitary Extract and Insulin

The results of the above long-term experiments clearly supported the conclusion drawn in the previous paper that "an increase in body weight . . . can be regarded as neutralizing, for a time at least, the diabetogenic influence of the anterior pituitary gland" (Young, 1941). An interesting possibility now arose with respect to the grown "puppy" that had become responsive to the diabetogenic influence of pituitary treatment, and had then ceased to grow despite continuation of the same treatment as had initially stimulated growth without precipitating diabetes. Would such an animal grow if pituitary treatment were accompanied by the administration of sufficient insulin to suppress, or at least depress, the diabetogenic effect of the pituitary extract? Experiments were therefore carried out on these lines.

*Dog 124.*—Although sugar first appeared in the urine of this animal on the 131st day of the experiment, the rate of growth under the influence of pituitary treatment alone was initially unaltered, remaining at about twice that of control animals (Fig. 1). But when the glycosuria exceeded 30 g./day growth stopped, both body weight and glycosuria then remaining approximately constant for a period

of about 2 weeks. Thereafter the rate of excretion of sugar rapidly rose to about 200 g./day, and the body weight simultaneously began to fall. Cessation of pituitary treatment on day 156 was quickly followed by disappearance of glycosuria, while the body weight remained substantially constant, though subject to some fluctuation. These results illustrate well the reciprocity between the growth-promoting and diabetogenic actions of the crude pituitary extract (Fig. 1). Subsequently, daily pituitary treatment was resumed for a short period (days 188–193), and although the body weight showed an inclination to rise in response to this stimulus, glycosuria, accompanied by an alarming ketonuria, appeared (Fig. 2). On day 210 a single injection of extract induced a slight but definite excretion of

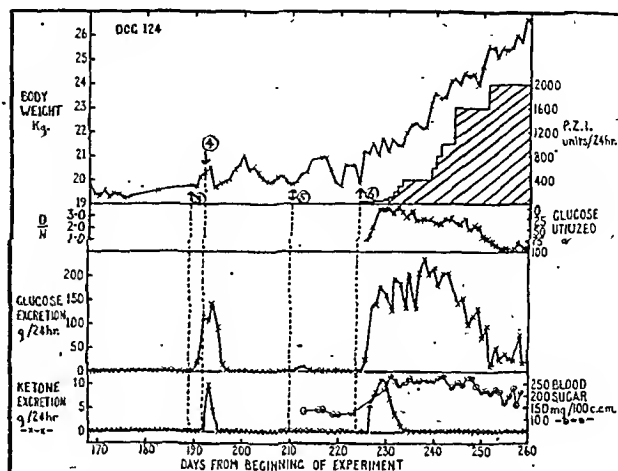


FIG. 2.—Data for dog 124 over period 24–37 weeks. The points indicated by the arrows are:—3: Daily injection of pituitary extract reinstituted. 4: Daily injection of extract stopped. 5: Single injection of extract given. 6: Daily injection of pituitary extract and insulin given from this point onwards.

sugar, which suggested that the animal was in a pre-diabetic condition. On day 224 the daily administration of 5 ml. of the pituitary extract was again begun, protamine-zinc-insulin now being simultaneously injected to control the diabetes thus induced. The initial daily dose of insulin was 20 units, but a dangerous degree of ketonuria developed, the daily excretion of ketone (equivalent acetone) rising above 10 g. despite rapid elevation of the daily dose of insulin to 120 units (Fig. 2). Ketonuria was almost entirely suppressed by raising the insulin dosage to 400 units/day, but even 2,000 units a day did not completely control the glycosuria (Fig. 2). Nevertheless, as the result of this simultaneous treatment with pituitary extract and insulin, the dog rose in body weight by nearly 7 kg. (Fig. 2 and Table I). It should be pointed out that the amount of food eaten by this animal was not controlled, and that he ate more as the result of the treatment with pituitary extract and insulin (Table I). During the last few weeks of the experiments samples of blood plasma from this dog were tested for anti-insulin activity in the rabbit (de Wesselow and Griffiths, 1936), with negative results.

*Dog 125.*—Unlike dog 124, this animal became persistently diabetic as the result of prolonged treatment (239 days) with pituitary extract alone. An experiment similar to that carried out on dog 124 was then performed on this animal, with the main difference that the food intake was controlled and fixed at 894 g. cal./day throughout the experiment and that the animal received a small daily dose of insulin before pituitary treatment began (Table I). This animal also increased in body weight as the result of simultaneous treatment with insulin and pituitary extract, the mean daily dose of insulin required to control the diabetic condition during pituitary treatment being 330 units, compared with 20 units/day for the period without simultaneous pituitary treatment. This experiment showed that the insulin sensitivity of the diabetes induced by the pituitary treatment was still low even when the food intake was restricted to a constant level, and, furthermore, that the growth-promoting action of simultaneous treatment with pituitary extract and insulin could be demonstrated under such conditions.

*Dogs 115 and 132.*—These were two adult (female and male respectively) dogs which had been rendered permanently diabetic by a short course of pituitary extract. Dog 115 had been diabetic for nearly 2½ years, and dog 132 for nearly 1½ years, when the experiments described here were carried out. Both animals were apparently adult at this time. Two experiments involving the simultaneous administration of insulin and pituitary extract were carried out with dog 132; in one of these the animal was allowed

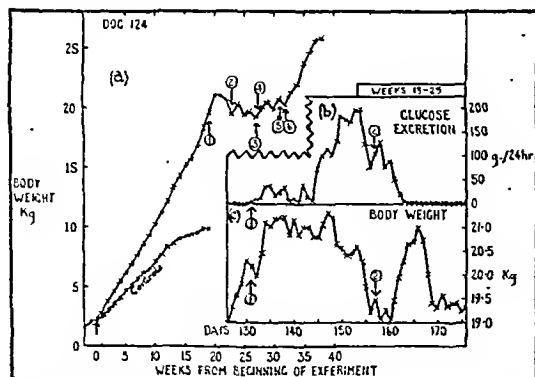


FIG. 1.—Data relating to dog 124, treated daily with diabetogenic pituitary extract. (a) Growth curve for whole experiment. The data plotted are the mean weights for periods of one week. The control curve is based on data for four untreated animals of the same breed as dog 124. (b) Sugar excretion over weeks 18–25. (c) Daily variations in weight over weeks 18–25.

The points indicated by the arrows are as follows:—1: Excretion of sugar first observed. 2: Daily injection of pituitary extract stopped. 3: Daily injection of extract resumed. 4: Daily injection of extract again stopped. 5: Single injection of extract given. 6: Daily injection of pituitary extract and insulin given from this point onwards.

to eat 50% more food during the period of simultaneous treatment with pituitary extract and insulin (Table I), while in the other the food consumed was constant throughout. In the single experiment with dog 115 the food intake was constant (Table I). The three experiments on these two animals confirmed the relevant results obtained with dogs 124 and 125—namely, that when the diabetic dogs were treated with pituitary extract and insulin simultaneously they increased in body weight, but that the amount of insulin

often grew normally without exhibiting glycosuria until they have attained a weight of 200 g. or more, after which they may begin to excrete sugar (cf. Foglia, 1944). In his classical studies on the partially depancreatized puppy Langfeldt (1920) found that an operated animal might be free from symptoms of diabetes mellitus for many months, although ultimately, when the animal had grown, the sugar tolerance might decline

TABLE I.—The Influence in the Diabetic Dog of Simultaneous Treatment with Insulin and Anterior Pituitary Extract

Dog	Condition	Control Period							Experimental Period (5 ml. of Pituitary Extract Injected Daily)						
		Duration (days)	Energy Intake (kg. cal./day)	Energy Utilized		Insulin Administered (units/day)	Available Carbohydrate Utilized (g. unit of Insulin)	Increase in Body Weight (g./kg./day)	Duration (days)	Energy Intake (kg. cal./day)	Energy Utilized		Insulin Administered (units/day)	Available Carbohydrate Utilized (g. unit of Insulin)	Increase in Body Weight (g./kg./day)
				(kg. cal./day)	(kg. cal./sq. m./day)*						(kg. cal./day)	(kg. cal./sq. m./day)*			
124	Pre-diabetic	21	1,061	1,061	1,260	0	—	0.0	26	2,157	1,680	1,798	400–2,000	0.12	8.6
132	Diabetic	12	823	740	1,248	25	2.88	0.0	7	1,235	1,059	1,690	285	0.33	21.7
125	"	7	894	894	1,440	20	5.30	0.0	11	894	894	1,365	330	0.30	5.5
132	"	16	823	762	1,291	30	2.88	1.0	8	823	670	1,105	280	0.20	7.0
115	"	12	526	465	963	8.5	5.24	-4.2	4	526	420	865	170	0.19	9.8

\* Body surface in square metres calculated from the formula  $0.112\sqrt{W}$  (Lusk, 1928), where W = body weight in kg.

required to control the diabetes during the period of pituitary treatment was very large compared with that required in the absence of pituitary treatment (Table I).

It should be mentioned that insulin sensitivity was not, in most instances, constant throughout the experimental period. It fell rapidly after 2 to 3 days of pituitary treatment, and then tended to rise again after 6 to 10 days (cf. Harst *et al.* 1940). The data given in Table I are the mean values for the stated periods.

### Discussion

**Growth during Pituitary Treatment.**—There is much evidence, direct and indirect, to support the view that pituitary-stimulated growth (together with the accompanying nitrogen retention) is dependent on an increased capacity of the pancreatic islets to secrete insulin. The intact rat does not become diabetic when treated with a pituitary extract which is highly diabetogenic in the adult dog (Young, 1938), and the amounts of islet tissue and of insulin in the pancreas of the rat are both doubled by such treatment (Richardson and Young, 1937; Marks and Young, 1940). Conversely, Marx *et al.* (1943) have recently found that treatment of partially depancreatized rats with a highly purified preparation of growth hormone increases the glycosuria of these animals. Growth is normally accompanied by nitrogen retention, and Mirsky (1939) has presented evidence that the nitrogen-retaining action of anterior pituitary extracts is mediated, at least in part, by the islets of Langerhans of the pancreas, while Gaebler and Robinson (1942) believe that whether or not an anterior pituitary preparation will cause nitrogen storage or exert a diabetogenic effect may depend on the amount of insulin that the pancreas can supply.

In the present experiments it has been shown that during the period of natural growth in the puppy the administration of a pituitary extract which is diabetogenic in the adult animal leads not to diabetes but to an acceleration of growth. When, however, the puppy has reached adulthood under continuous pituitary treatment it may become diabetic and ultimately cease to grow. The treatment of such a diabetic animal, or even of a normal adult diabetic dog, with anterior pituitary extract together with insulin leads again to an increase in body weight, although the daily dose of insulin required to restrain the diabetogenic action of the anterior pituitary extract under these conditions may be very large. For instance, dog 124 required more than 2,000 units/day of P.Z.I. to suppress the diabetogenic action of the daily subcutaneous injection of 5 ml. of the pituitary extract, a dose of extract which during the first 20 weeks of the experiment induced growth uncomplicated by diabetes. It would be unsafe to deduce that during the period of pituitary-stimulated growth the pancreas of the puppy was secreting each day an amount of insulin equivalent in effect to the daily subcutaneous injection of 2,000 units of P.Z.I. It is common experience that rats partially depancreatized at an early age

and a progressive and ultimately fatal diabetes become manifest. The maintenance of normal growth may require less insulin than might otherwise be expected. Nevertheless it seems probable on the evidence available, that during the period of pituitary-stimulated growth the pancreatic islets of our puppies were secreting more insulin than would have been required for normal growth in the absence of the extra pituitary stimulus. Certainly once the endogenous insulin supply of our animals proved to be insufficient for further growth the amount of exogenous insulin required for the maintenance of the growth-promoting action of the anterior-pituitary extract was large (Table I). But there is no evidence that at the point when insufficiency of the endogenous insulin supply became manifest the insulin requirement for the control of carbohydrate metabolism remained unchanged; indeed, the requirement may have risen substantially.

It has been assumed in the present paper that the increase in body weight which occurred under the influence of pituitary extract and insulin was indeed representative of true growth. A study of the nitrogen retention during the period of alleged growth and of the composition of the tissues of the enlarged animal will be reported in detail elsewhere, but it may here be stated that the increase in body weight represents, to a large degree, a rise in the amount of protein-containing tissue in the animal (Young, 1945). These results serve to emphasize once again the possible significance with respect to clinical diabetes mellitus of the relationship between the growth-stimulating and diabetogenic actions of anterior pituitary secretions.

TABLE II.—Insulin Sensitivity in Different Types of Insulin-controlled Experimental Diabetes in the Dog

Condition	No. of Animals	No. of Observations*	Mean Values			
			Maximum	Minimum	Mean	Standard Error of Mean
Diabetes following pancreatectomy	8	20	6.30	1.79	3.73	0.277
Persistent pituitary diabetes	5	13	5.30	1.71	2.60	0.258
Persistent pituitary diabetes treated with pituitary extract and insulin	4	5	0.33	0.12	0.23	0.038

\* Each observation is the mean value for a series of daily estimations, over periods of 1 to 4 weeks, at a time when the diabetic condition was under control, or nearly under control, as the result of the administration of insulin.

**Insulin-insensitive Diabetes.**—The diabetic condition exhibited by our pre-diabetic or pituitary-diabetic animals which are treated daily with diabetogenic anterior pituitary extract is clearly of an insulin-insensitive type. In Table II is given a

summary of the data for insulin sensitivity (grammes of available carbohydrate utilized per unit of insulin administered) for the three types of experimental diabetes we have studied. It will be seen that the previously claimed difference in insulin requirement between the depancreatized and the pituitary-diabetic dog (Marks and Young, 1939) is endorsed, and the very low insulin sensitivity of the diabetic animals, treated with both pituitary extract and insulin, emphasized. Statistical analysis shows that the differences between the insulin sensitivities of the three groups are all significant.

For many years Falta and his pupils have emphasized the differences in insulin sensitivity that are encountered in clinical diabetes mellitus. Falta (1936) divides clinical diabetes into three main classes according to insulin sensitivity: those which are insulin-sensitive and retain 2-3 g. of available carbohydrate for each unit of administered insulin; those of the middle class of insulin sensitivity, who retain 1-2 g./unit; and those whom Falta describes as insulin-resistant and who retain only about 0.1 g. of carbohydrate/unit of insulin injected. The insulin sensitivity of the insulin-resistant class of Falta agrees very well with that of our diabetic dogs treated with both pituitary extract and insulin. Dog 124, which required daily more than 80 units/kg. of insulin for (incomplete) control of the diabetic condition (i.e., 5,600 units for a 70-kg. man), appeared to be at least as insensitive to the action of insulin as the human diabetic usually classed as "insulin-resistant." It is therefore of interest that no "anti-insulin" activity of the plasma of this animal was demonstrable in rabbits, although some well-authenticated instances of a "de Wesselow-Griffiths" effect of blood plasma in human insulin-insensitive diabetes have been recorded (Marble, Fernald, and Smith, 1940; Rushton, 1940). But the fact that dog 124 was receiving such large doses of insulin may have complicated the results of this type of test.

Recently Best *et al.* (1942) have examined the effect of simultaneously administering P.Z.I. and diabetogenic pituitary extract to normal dogs. Their dose of diabetogenic pituitary extract was probably approximately equivalent to ours, and they found that an average of about 40 units of P.Z.I. was required daily to suppress almost completely the diabetogenic action of the anterior pituitary extract. Calculation on the basis of their published data shows that the carbohydrate equivalent of the exogenous insulin in their experiments was  $2.49 \pm 0.41$  g./unit—i.e., the apparent insulin sensitivity of their animals was similar to that for dogs with ordinary pituitary diabetes. This suggests that a large increase in endogenous insulin secretion may occur in the normal dog treated with diabetogenic anterior pituitary extract, and rough calculation indicates that for a 10-kg. dog it may be equivalent to the effect of the daily subcutaneous injection of about 300 units of P.Z.I. As this is probably 10 to 20 times the normal rate of insulin secretion by the pancreas it is perhaps not surprising that degeneration of the pancreatic islets usually follows treatment with diabetogenic pituitary extract in the dog.

### Summary

Daily injection of diabetogenic anterior pituitary extract into puppies induced an acceleration of growth uncomplicated by diabetes, which was maintained during treatment lasting four months or more. At varying times after this period three out of four animals became diabetic, and then ceased to grow despite continuation of pituitary treatment. The animal which did not become diabetic had developed an enlarged thyroid gland early in the experiment; this dog continued to grow in response to pituitary treatment lasting nearly 11 months.

Two of the grown puppies in which the growth-stimulating action of the pituitary extract had given way to a diabetogenic one were induced to resume growth when the administration of the pituitary extract was accompanied by the injection of large doses of insulin. Two adult pituitary-diabetic dogs likewise responded to similar treatment by a rise in body weight.

When diabetic or pre-diabetic adult dogs were treated daily with diabetogenic pituitary extract an extremely insulin-insensitive diabetic condition developed. One dog required as much as 80 units/kg./day of body weight for (incomplete) control of this diabetes.

The possible significance with respect to clinical diabetes mellitus of the relationship between the growth-stimulating and diabetogenic actions of anterior pituitary secretions is once again emphasized.

I am indebted to the Medical Research Council for a grant in aid of that part of the work which was carried out at St. Thomas's Hospital Medical School, and to Dr. J. W. Trevan, Director of the Wellcome Physiological Research Laboratories, for a gift of insulin.

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## THE ACTION OF PENICILLIN ON LEPTOSPIRA AND ON LEPTOSPIRAL INFECTIONS IN GUINEA-PIGS

BY

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AND

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The experiments described below were designed to test whether penicillin inhibits the growth of leptospira in culture, and if so, whether the drug would cure leptospiral infections in guinea-pigs.

### In Vitro

#### Material and Method

Nine strains of *Leptospira icterohaemorrhagiae* were used. Six had been obtained from human infections (Jackson, Hick Wijnberg, K.L., Barber, Rachmat); two had been isolated from rats (wild rat and W.P.R.L.); and one from a dog (L.S.). The strain of *L. canicola* maintained in the National Collection of Type Cultures was tested also. Some of these strains are virulent for guinea-pigs, and others are completely non-virulent. For the test a solution of penicillin was prepared containing 200 Oxford units per ml.; and serial fivefold dilutions were made from it. 0.25-ml. volumes of these dilutions were added to 3 ml. of Fletcher's broth. After mixing, the medium was seeded with 0.25 ml. of a heavy culture of leptospira. Final concentrations of penicillin were thus 50, 10, 2, etc., down to 0.016 Oxford unit in 3.5 ml.

In some later experiments the two highest concentrations were omitted. Most of the tests were carried out with calcium penicillin; in a few parallel experiments crude filtrate of the growth of *Penicillium notatum* in a protein-free medium (Alston, 1944) was used with similar results.

### Results

The growth of all these strains was prevented by penicillin in concentrations of 0.4 o.u. and upwards in 3.5 ml. (0.11 o.u. per ml.). With lower concentrations variation of sensitivity to the drug was apparent. Since leptospira multiply more slowly than such bacteria as staphylococci, inhibition of growth compared with controls first becomes noticeable only after about three days' incubation. It was noted that cultures which were inhibited after three days showed no further sign of growth when examined at intervals up to 14 days. Penicillin thus either kills leptospira or maintains its activity against them for one to two weeks at 32° C. It was also found that penicillin cultures which appeared to be multiplying during the first three days might show marked diminution in numbers when examined at the end of a week.

This possible lethal, as opposed to inhibitory, effect was examined in another experiment. A well-grown 7-day mass

culture of leptospira was distributed in 9 ml amounts in test-tubes, and 0.5 ml of serial dilutions of penicillin diminishing by 50%, were added. The final series contained 240, 120, down to 0.50 u in 10 ml. The mixtures and controls were incubated at 24° C and were examined at intervals. As before, counts were made of the number of living leptospira in standard microscope fields.

It was found that concentrations of less than 1.50 u of penicillin in 10 ml had no apparent effect on the leptospira. After 12 days' incubation the number of living leptospira was greatly diminished in higher concentrations but the organisms were not entirely eliminated after three weeks' contact with penicillin. No abnormal morphological forms were noted such as occur when staphylococci are acted on by penicillin.

This lethal effect of penicillin on leptospira associated with lysis and destruction, is similar to the action on staphylococci described by Rantz and Kirby (1944).

#### In Vivo

A series of animal experiments was planned to test (1) whether infection of guinea-pigs by virulent leptospira could be prevented by the simultaneous administration of penicillin (2) whether the course of the established disease could be affected by giving the drug once symptoms (fever or jaundice) had become apparent. Before the experiments were carried out Heilmann and Herrell (1944) reported that large doses of penicillin, administered at frequent intervals beginning shortly after infection, will protect guinea pigs against virulent leptospira. The aim of this work differed from our own so preliminary experiments were undertaken on the lines originally intended.

It was found, however that guinea pigs inoculated intraperitoneally with virulent *L. icterohaemorrhagiae* and given 60 units of calcium penicillin (also intraperitoneally) immediately thereafter and again 48 hours later died in about the same time as untreated controls. This dosage corresponds to 140,000 units for a man of 70 kg. It was also found that penicillin had no therapeutic effect when treatment was begun after the onset of symptoms—i.e. on the sixth or seventh day after infection. In these experiments guinea pigs received in some cases, doses corresponding to 140,000 units for a man of 70 kg. In further experiments the administration of penicillin was started two to four days before symptoms were expected to appear. The results were irregular and no definite conclusions could be drawn from them.

We finally carried out one experiment in an attempt to confirm the findings of Heilmann and Herrell. Fifteen guinea pigs were inoculated intraperitoneally with a virulent strain of *L. icterohaemorrhagiae* and treatment with sodium penicillin suspended in an inert oil (arachis oil) was begun 18 hours later in 7 of the animals. Each received 200 u at 10 a.m. and 5 p.m. and 400 units at 10 p.m. The dose was divided—4/5 was injected subcutaneously and 1/5 intraperitoneally. This treatment was continued for 13 days and on the two following days 400 units were given at 10 a.m. and 5 p.m. Each guinea pig thus received 12,000 units corresponding to more than 1,000,000 units for a man of 70 kg.

The result was that 4 of 8 control guinea pigs and 6 of the 7 treated animals survived. The seventh treated animal showed no signs of leptospiral infection at necropsy, and its tissues were not infective when inoculated into other guinea pigs. So far as it goes therefore, this experiment supports the view that penicillin, if given early enough will reduce the death rate of infected guinea pigs. In treatment of human beings the use of continuous therapy is a factor which could be expected to increase greatly the efficiency of the treatment and to allow it to be effective in later stages of the infection by maintaining a steady concentration of the drug in the blood stream. In other ways the experience in guinea pigs is valuable because human beings and guinea pigs are very similar to one another in susceptibility to infection by virulent strains of *L. icterohaemorrhagiae* as well as in morbid anatomy of the disease produced.

#### Serological Tests

It seemed of interest to test the agglutinating titre of the serum, and the resistance to reinfection of those guinea pigs which had recovered after penicillin treatment, compared with

the control animals which had withstood infection. It might be that the treated animals would show less immunity if the drug had reduced their contact with leptospiral antigen. No such tendency was apparent. The sera of 13 animals which had recovered in various experiments with penicillin treatment, agglutinated *L. icterohaemorrhagiae* in dilutions of 1 in 30 or 1 in 100. Of 7 control animals, the sera of six gave similar titres while the seventh serum did not agglutinate at all. These agglutination levels are very low as compared with those of convalescent human cases but we have found previously that guinea pigs do not produce high titres after either infection or inoculation with leptospiral vaccines. Ten of the animals treated with penicillin were again inoculated with virulent leptospira. None of them showed any sign of infection while all of four fresh control guinea pigs died with typical symptoms.

These tests show that penicillin does not prevent the normal development of immunity in this infection.

#### Toxicity of Penicillin to Guinea-pigs

Heilmann and Herrell (1944) found, in confirmation of Hamre *et al* (1943) that penicillin in large doses is toxic to normal guinea pigs. The former writers report that young guinea pigs receiving from 1,000 to 5,000 units of penicillin daily in divided doses frequently died after several days. Sodium and calcium penicillins from four different sources all produced this effect. Death was preceded by apathy, anorexia, loss of weight and other signs but the only obviously abnormal post-mortem finding was dilatation of capillaries throughout the tissues.

Heilmann and Herrell believed that some of the infected guinea pigs which died without the usual signs of leptospirosis were killed by penicillin. This may be so, but in our experience especially when the course of the disease is unusually rapid guinea pigs sometimes die of leptospiral infection without showing either jaundice or haemorrhages, and the infection can be transmitted to other animals.

Rake *et al* (1944) reached the conclusion that the rapid death of guinea pigs after large doses of calcium penicillin was attributable to calcium. Solutions of calcium chloride in equivalent amounts were even more toxic. They also found that the toxic effect of sodium penicillin was greater in guinea pigs than in rabbits or mice. This however, was observed only after multiple injections and death was delayed up to six days. The position is not yet clear because Heilmann and Herrell used calcium penicillin and the toxic effects which they attribute to that drug were of the same kind as those which Rake *et al* observed with the sodium salt.

The toxicity of the penicillin salt used in the last of our experiments was controlled as follows. Six normal guinea pigs also received 800 units of sodium penicillin daily for 15 days. No change in weight, appetite or behaviour was seen. Three weeks later the same animals were given 1,100 units of sodium penicillin twice daily for three and a half days. Again no ill effects were observed. This total dose of almost 20,000 units per animal would correspond to about 5 million units for a man of 70 kg.

#### Summary

Nine strains of *Leptospira icterohaemorrhagiae* (the causative organism of Weil's disease) and one of *L. canicola* (the cause of another form of leptospiral infection of men and dogs) were found sensitive to penicillin, which has a lethal as well as an inhibitory effect on multiplication.

Penicillin has a curative action on leptospiral infections in guinea pigs provided administration is begun very soon after infection.

The curative action of penicillin does not prevent the development in guinea pigs of serum antibodies or resistance to reinfection.

Toxic action of penicillin in guinea pigs which has been reported by others, was looked for but was not found.

We are indebted to our technicians Mr E. N. Martin and Mr R. J. Reed, for careful and skilful help in these experiments.

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A CASE OF WEIL'S DISEASE TREATED  
WITH PENICILLIN

BY

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The following report of a case of Weil's disease which seemed to respond to treatment with penicillin may be of interest

## Case History

On the first day of the illness the patient, an Italian male aged 26, complained of feeling hot and of a pain in the right side of the chest. On the second day a slight cough developed, and he was admitted to hospital on the third day. Examination revealed the following: T 102°, P 112, skin hot and dry; a few fine crepitations at both bases, other systems normal. Radiographs showed some opacity at the left base. A tentative diagnosis of pneumonia was made and therapy with sulphamezathine begun.

On the fifth day of the illness the patient's condition was not improved, the fever continued, and the radiologist reported that the films already taken suggested atypical pneumonia. In view of this the sulphamezathine was discontinued. On the sixth day the patient became slightly jaundiced, pale stools and bile pigments in the urine were also reported. The liver was slightly enlarged and tender. Conjunctivitis was present. An interpreter elicited that the patient had worked in ditches and canals. A low-fat high-protein

some time. It can, however, be regarded as at least very possible that the penicillin was responsible for the destruction of the organisms in this instance, and, if this be assumed, the following conclusions may be drawn from the case:

1. In view of the small dosage at relatively long intervals it would appear that the organism can be eliminated rapidly and easily, being relatively susceptible, as suggested by experimental work in animals.

2. That the diagnosis must be established at the earliest possible moment, and penicillin administered. From a study of this case it will be seen that recovery had begun before the organisms could be found in the urine. In this connexion the great value of an early increased white cell count with relative and absolute granulocytosis is again deserving of emphasis. It may well prove that in view of the difficulty of establishing the diagnosis completely until relatively late in the disease—save for those cases in which the organisms may be demonstrated in the blood in the early stage by dark-ground illumination (though unfortunately this is not always successful)—a case suspected of being Weil's disease, with a typical white cell count, should have penicillin immediately when ample supplies become available.

3. The penicillin did not appear to hasten recovery in any way, the jaundice diminishing no more rapidly, and remaining until the 42nd day. In a case in which recovery is already taking place spontaneously this might be anticipated, since

Day of illness	White Cell Count	Icteric Index Units	Agglutination of Formalized Culture of <i>L. icterohaemorrhagiae</i> (Human Strain) with Patient's Serum	Presence of <i>Leptospira</i> in Alkaline Urine of Patient	Penicillin Administration
6th	Total 14 000 neutrophils 13 440 (96%) lymphocytes 560 (4%)				
7th		55		None seen	
10th	Total 14 000 neutrophils 76%, lymphocytes 19% eosinophils 3%	110			
11th			$\frac{1}{10} \pm \frac{1}{30}$ trace		
16th	Total 12 000 neutrophils 78% lymphocytes 22%		$\frac{1}{10} + \frac{1}{30} + \frac{1}{100} \pm \frac{1}{300}$ trace		
17th					
18th			$\frac{1}{10} + \frac{1}{30} + \frac{1}{100} + \frac{1}{300} + \frac{1}{1000} + \frac{1}{3000}$ trace		
19th	Total 10 000 neutrophils 64% lymphocytes 35%	36			
22nd					
23rd		24		Numerous organisms of <i>L. icterohaemorrhagiae</i> seen	
28th				Scanty organisms	
29th				<i>Leptospira</i> still present	
30th					Penicillin 15,000 units every 4 hours started at 6 a.m.
1st				Very scanty organisms seen	Penicillin continued
2nd				No organisms seen	
3rd					Penicillin discontinued
35th	Total 8 000	15			Total given, 315,000 units
41st					

high carbohydrate diet was ordered, with additional vitamins and a saline purge each morning. Precautionary measures were instituted.

On the seventh day the jaundice was more pronounced and the temperature still raised (100.2° F), the patient was rather drowsy, and for the first time his condition gave rise to some anxiety. By the ninth day his general condition had begun to improve, and by the 20th day the temperature was normal, with the jaundice markedly improved. At no time during the illness did the patient show any haemorrhagic tendency.

The laboratory investigations together with details of penicillin administration are set out chronologically in the accompanying Table.

## Conclusions

Unfortunately this case cannot be regarded as proof that the penicillin was responsible for the disappearance of the organisms from the urine, since they tend to disappear spontaneously in the natural course of the disease, though they may remain present in the urine for as long as 40 days. Indeed, to offer complete proof that penicillin will destroy the *Leptospira* in vivo a series of cases will have to be created, and in view of the comparative rarity of the disease this may take

obviously the damaged liver will take some time to resolve. It suggests, however, that, if spontaneous recovery is already occurring, penicillin may not benefit the course of the disease, its value at this stage being to render the patient free from the risk of infecting others earlier than might otherwise be the case, and in preventing a relapse—sometimes spoken of as "after-fever"—which is said to occur in from 25 to 40% of cases during the convalescent period.

The Bristol Hospitals Fund has issued its fifth annual report. In 1941 the hospitals decided to use the Fund as a collecting agency for all employers' contributions formerly sent to the individual hospitals direct. The Fund's total revenue in 1943 was £56,411, an increase of £3,017 over 1942. In an epilogue the report states: "The failure of the Government in the White Paper on a National Health Service published on Feb. 17, 1944, and its failure in the subsequent Parliamentary debates, to give any certain indication of the retention of the contributory scheme organization in the proposed new National Health Service, or to allay the fears of the voluntary hospitals as to their future chances of survival in a vast bureaucratic structure, is disquieting and calls for deep and earnest thought."



or the finding of amoebae in the stools will suggest amoebiasis, but it should be remembered that carcinoma and amoeboma may coexist in the colon just as in the rectum.

In the early stages of the tumour formation the whole mass will melt away miraculously after emetine treatment.

A soldier had a history of dysentery 13 months ago; now pain in the anal region and retention of urine. Sigmoidoscopy showed a firm irregular tumour on the posterior rectal wall covered with mucus. Examination of the stools and mucus showed no amoebae or cysts. After a course of injections of emetine the tumour totally disappeared within one month.

When the amoebic lesion has been present for a long period, however, the superadded result of chronic secondary infection of the colon may prevent the mass disintegrating after emetine treatment. In such cases excision of the tumour may be necessary not only to treat the ill-health, recurrent diarrhoea, and obstructive symptoms, but also because it is impossible to exclude carcinoma.

"Squad. Ldr. X., aged 44, had diarrhoea in Mombasa 17 months ago and recurrent attacks since. During the past 6 months he had increasing and recurrent abdominal colic with pain in the right iliac fossa, anorexia, loss of weight, and slight fever. A large tender mass was palpable in the right iliac fossa; w.b.c. 17,000; sigmoidoscopy—amoebic ulcers in rectum; active *E. histolytica* in stools. Given two courses of emetine and one of carbarsone; after each course the mass was much smaller, the patient improved in health, became apyrexial, and was allowed up and about. (Seen by Gp. Capt. C. W. Flemming.) Barium meal and enema showed a large tumour bulging into the caecum and pushing it upwards. The ileo-caecal junction could not be demonstrated with certainty, though it was thought to be above the main mass. The intraluminal projection was quite smooth. Diagnosis: ? amoeboma—unlike a carcinoma. Two months later the mass again became larger and the patient was not so well; he was transferred to the M.E. Rectal Centre. The tumour was thought to be an amoeboma, which as a result of prolonged secondary infection did not subside completely with emetine. Pre-operative blood transfusion, sulphasuxidine, and a few grains of emetine were given.

**Operation**—A huge inflamed mass was present in the caecum, attached to the anterior and posterior abdominal walls; many adherent coils of small intestine were separated; one loop formed a fistula with the mass (this was where the x rays showed the ileo-caecal junction); mobilized with difficulty. Ileo-caecal resection—lateral ileo-colic anastomosis—sulphathiazole powder locally—drainage of retroperitoneal tissues—abdomen closed. Emetine 8 gr. was given after operation. Uneventful recovery; secondary anaemia treated with blood transfusion and iron.

Even after its removal and macroscopic examination the tumour was thought to be an amoeboma until examined microscopically.

**Pathological Report** (Capt. A. W. Morgan, R.A.M.C.)—"Specimen consists of 8 in. of terminal ileum, a caecal tumour, and the ascending colon. The terminal ileum disappears into the tumour and there is a fistula between the ileum and the mass. On section the tumour is pale white, mottled with areas of fat, haemorrhage, and necrosis. The last 2 in. or so of ileum winds through its substance. The tumour has pushed upwards into the lumen of the ascending colon, terminating in a valvular opening (? site of ileo-caecal valve)."

**Histology**—Adenocarcinoma, Grade II, with mucoid degeneration. One gland examined was not invaded. No evidence of amoebiasis.

The marked decrease in size of this tumour following the use of emetine, the finding of amoebae in the stools, and amoebic ulceration in the rectum, make it probable that this patient originally had both a carcinoma and an amoeboma, and the latter disease had reacted to the emetine.

#### Amoebic Typhlitis and Appendicitis

The differential diagnosis between amoebic typhlitis, acute appendicitis, and appendix abscess often presents difficulty, since the most important diagnostic fact—the typical history of acute appendicitis—may not be forthcoming, and, further, obstruction to the lumen of the appendix may result from amoebic infection.

Operation is undesirable in the presence of uncomplicated active amoebiasis of the caecum and appendix: a high mortality rate was reported in the Chicago epidemic. Surgical treatment, however, must not be delayed when the typical history, symptoms, and signs of acute "obstructive" appendicitis are encountered within the first 24 to 36 hours, whether or not the patient has amoebic dysentery. If at operation both the caecal wall and the appendix are found to be uniformly inflamed

and the case is likely to be dysenteric, it is best not to remove the appendix unless it is obstructed and/or its blood supply is in jeopardy. Further, when there is typhlitis only, the normal appendix should be left. When appendicectomy is necessary in the presence of inflammation of the caecal wall at the appendix base, sulphathiazole or sulphanilamide powder should be sprinkled locally and adequate drainage instituted. Immediate post-operative specific treatment of amoebiasis will prevent local complications, such as skin ulceration or persistent faecal fistula.

When a mass is palpable in the right iliac fossa, though it may be impossible to distinguish between an appendix abscess and amoebiasis, its treatment, however, is the same—namely observation of the patient and of the mass and a strict Ochsner-Sherren regimen. If indications for surgical intervention arise treatment should be limited to simple drainage with minimal disturbance of the inflamed mass.

When amoebic infection is proved or suspected emetine should be administered. It may be assumed that a mass resolving spontaneously without emetine treatment is undoubtedly not due to amoebiasis.

#### Amoebic Ulceration of Anal Skin: Amoebic Fissure in An

Painful fissures are sometimes due to amoebiasis of the skin. They are usually multiple, but may be single. The edge of the ulcer is sharply defined and irregular, with undermining and sometimes slight heaping-up. The base has a dirty yellow unhealthy appearance, with no surrounding induration and little inflammatory reaction, somewhat resembling synergic gangrene of the skin. Cutaneous amoebic ulceration vanishes in a dramatic way soon after the administration of emetine. One case undergoing treatment with carbarsone developed a typical amoebic anal ulcer: emetine produced an immediate improvement.

#### Operations on the Anal Canal and Rectum in the Presence of Amoebic and Bacillary Infection

The danger of operating upon haemorrhoids, fissure, etc. in a patient with recurrent diarrhoea soon became known. Painful, unhealthy, non-healing ulceration of the anal canal and rectum was seen in cases referred to the Centre for opinion. The cases had active bacillary or amoebic infection, or, when no specific cause could be found, sigmoidoscopy always revealed proctitis of varying degrees. One officer had been in a hospital for 2½ months with ulceration of the anus following haemorrhoidectomy performed soon after an attack of diarrhoea. The appropriate medical treatment and simple local irrigations soon produced a cure.

An instruction was circulated pointing out these dangers, and sigmoidoscopy was carried out before every rectal operation. It is unwise to do even a minor rectal operation within 6 weeks of an attack of diarrhoea, and dysenteric infection must always be excluded before operation.

The accompanying photomicrographs are reproduced by the courtesy of Dr. Habibi, pathologist, the Faculty of Medicine, Iraq.

## AN INVESTIGATION INTO THE USE OF SULPHASUXIDINE IN OPERATIONS ON THE RECTUM AND COLON

BY

D. H. MACKENZIE, B.A.

It has been shown by previous workers that administration of succinyl sulphathiazole (sulphasuxidine) causes profound change in the stools of the recipient, the change most relevant to the present discussion being the decrease in the number of Gram-negative organisms. Prior to the work described here investigations were carried out to study the action upon the intestinal organisms of sulphasuxidine, sulphaguanidine, and sulphathiazole. The technique used was that of Holt and Wright (*J. Path. Bact.*, 1942, 54, 248). 0.5 g. of faeces was thoroughly mixed with 4.5 c.c.m. of nutrient broth, and serial

dilutions were made up to  $10^{-4}$ . One standard loopful of each dilution was plated on to selective media—MacConkey and desoxycholate citrate agar. Colony counts were made after 24 hours at  $37^{\circ}\text{C}$ . Films were examined wet and by Gram's stain.

### The Investigation

Thirty cases were examined; eight of these received sulphasuxidine—three 20 g. per day and five 10 g. per day—and eight received 10 g. of sulphaguanidine per day. The remaining fourteen cases received sulphathiazole—six having 2.5 g. and eight having 5 g. per day. It is not intended to record the full colony counts of these earlier experiments or to include clinical details of the diseases and their courses; but an account of the results, which were remarkably consistent, is given.

Colony counts and studies of films showed in cases receiving 20 g. per day of sulphasuxidine, a universal decrease in Gram-negative organisms. Although the results varied slightly from person to person, there were many occasions when no coliform organisms were grown from the  $10^{-2}$  dilution, and sometimes they disappeared from the  $10^{-1}$  dilution. In cases receiving 10 g. per day the "sterilization" was less consistent and more time was required to effect an adequate reduction in Gram-negative organisms. A dosage of 5 g. per day appears to be ineffective (see Appendix).

With the exception of the abolition of pathogenic non-lactose fermenters, the action of sulphaguanidine did not emulate that of sulphasuxidine upon the intestinal flora. Even after five or six days' treatment there was frequently a confluent growth of coliform organisms when the  $10^{-1}$ ,  $10^{-2}$ , and, sometimes, the  $10^{-3}$  dilutions were plated out.

The use of sulphathiazole as a pre-operative treatment has certain obvious disadvantages. It is more likely to cause toxic symptoms than either sulphasuxidine or sulphaguanidine, and is far more likely to give rise to renal complications. However, even with the small doses given in these experiments, there was a greater effect than that obtained with sulphaguanidine. There was a decline in Gram-negative organisms, and with a dose of 5 g. per day it was common for *B. coli* colonies from the  $10^{-2}$  dilution to number less than 20.

No toxic symptoms or complications were observed in any of the cases in this series. Blood concentrations remained low, particularly with sulphasuxidine, figures about 1 mg. per 100 c.c.m. being common. Figures for sulphaguanidine seldom exceeded 3 mg. per 100 c.c.m., while the smallness of the doses of sulphathiazole kept the absorption low.

Estimations of sulphonamide concentrations in the faeces were carried out in many cases. This is an unsatisfactory estimation, however, because it is difficult to ensure that all the drug has been extracted from the faeces, and concentrations will vary according to the consistency of the stools and the number passed per day.

With sulphasuxidine there is an added difficulty owing to the fact that the drug is being continually broken down into free sulphathiazole. The percentage of this drug which is excreted as sulphathiazole is small, and unless stools are passed very infrequently the breakdown is unlikely to exceed 5%, and is often considerably smaller. With sulphaguanidine the concentration usually lies between 500 and 2,000 mg., while with small doses of sulphathiazole the concentration is usually below 100 mg. per 100 c.c.m. These are only approximate figures, and exceptions are common.

The accompanying Appendix demonstrates the effect of various doses of sulphasuxidine. The drug appeared to exercise no effect on the growth of enterococci. Except where otherwise stated, colony counts were made from the  $10^{-2}$  dilution only, by the technique described previously. MacConkey's medium being used in all cases.

### Summary

Sulphasuxidine is capable of causing a profound decrease in the Gram-negative organisms of the intestine, as shown by colony counts and by the study of films. It will be noted that a direct swab from the carcinoma showed no Gram-negative organisms.

A dosage of 20 g. per day for four days before operation appears suitable.

The same effect cannot be produced with sulphaguanidine, but can, to some extent, be obtained with sulphathiazole.

### APPENDIX

Case	Dose of Sulphasuxidine per Day	Day	Colonies of <i>B. coli</i>	Nature of Specimen
1. G.S.W. colon Closure of col. stomy	10 g.	Before treatment 1st 2nd 3rd 4th 5th	Confluent growth " Semi-confluent " " " " " "	
2. Carcinoma sigmoid colon Resection	10 g.	Before treatment 1st 2nd 3rd 4th	Confluent growth " Semi-confluent " 3 colonies 39 " 15 "	
3. Recurrent ileitis illeo-caecal resection	10 g.	Before treatment 1st 2nd 3rd 4th	Semi-confluent " " " 77 colonies 5 "	
4. G.S.W. rectum Closure of colostomy	10 g.	Before treatment 1st 2nd 3rd 4th	Semi-confluent " 50 colonies 60 " 60 " 11 "	
5. Adenomatosis colon and carcinoma rectum Combined excision and total colectomy, terminal ileostomy	20 g.	Before treatment 1st: 8 a.m. " 9 a.m. " 3 p.m. " 8 p.m. 2nd: 1 3rd 4th	Semi-confluent " 22 colonies 10 " 3 " 7 " 2 " " " " "	Swab from growth Direct plating from ileostomy Scrape from dressing
6. Carcinoma rectum: Combined excision	20 g.	Before treatment 1st 2nd 3rd 4th	Semi-confluent " 69 colonies 25 " " "	
7. Carcinoma rectum: Combined excision	20 g.	Before treatment 1st 2nd 3rd 4th 5th	Semi-confluent " 3 colonies " " " " " " " "	Swab from growth Swab from colostomy
8. Trial	5 g.	Before treatment 1st 2nd 3rd 4th	Confluent " " " " " " " "	
9. Trial	5 g.	Before treatment 1st 2nd 3rd 4th	Semi-confluent " " " " " " " "	
10. Trial	5 g.	Before treatment 1st 2nd 3rd 4th	Confluent " " " " " " " "	
11. Trial	5 g.	Before treatment 1st 2nd 3rd 4th	Semi-confluent " " " " " " " "	

This investigation was prompted by Brig. C. Naunton Morgan, with whose help and co-operation this work was done. Some of the earlier experiments were carried out by Sergt. J. Pilling, R.A.M.C., and Sergt. L. C. Wilson, R.A.M.C. All the laboratory work was done under the direction of Lieut.-Col. R. J. V. Pulvernt, R.A.M.C., A.D.P., M.E.F.

I wish to thank Col. H. D. F. Brand, late R.A.M.C., commanding (Scottish) General Hospital, and Col. J. S. K. Boyd, late R.A.M.C., D.D.P., M.E.F., under whose general direction the investigations were made.

A. O. John (*Tubercle*, 1944, 25, 69) records a case of tuberculous endometritis in a woman aged 35, in whom a symptomless pleural effusion caused a suspicion of tuberculosis. Irregular menstrual bleeding followed by curettage led to the tubercle bacillus being discovered in the endometrium. Death took place from tuberculous meningitis.

## A SMALLPOX EPIDEMIC

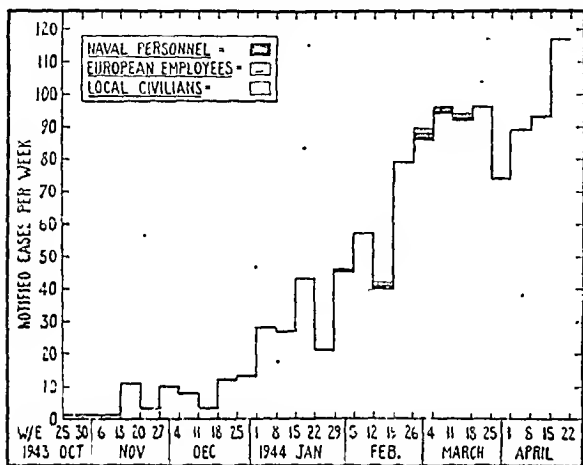
BY

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An epidemic of smallpox occurring among naval personnel and (European) civilian Admiralty employees is here described. The greater severity and length of the primary epidemic occurring among the native population are demonstrated, and its progress would appear to illustrate the very great prognostic value that can be attached to the presence and size of scars of previous successful vaccination.

## Description of Outbreak

Smallpox is endemic in the Eastern Mediterranean area. During the winter of 1943-4, from the middle of November onwards, the weekly notifications for civilian cases steadily rose (see Graph). The rise was noted by the naval health



authorities, who in consequence started a campaign advising all naval medical officers to keep their vaccinations up to date.

On Jan. 25, 1944, the first naval case occurred in this area; there were subsequently 7 naval cases in all, with three deaths, and 3 cases among Admiralty (European) civilian employees, with no deaths. The last naval case occurred on March 11.

## Naval Cases

**Case 1**—Coder. Admitted to the isolation hospital on Jan. 25; had been in an H.M. ship and in a shore base during the incubation period. He gave no history of ever having been vaccinated, and had no scars of successful vaccination. This man developed confluent haemorrhagic smallpox, and died on Feb. 1, seven days after admission to hospital.

**Case 2**—A.B. Admitted to the isolation hospital on Feb. 6, 1944. This man had been in a shore establishment. He stated that he had been vaccinated in infancy, but not since. He showed two small scars of successful vaccination. His was a mild case, and he made an uninterrupted recovery.

**Case 3**—A.B. Admitted to the isolation hospital on Feb. 23, 1944. He worked in the Dockyard Salvage Unit and was accommodated in a naval hostel. He stated that he had been vaccinated in May, 1942, and showed one very small scar of successful vaccination. This man developed confluent smallpox, was extremely ill, but subsequently recovered, though badly disfigured by facial scars.

**Case 4**—A.B. Admitted to the isolation hospital on Feb. 24, 1944. Had been in a large transit camp. He stated that he had been unsuccessfully vaccinated in 1941, but showed neither documentary evidence of this nor any scar of successful vaccination. He developed confluent haemorrhagic smallpox, and died on Feb. 28, five days after admission to hospital.

**Case 5**—Leading seaman. This man had been a patient in a general hospital for one month at the time he contracted smallpox. He stated that he had been vaccinated in infancy and again successfully in 1942 and 1943. He showed three small scars of successful vaccination. His was a mild case, and he made an uninterrupted recovery.

**Case 6**—Skipper. Admitted to a general hospital on March 1, 1944, and transferred to the isolation hospital on March 2. This man was from a converted fishing trawler, which had been in the base for three weeks before he contracted the disease. He thought that he had been vaccinated in 1943, and according to his pay-book

had been vaccinated in 1941. He showed no successful scars. He developed confluent haemorrhagic smallpox and died on March 4, the fourth day after admission to hospital.

**Case 7**—Cook. Worked in a W.R.N.S. mess, and lived in private lodgings. Admitted to a general hospital on March 11, 1944, and transferred to the isolation hospital on the 13th. Had been vaccinated in infancy and again in 1942; he showed three good scars of successful vaccination. A very mild case, with an uninterrupted recovery.

## Civilian (European) Admiralty Employees

**Case 8**—Fitter. Worked in the dockyard. On Jan. 31, 1944, he had been discharged from a general hospital, where he had been in contact with a case which subsequently proved to be smallpox. He was immediately vaccinated. Admitted to the isolation hospital on Feb. 10. He stated that he had previously been vaccinated, and showed one small scar. A very mild case, making an uninterrupted recovery.

**Case 9**—Shipwright. Admitted to the isolation hospital on Feb. 25, 1944. He stated that he had been vaccinated in March, 1942, and showed two small vaccination scars. His was a mild case, and he made an uninterrupted recovery.

**Case 10**—Shipwright. Admitted to the isolation hospital on March 9, 1944; the second contact case. Stated that he had been vaccinated in 1939 and again in 1944 (after contact). He showed good scars of previous successful vaccination. A fairly severe case, but the patient made an uninterrupted recovery.

## Case Occurring in a Corvette

Another case presumed to have been contracted in the area of the base occurred in a corvette. This ship was ten days at sea, outward bound to another port, where a member of the crew was landed suffering from what at first was thought to be measles, but which proved later to be smallpox. The ship's company were all revaccinated, and she returned to base.

On the fourteenth day after landing the patient in the other port, the ship's company were medically inspected. All showed good scars of previous successful vaccination; none contracted the disease, and the ship was taken out of quarantine. This ship carried no medical officer.

Table Summarizing Cases

Case No.	Date of Vaccination	Number and Size of Vaccination Scars	Remarks on Course of Illness
6	1941	None	Died (fourth day)
1	Unknown	"	" (fifth day)
1	None	"	" (seventh day)
3	1942	1 very small scar	Extremely ill with confluent small pox; recovered, though scarred
10	1939 and after contact 1942	2 good scars	Fairly severe case; recovered
9	Infancy	2 small scars	Mild case; recovered
8	Unknown	1 small scar	Very mild case; recovered
5	Infancy, 1942, 1943	3 small scars	" "
7	Infancy and 1942	3 good scars	" "

## Control

This epidemic occurred among personnel whose presence in the base was for the specific purpose of carrying out operations against the enemy. The epidemiological principles applicable to such an epidemic occurring among the civilian population in peacetime had to be modified to suit the situation as it arose. Fortunately it transpired that there was no increase in the incidence or severity of individual cases as a result. The primary consideration was that there should be the minimum interference in the movements of naval personnel on duty and in the operations of H.M. ships. At the same time it was recognized that to achieve this object successfully the epidemic in the Navy must be fully controlled in the minimum of time.

A somewhat bold policy of relying almost solely on vaccination was adopted. The efficacy of this policy was borne out by results, for, so far as is known, no contact of any naval case contracted the disease; though two civilian "European" Admiralty employees may have been infected from the same source or from one another.

In ships and establishments where a case of smallpox occurred the following action was taken: (1) All possible contacts were revaccinated immediately. (2) Direct contacts were paraded for medical inspection daily for 14 days; and their drafting was stopped for this period. (3) The ships and establishments concerned were not put in quarantine nor were

contacts isolated (4) No drafting of naval personnel other than direct contacts, was stopped provided they had been vaccinated and showed good scars

### Course of the Epidemic

By March 2 (thirty six days after the first case had occurred in the Navy) there had been six naval cases of these three showed no scars indicative of previous successful vaccination, and a fourth had only a very small scar. It was decided, therefore, that the scheme was not working satisfactorily because all personnel were still not vaccinated and that more drastic steps must be taken to obtain 100% immunity. Consequently, all leave to and from the base was stopped and liberty men were not allowed ashore unless in possession of documentary evidence of vaccination within the past two years.

These restrictions especially the former had the desired effect of making all naval personnel and particularly officers, smallpox conscious and vaccination minded. From this date onwards there was a noticeable increase in the numbers presenting themselves for vaccination and the epidemic in the Navy rapidly subsided. It was possible to raise the ban on leave by March 12.

### Conclusions

1. In this epidemic the type of smallpox was virulent the three fatal cases all ending within a week of admission to hospital.

2. All patients who had no scars of successful vaccination died. Only one patient who showed old scars contracted the disease, and no patient died who did possess any scars even if very small, of previous successful vaccination.

3. Good scars of previous vaccination were good evidence of immunity in all or in a very high percentage.

4. In the case of the corvette and the converted fishing trawler—both small ships where contacts must have been close and prolonged—all personnel had been successfully vaccinated and there were no secondary cases. In the latter ship another officer actually shared a cabin with the skipper who died in four days of confluent smallpox.

5. It was found that issuing advice and instructions alone did not obtain 100% successful vaccination. This was achieved only when restrictions were placed on individual privileges.

6. For some time after the last naval case had occurred the epidemic among the civilian population continued.

## Medical Memoranda

### Human Infection with *Pasteurella septica*

Human infection with *Past. septica* is of rare enough occurrence to warrant recording the following case.

#### CASE REPORT

An African woman aged about 20 was admitted to the Maternity Hospital, Accra, Gold Coast, on Dec. 13, 1948. She was 28 to 30 weeks pregnant and complained of abdominal pain and headache. Temperature 104°, pulse 138, respirations 28. On Dec. 15 she gave birth to a premature infant, which survived only a few minutes. Her temperature did not settle and a blood culture was made on Dec. 20. On Dec. 28 the left knee joint was very swollen and a considerable amount of pus was aspirated. The joint was again aspirated on Dec. 30. The patient was discharged from hospital fit on Jan. 14, 1949.

*Bacteriology*.—From the blood and the two specimens of pus an organism, morphologically and culturally very suggestive of *Past. septica* was isolated in pure culture. The patient's serum on Dec. 30 agglutinated a suspension of 1 in 640. White mice injected pus from the knee usually died in 1 or 2 days. One survived 72 hours and showed peritonitis and septicaemia.

The cultures were sent to Prof. G. S. Wilson, London School of Hygiene and Tropical Medicine, who, after thorough cultural, serological, cross immunity, and pathogenicity tests, reported the organism to be a typical strain of *Past. septica*.

Strains of *Past. septica* have been isolated on several occasions in this laboratory from the local wild rat (*C. gambianus*) population but this is the only human infection met with so far.

I wish to express my thanks to Prof. G. S. Wilson for the trouble he took over the investigation of the strain, and to Dr. W. M. Howells O.B.E., Acting Director Medical Services, Gold Coast, for permission to record this case.

Medical Research  
Institute, Accra

R. ROBINSON M.B., Dip. Bact. (Lond.)

## Reviews

### PHYSICAL METHODS IN PSYCHIATRY

An Introduction to Physical Methods of Treatment in Psychiatry. By William S. M.B. M.R.C.P. D.P.M. and Ehot Slater M.D., M.R.C.P. D.I.M. (Pp. 171. 8s. 6d. plus 4d. postage.) Edinburgh, E. and S. Livingston, 1944.

In this well-written book descriptive of physical methods of treatment in psychiatry the fundamental thesis is that in a considerable proportion of psychiatric illnesses, and in a sense in all of them there is a physical substratum. Although this is a presumption and not as the authors are careful to explain a matter of immediate knowledge, none will deny that they have made an excellent presentation of their case. This view goes naturally with an emphasis on constitutional factors as predisposing so largely in the occurrence of abnormal reactions under stress. The authors point out that psychiatrists have unfortunately been divided into two camps: those who are preponderantly interested in the psychological and those who are mainly interested in the physical aspects of mental disease. The authors plead with evident justification for a union of the physical and psychological ways of treatment in psychiatric syndromes and throughout the book they leave their readers in no doubt as to the need for supporting physical with psychological therapy. Drs. Sargant and Slater have pondered their experience with insight, and their clinical observations are often shrewd and original. Most of their work has been done with neurosis of war and they are careful to say that the physical methods they advocate for the treatment of neurosis are apt to be less successful with the more complex neurosis of civil life. This unfortunately makes it impossible to be quite so enthusiastic as the authors about some of the methods they describe.

The various techniques—continuous narcosis, prefrontal leucotomy, etc.—are described in detail and some relevant comments are made—for example the need to treat epilepsy with more discrimination than is customary, taking into account the environmental circumstances instead of focusing only on the dosage of the drug employed, and they emphasize the usefulness of controlling their administration with electroencephalograms.

Since the book is likely to have a deservedly large sale it is as well to enter a caveat. The essential ingredient of all treatment is a human outlook. It is not that the book lacks it, but readers less experienced than the authors may be tempted into a very mechanical attitude towards the patient. Nowhere is it more necessary than in psychiatry to think first of all of the patient as a personality with hopes and fears, rather than as a mechanism to be experimented with.

### DOCTOR IN THE MAKING

Doctor in the Making. The Art of Being a Medical Student. By Arthur W. Ham M.B. and M.D. Salter Ph.D. (Pp. 120. 9s. 6d.) London: Medical Publications Ltd.

This is an excellent book which should be read by all studying in medical schools and those considering the medical profession as a career. It deals with the motives and mental equipment necessary for the successful medical student. The authors deplore the fact that so many people drift into medicine without the right basic education and ability and for no better motives than "because my father is a doctor" or "because my parents wanted me to be a doctor." There is an excellent section dealing with the enemies of success, which gives most useful practical advice on how to work, how to improve powers of concentration, how to organize knowledge. The importance of understanding as opposed to memorizing is especially stressed. The chapters on the causes of maladjustment are clear and concise and free from technical terminology. The means for improving adjustment by the change of the ratio between demands and realization are well presented. The need for understanding and applying the scientific method of approach in medicine is emphasized, though the authors remark rather despairingly—perhaps the result of years of teaching medical students—that "it almost seems that scientific thinking is unnatural to man."

## MEDICAL MALPRACTICE

*Medical Malpractice* By Louis J. Regan M.D. LL.B. (Pp. 256. 25s)  
London Henry Kimpton

This is probably the first monograph of its kind in this country the subject would not afford the material for more than a longish paper, in America it is so much more important, both in quality and in quantity, that Dr. Regan has had no difficulty in writing a fair-sized though highly condensed textbook "Malpractice" is a comparative newcomer to the vocabulary of law. It is not strictly a legal entity, for it goes beyond negligence—failure to use proper skill and take proper care—to wrongs which come in quite a different category, such as assault by intervention without consent, and even the betrayal of confidence, invasion of the "right of privacy," and the making of a necropsy without legal authority. These last three wrongs illustrate the difference between the American point of view and our own, for the first is only doubtfully actionable here and the second and third are not at all. The American practitioner has therefore more ways of going wrong than we have, and he seems much more likely than we are to be sued for damages if he strays into any of them. Perhaps American cases are more completely reported than ours, perhaps American patients are more litigious. The fact remains that whereas an English writer would have difficulty in finding two dozen good malpractice cases, Dr. Regan cites several hundreds from the reports of the different States. His method is to state each proposition of law in general terms and then follow it with a number of head notes and extracts of judgments from decided cases in order to throw light on particular aspects of the position. The largest part of the law which he formulates is identical with our own, and so his book will be found not only interesting but practically valuable to British doctors. The reader must, however, be alert for divergencies between the two systems. For instance, eugenic sterilization Dr. Regan says is provided by the law of twenty-nine of the States, and some States prohibit non-therapeutic sterilization. The consent of the widow or next-of-kin is necessary before a necropsy can be legally performed except by a coroner or other authorized person, for the wrongful dissection of a dead body is actionable at the suit of the person entitled to the possession and control of the body for burial. Doubtless the conditions which protect a person's right of privacy, and prohibit such infractions of it as the taking of a cinema film of a patient during an operation or the unauthorized publication of likenesses, might well be adopted here. Many States extend privilege from disclosure in evidence to communications made in confidence by a patient to his doctor and the protection sometimes extends to hospital records in so far as they tend to disclose what physicians have said in their attendance on a case, and also to facts known to a nurse through being present and assisting a physician and hearing communications between him and the patient.

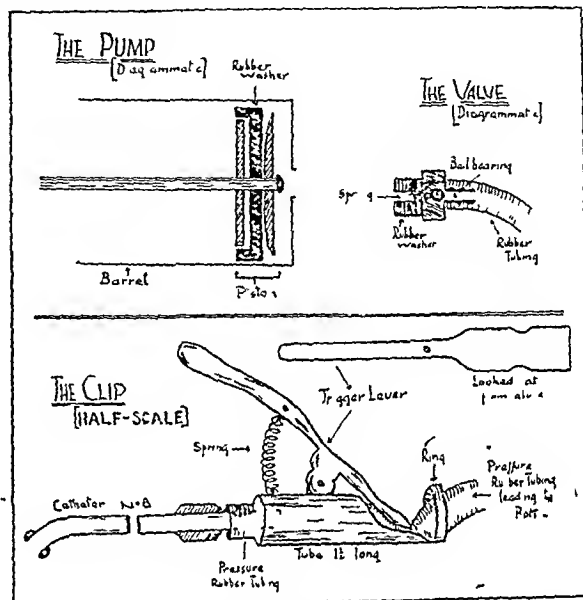
Dr. Regan gives some useful forms of consent to operations and to disclosure of privileged information, and forms of indemnity against the hospital and the attending physician to be signed by a patient who leaves against advice. His self-test for "malpractice vulnerability" is very exacting, and would floor all but one or two exceptional practitioners in this country. How many would get full marks for their answers to the questions whether their records are so kept that they would not be embarrassed by the production of these in court, whether they fully realize their responsibility for the negligence of a partner, an employee, an assistant, an associate, and a substitute, or whether they have some understanding of the doctrine of *res ipsa loquitur*? Nevertheless Dr. Regan regards a good mark as highly necessary for relative safety in "hot-bed" areas. He is caustic about the part frequently played by what he calls the physician instigator—the doctor who cannot refrain from criticizing the conduct of a predecessor. His chapter on prophylaxis makes some exacting recommendations but is well worth studying, especially the advice which he summarizes as "Don't talk so much."

## Preparations and Appliances

## AN IMPROVED FIELD SUCTION APPARATUS

Major A. H. SALEH, R.A.M.C., writes.

The need for a simple, improvised, and efficient suction apparatus in the field has always been felt. The appliance supplied to some field units has an old-fashioned foot-pump which entails much energy to cause a vacuum in a Winchester bottle, furthermore, it requires an orderly whole modification of it.



The Pump is an American box-type, as supplied with Dodge and other American trucks. The barrel is opened and the shallow cup shaped rubber washer is reversed, so that it faces the opposite direction (see diagram). The ball-bearing in the valve connecting the pump to the rubber tubing is displaced to the distal end of the spring (see diagram).

The Suction Head consists of a No. 8 silver catheter to which a bulbous end has been fitted. The other end of the catheter fits into a "negative" clip made to my design by an R.E.M.E. workshop.

The "Clip" consists of (i) a metal tube  $1\frac{1}{2}$  in. in length and of a diameter to fit over the narrow pressure tubing used, (ii) a ring to keep the rubber tubing in position, (iii) a trigger lever; (iv) a spring. (See half-scale diagram).

A Winchester Bottle connected to the pump and the suction head.

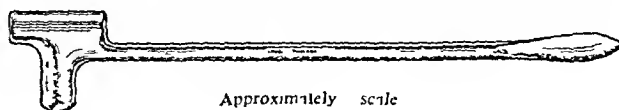
**Function**—Two strokes of the pump will cause a vacuum in the bottle. The apparatus is now ready. During the course of an operation, such as a laparotomy, with much blood, etc., in the abdominal cavity, the operator inserts the end of the catheter into the fluid, and with his thumb depresses the trigger lever, when suction instantly comes into play. When the lever is released the tube is linked and the vacuum in the bottle is conserved for further use. The process can be repeated as long as necessary, with an occasional stroke of the pump to ensure full vacuum.

This apparatus has been in use in a C.C.S. for the last six months and has been found extremely efficient. The vacuum is powerful enough to suck the fluid but not powerful enough to damage any viscera which may get in its way.

## TENDON HAMMER

Mr. J. P. CURRIE writes from the Glasgow Royal Infirmary.

The accompanying illustration shows a tendon hammer which I designed some time ago and which has now been produced by Chas. F. Thackray, Ltd., of Leeds. The hammer is entirely of metal and chromium plated. I have found it more useful than



Approximately scale

any other available types because of its greater weight and better balance. The pointed handle is useful for eliciting the cremasteric, abdominal, and plantar reflexes. The hammer has the obvious advantage of being unbreakable and having no perishable parts.

# BRITISH MEDICAL JOURNAL

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## ARTIFICIAL INDUCTION OF LACTATION

When Folley and his colleagues at the National Institute of Research in Dairying demonstrated<sup>1</sup> that copious lactation could be produced in virgin goats by injection of he, udders with stilboestrol, wide prospects of practical application were opened up. Any measure likely to increase the milk production of Britain during wartime was obviously of first class importance and the Lactation Committee of the Agricultural Research Council authorized large-scale field experiments to be undertaken. Reports of the results of these investigations fill the current issue of the *Journal of Endocrinology*. The papers are long but fortunately the results can be summarized quite briefly. Hammond and Day from the School of Agriculture at Cambridge agree with Folley and Malpress<sup>2</sup> that plentiful lactation may be induced in maiden or nulliparous heifers or in dry cows by the subcutaneous implantation of tablets of synthetic oestrogens: both papers, however, stress that the response is extremely variable, ranging from nil to normal lactation levels. The daily absorption from the tablets was of the order of 5-25 mg. of hexoestrol or stilboestrol, but there appeared to be no correlation between the amount absorbed and the amount of milk yielded. A disadvantage of the treatment was that it caused nymphomaniac symptoms, which led to frequent mounting and consequent pelvic fracture in as many as 20% of the animals in some experiments. Folley and Malpress<sup>4</sup> were able to induce lactation in heifers by oral administration of hexoestrol, stilboestrol, or dienoestrol in doses of 20-200 mg. daily, given either in the drinking water or in food. Only about 10% of these doses are apparently utilized in the body. This treatment did not lead to such pronounced nymphomania, nor were any pelvic fractures sustained, but, on the other hand, the level of lactation was lower than with tablet implantation, just as variable in degree, and again apparently unrelated to dose. Essentially similar results followed the implantation of tablets of 50% hexoestrol, 49% lactose, and 1% stearic acid, which Folley, Stewart, and Young<sup>3</sup> found to be more slowly absorbed than pure hexoestrol tablets. Parkes and Glover<sup>5</sup> were able to cause lactation by single injections of appropriate esters of stilboestrol. The best results were achieved when 50 mg. of a slowly absorbed and of a rapidly absorbed ester such as the dilaurate and dipropionate of stilboestrol were injected together. Folley and Malpress<sup>4</sup> made detailed studies of the composition of the milk they obtained and

found it to be initially colostrum in type, changing to normal milk as the daily yield increased, so that a daily output of 5 lb. or more was a guarantee of normal composition. Parkes and Glover<sup>5</sup> similarly found the milk to be of normal or high quality. Lawson Williams, and Stroud<sup>6</sup> analysed samples of the experimental milk from Shinfield and Cambridge for any contained oestrogen. They found the maximum concentration to be 1 µg. per pint, but the average very much less. There can therefore be no doubt that oestrogen treatment is capable of increasing the country's yield of good-quality milk, but unfortunately the variability of response and chances of damage due to nymphomaniac symptoms at present make the treatment too uncertain and risky for anything but veterinary trial in isolated cases. The hope that it might be possible to give a route to milk production during the winter months cannot yet be realized.

The reasons for the extreme variability in response are not clear and presumably they will not be understood until it is known exactly how oestrogens provoke lactation. The cow is an expensive animal to use for experimental purposes and only the urgency of war accounts for the precipitate large scale field trials without preliminary laboratory investigations, even though such investigations may fail to give the desired information since species differences in mammary physiology add much confusion to the subject. At present the theory generally held is that oestrogen induces udder development directly, and in appropriate doses stimulates the pituitary gland to secrete the hormones necessary to initiate and maintain lactation. If, however, the oestrogen dosage is too high the pituitary may be inhibited instead of stimulated. Failure to induce lactation may therefore be caused either by inadequate oestrogen dosage or by overdosage, and, in fact, instances of both are to be found in these reports—instances where minimal lactation was markedly improved by giving additional oestrogen treatment, and other cases where removal of the implanted oestrogen tablets increased the milk yield. Hammond and Day also point out that failure to initiate lactation is more frequent in cows than in heifers, and they attribute this to the inhibitory action of persisting corpora lutea, if such corpora are removed during the period of oestrogen treatment the milk yield goes up. The authors regard this as analogous to the condition in pregnancy, where persisting corpora lutea prevent lactation despite fully developed mammae. All the authors are agreed that there is a cessation of follicular growth and that the ovaries are quiescent during the period of oestrogen treatment, which must therefore exert an inhibitory action on the secretion of pituitary gonadotrophin. It is apparent that rigorous control of dosage is one of the prerequisites of successful application of these findings to normal dairy-farm practice, and one suspects that tablet implantation is not the method to ensure this. It is noteworthy that Dr Parkes, in spite of his great part in the discovery and development of the tablet-implantation technique, has here preferred to administer the oestrogens by injection, which, in view of the very large wastage that occurs with oral administration, appears to be the most hopeful line for further investigation.

<sup>1</sup> *J. Physiol.*, 1940, 98, 15, p. 1. *J. Dairy Res.*, 1941, 12, 241.

<sup>2</sup> *J. Endocrinol.*, 1944, 4, 53.

<sup>3</sup> *Ibid.*, p. 1.

<sup>4</sup> *Ibid.*, p. 25.

<sup>5</sup> *Ibid.*, p. 4.

<sup>6</sup> *Ibid.*, p. 90.

<sup>7</sup> *Ibid.*, p. 37.



## DISPERSAL OF OFFICE WORKERS

Since the days of Queen Elizabeth the growth of London has been a problem. With every fresh development of transport it has become more insoluble. Various writers have during the present century emphasized that something ought to be done, but how that something should be done has been less clear. The war produced an experiment on a large scale. Hundreds of people of the clerical and administrative groups had, for security reasons, to leave London whether they wished it or not. These have adjusted themselves, some successfully, others unsuccessfully. The Bank of England posed the problem whether clerical, administrative, and allied departments could in normal times be efficiently worked away from London. The National Council of Social Service was asked to undertake the survey.<sup>1</sup> It was clear from the beginning that reliable evidence would be difficult to obtain. The sorting of facts from assumptions emotionally motivated, not to mention the border-line information between the two, was in itself formidable. People compulsorily removed from their familiar surroundings and living under makeshift conditions naturally compared the often purely imaginary amenities of pre-war days with the present discomforts. Making all allowances for the necessarily unscientific comparisons, there seemed to be certain advantages believed with reason by many people to be inherent in London which could be checked. These included greater choice of accommodation and type of district, wider choice of schools and better provision of scholarships, better chances of promotion and wider choice of employment, better marriage chances for women, and unequalled prestige and glamour. Employers thought there were better contacts between various offices and also with leading consultants. The disadvantages were the amount of travelling involved in getting to and from work and to the country, the discomfort of the overcrowded vehicles, the higher cost of living, and the high rent of offices.

This report was concerned chiefly with clerical workers earning between £200 and £500 a year, most of them men and some women. There were some women, most of whose families did not exceed £250. The problem was concerned with their probable dispersal to provincial towns of medium size, roughly from 40,000 to 100,000 in population. What is the health problem? So far as general practitioners are concerned there was no evidence that the provincial doctor was inferior to his counterpart in London. Some people stressed the view that the provincial doctor was likely to have a more varied experience and a more stable connexion with families. Consultants and specialists, however, are not likely to be found in a small town unless there is a special reason for their presence—for example, in a university town where there is a medical school, or in a spa where invalids congregate. The resident in a small town is in this respect at a disadvantage; he will have either the expense of travelling to see the specialist or the still greater expense of bringing the specialist to him. A number of special hospitals exist, both large and small, to deal with

specific classes of illness—e.g., diseases of the ear and throat—or for specific classes of persons—e.g., children, women, or seamen. The distribution, however, of these is very uneven: the tendency is increasingly to deal with most kinds of cases at large general hospitals. Many families attached importance to the provision of private beds. The number of beds reserved for private patients in each voluntary hospital in the country and the fees charged vary considerably. The range of fees is rather wider in London than in the counties. On the whole the provision for confinements at moderate fees is scanty, and is less satisfactory in small towns than in great cities. Special services such as massage or electrotherapy and some of the newer methods of diagnosis are not so easily obtainable in small towns. Although most provincial towns of any size will have competent dentists, yet, at present medical and allied services are on the average inferior except where there is a university.

Quite apart from the problem of the treatment of sickness when it has occurred there is the provision for those public health services necessary for the preservation of health. Wherever dispersal was discussed with those who had to leave London it was found that living accommodation was uppermost in the minds of many employees. Many were living in most uncomfortable circumstances and there was no chance of renting a house. Office accommodation is also important, and there is no doubt that many makeshift and unsuitable buildings have been the only possibility. While employees will put up with these discomforts during the war, they will not be content to do so after the war. It must be admitted that employees often overlooked that there are some extremely unsuitable offices in London. It is also very difficult to discover what exactly people mean by London. Large numbers of the population who live in a London suburb rarely leave the suburb; they may go to the West End or the City for occasional excursions, but so also do people from many miles away. There was much evidence that people had the idea of the possibilities of education and amusement that existed, even if they never or only rarely used them. Perhaps the bedrock idea is the dislike of being uprooted. It might well be that if hundreds of people hitherto resident in a small town or village had to leave they might equally resent removal, even though it were to London.

The report recognizes that those of the present generation who have to migrate will find life difficult, but that it will be very different for the next generation who will be free from London ties. The long-term balance-sheet of advantages and disadvantages differs from the short-term balance and is more favourable. In the national interest several great cities ought to be gaining, not losing population. Many provincial towns of moderate size would gain by an increase of population, and such an increase would facilitate social, educational, and medical improvements. The committee held that such powers as the local authorities will need to enable them to play the part adequately should be granted by the Government. Legislation is necessary. The public services to be considered are water, electricity, gas, sewage and sewage disposal, transport. The local authority will have to consider provision for more children, and the public health depart-

<sup>1</sup> *Dispersal*. An Inquiry made by the National Council of Social Service. Oxford University Press, 1944. (3s. 6d.)

nents will have to see if extra hospital accommodation or clinics are necessary. This means that the reception areas will have much careful planning to do. There is a list at the end of the report of towns of medium size within 30 miles of London with populations from 20,000 to 100,000.

The committee recognized that it will be no easy matter to reverse the trends of centuries, and the report has considered only the clerical workers. There is the analogous problem of the industrial worker.

## PENICILLIN AND SPIRAL ORGANISMS

Although penicillin and the sulphonamides cover much common ground, each has fields of activity in which the other takes no part. Perhaps the most important direction in which penicillin is of value while the sulphonamides are none is in the treatment of "spirochaetal" infections, using that word in its broader and less legitimate sense. The place of penicillin in the treatment of syphilis is now almost assured; if long-term results are satisfactory it may replace the arsenicals altogether, at least for the primary form of the disease. It would be rash to assume that all spiral organisms will react in the same way, since they include a number of widely distinct genera, but scattered items of information are coming to hand which suggest that some degree of susceptibility to penicillin is a common property among many of them. The rapid disappearance of *T. vincenti* from the lesions of Vincent's gingivitis reported by MacGregor and Long in this *Journal* last week is one such piece of evidence from the clinical field. Others are so far experimental only: an effect on *p. minus* and on *T. recurrentis*, first reported by E. M. Laurie and H. O. J. Collier,<sup>1</sup> has been confirmed by F. R. Leilman and W. E. Herrell<sup>2</sup> and by H. Eagle and H. J. Magnuson<sup>3</sup> respectively. The former authors found penicillin curative in experimental mouse infections due to either *Sp. minus* or *Streptobacillus moniliformis*; both forms of rat-bite fever may therefore prove amenable. Eagle and Magnuson, studying infection with *T. novyi* in rats and mice, found that, although 50% of cures could be obtained with a dose of about 100,000 units per kg., 95% are called for 400,000 units per kg., a dose of which the equivalent in man is about 25,000,000 units. If all species of *Treponema* causing relapsing fever behave in this way, and if findings in mice prove applicable to man, penicillin is unlikely to displace arsenic for the treatment of this disease.

Leptospirosis infections must be regarded differently, because arsenic is useless for them. Even should *icterohaemorrhagiae* be only moderately susceptible to penicillin, the treatment of Weil's disease should still be attempted, since there is no chemotherapeutic alternative. Some indications that this treatment may prove useful are to be found in two papers in our present issue. J. M. Linton and J. C. Broom began by determining the concentration of penicillin which would inhibit the growth of 9 strains of the organism in cultures; all were inhibited by 0.4 unit of penicillin in 3.5 ml. of medium—i.e., a concentration of just over 0.1 unit per ml. This is about five times the concentration necessary for preventing the growth of a normally sensitive staphylococcus, but the twofold dilutions used do not enable an exact comparison to be made between the two organisms. The first therapeutic test failed, evidently owing to infrequent dosage; the second, penicillin was administered three times a day

in oil, with the result that 6 out of 7 treated animals survived, the seventh dying apparently of some other cause, while 4 out of 3 controls died. These findings, although inconclusive owing to the small numbers of animals used, encourage the observations. In the patient with Weil's disease described by V. Lloyd Hart, penicillin was given at too late a stage to judge its effect on the course of the disease, but may have contributed to eliminating the organisms from the urine. So far as they go, these observations justify the clinical trial of penicillin in the treatment of Weil's disease; early diagnosis and perhaps generous dosage will be necessary.

## DENTAL SERVICE REPORT

The Inter-departmental Committee on Dentistry, of which Lord Trenchard is chairman, has issued an interim report to the Minister of Health and the Secretary of State for Scotland which is published as Cmd. 6565 by H.M. Stationery Office at 6d. The committee unanimously recommends that a comprehensive dental service should form an integral part of, and operate simultaneously with, the Government's National Health Service, and that it should be available to all who want to use it and be paid for by the community as a whole. It recommends also the establishment of a general dental practitioner service broadly analogous in principle and structure to the proposed general medical practitioner service of the National Health Service, and that dental health centres on experimental lines should be set up in suitable areas without compulsion either on dentists to work in them or upon patients to attend them. The committee recommends that measures to stimulate the recruitment of dentists should include every step to encourage suitable ex-Service men and women to enter dentistry and that dental teachers should be released from the Forces at the earliest moment. Another main point is that the public should have more dental health education, dealing with questions of diet and dental hygiene, as well as stressing the need for regular inspection and treatment. Further reference to the report will be made in a later issue.

## THE R.A.V.C. IN THIS WAR

Sir Clifford Allbutt would not work in blinkers; he had to see all round him. He often pleaded the cause of comparative pathology, and in effect what he said was: there is only one Medicine, and we all have a lot to learn from each other. The *Veterinary Record* for Nov. 18 contains an article by Major A. V. Franklin on the work of the Royal Army Veterinary Corps in the Mediterranean theatre. By reason of the progressive mechanization of the Army the outbreak of this war found the Corps shrunk to a shadow of its former self. Major Franklin traces its history from the early days of mobilization to the present time. The primary cause of its regrowth was the formation of a Cavalry Division for service in Palestine. After 1940 the horse, mule, and camel began to come into their own again, and with them the R.A.V.C. During that year all ranks were trained to be ready in the event of heavier calls, so that they could form a sturdy framework for further expansion. In 1941 the duties performed by the Army Remount Service were transferred to the Corps; this unity of control led to a notable increase in efficiency and economy. In the campaigns of Eritrea, Greece, and Syria the R.A.V.C. played an active part. In 1942 further important duties were assigned to it—meat inspection and the administration of livestock depots. The campaign in Italy gave the Corps its first occasion in this war to play an active part in large-scale operations. The difficult nature

<sup>1</sup> *Ann. trop. Med.*, 1943, 37, 700.

<sup>2</sup> *Proc. Staff Meet. Mayo Clin.*, 1944, 19, 257.

<sup>3</sup> *Publ. Hlth. Rep. Wash.*, 1944, 59, 583.

of the country made heavy demands on mule transport, and it became the responsibility of the R.A.V.C. to meet all requirements. This work called for intimate knowledge of the remount side and also for vigilance on the part of purchasing officers to prevent such scourges as glanders, epizootic lymphangitis, and mange from being introduced into the distributing depots. These and other activities led to rapid expansion of the officer strength. High credit is due to the administrative staff for the way in which the Corps, greatly diminished owing to mechanization, expanded so quickly and so successfully while taking over the additional duties of a remount service. Medical men who made friends with veterinary colleagues while serving in the last war will be glad to know how the R.A.V.C. has risen to the occasion after a period of enforced decline.

### PACKAGING OF MEDICAL SUPPLIES

With the prospect of increasing war activity in the Far East the preservation and packaging of war supplies, including medical supplies, becomes of growing importance. Stores may have to be landed on beaches instead of at ports and carried on muleback or on men's shoulders far into the jungle, exposed to the rigours of tropical climate. In the earlier days of the war vast quantities of stores arrived at their destination in a useless condition owing to improper packing at the source. The "global" nature of the war lends special interest to an exhibition of packing methods, in which the British and American Army authorities have co-operated, at the Central Ordnance Depot at Feltham in Middlesex. A section is devoted to medical stores, and here we can witness the American genius for packing. The eye is caught by 100,000 Oxford units of penicillin packed in a bottle large enough for the distilled water necessary to produce the required concentration. The bottles are packed in a divided carton inside a corrugated box; this again goes inside a larger corrugated box, around which is a waterproof-bag liner, and the whole is placed in a nailed wooden box. Plaster-of-Paris bandage, susceptible to damage by water, is sealed inside a metal-foil laminated package; this is cartoned and put into a waterproof-bag liner which is nailed up in a wooden box. Surgical instruments are cleaned and preserved, then all contacts and moving points are press-fitted with small pieces of aluminium foil; the entire instruments are laid between sheets of the same foil and sealed inside a laminated, waterproofed cellulose bag. A waterproof-lined wooden box encloses these envelopes. Each unit of blood plasma is packed in two bottles—one containing distilled water, the other the cakes of blood plasma. Each bottle is sealed in a tin, together with the rubber and glass tubing, needles, bottle hanger, and auxiliary caps needed for the transfusion operation. The units are cartoned, and a wooden box lined with waterproof material holds several cartons. Sulphuric acid is packed in glass containers fitted with rubber-gasketed plastic caps. Several bottles of this are packed in a divided case entirely surrounded by material made out of rock wool. An emergency refrigerated serum box uses dry ice and sufficient thickness of bitumen-treated creped cellulose wadding to maintain serum at a temperature of  $-10^{\circ}\text{F}$ . for nine days. This is used only when refrigerated transportation is not available. X-ray tubes are enclosed in a canvas bag suspended in a wooden frame and put in a corrugated fireboard box with greaseproof wrappings, and this again in a nailed wooden box. X-ray film is put in a tropical bag, and this again in a metal box with soldered seams and tear-off strip.

The purpose of the exhibition is to impress upon manufacturers that it is part of their job to ensure the proper

packing of their goods. The Army services units cannot be expected to be specialists on the 150,000 different types of stores at an ordnance depot. The use of preservatives against corrosion, the provision of protective layers between the atmosphere and critical metal surfaces, the value of neutralizers for finger-prints, the compressed-air method of drying, and the never-failing serviceability of greaseproof wrapping-paper, waxed cartons, and waterproof envelopes are brought home to the least expert observer. Of equal importance is the precise labelling of each package so that there may be no unnecessary opening and exposure to ascertain its contents.

### DIAGNOSIS OF ANGINA PECTORIS

In many cases the diagnosis of angina pectoris depends entirely on the patient's account of his subjective symptoms. Nothing may be apparent on examination, and the electrocardiogram may be normal. Records taken by chance during an attack of angina have shown changes in the T wave or the R-T interval. Sometimes these transient changes have resembled the more permanent features of the curves of myocardial infarction. In this way the part played by myocardial ischaemia or anoxaemia in their pathogenesis has been established. Recently in the United States, Master, Nuzie, Brown, and Parker<sup>1</sup> have studied the effects on the electrocardiogram of what they have called the "two-step" exercise in patients suspected of having disease of the coronary arteries. They have devised a simple standard step exercise, graded according to the age and weight of the patient. The five leads of the electrocardiogram were first taken at rest, and the pulse and blood pressure were recorded. Immediately after the test the curves were taken again, and then ten minutes later. In normal persons no changes in the curves were noted. In 13 out of 20 persons with disease of the coronary arteries transient abnormalities appeared in the T wave or the R-T intervals. In order to prove that the change was due to myocardial anoxaemia the patients were made to breathe an atmosphere containing only 10% of oxygen. The result of this was to produce curves similar to those which were obtained after the exercise. This procedure was not entirely free from unpleasant consequences. Patients with valvular disease also showed signs of relative coronary insufficiency, presumably the result of diminished output from the left ventricle. Patients with effort syndrome also gave positive results, due, it was thought, to the poor output of their hypoplastic hearts.

It is doubtful whether these procedures are of real practical value in ordinary clinical practice. Special technique is needed to take the curves quickly enough after the test to record the transient changes, and each patient requires at least six films. The chief disadvantage is that in about a third of the cases with coronary artery disease results are negative; also in some instances the results are positive although disease is absent. It is interesting to observe that breathing air with a diminished oxygen content caused the same curves to appear as those which were found after exercise. The diagnosis of angina pectoris must still mainly depend upon the accurate and careful taking of the history and upon a clear understanding of the nature of the symptoms, negative findings in all available methods of examination notwithstanding.

We regret to announce the death of Sir Joseph Arkwright M.D., F.R.S., for many years honorary bacteriologist to the Lister Institute, and joint author, with his colleagues, the late Sir John Ledingham, of *The Carrier Problem in Infectious Diseases*.

<sup>1</sup> *Amer. J. med. Sci.*, 1944, 207, 435.

A gathering in B.M.A. House last week of medical men from eight European countries, which was arranged by Dr. George de Swiet, was in itself an example of how much can be gained even at an informal meeting between doctors of different nations. The meeting was in a sense an opportunity for saying *Ave atque vale* to men and women who hope soon to return to their own countries to deal with the terrible aftermath of German invasion. Dr. Dain, the Chairman of Council, struck a note that found a ready response among all those present when he observed that if there were a wider diffusion of the spirit that permeated medicine, the prospects of future peace might be made secure. There were, he said, no frontiers in medical knowledge, there were no monopolistic restrictions in medical discoveries. Medicine was truly international. British doctors had a big sense of obligation and gratitude to their foreign colleagues, because we were conscious that we had been spared the misery and destruction to which almost the whole of Europe had been subjected. If, therefore, out of that meeting there came some movement for giving a permanent expression to the bonds which hold together doctors of different countries, then the British Medical Association would feel it a privilege to give all the help it could to make such a movement successful. Dr. Dain's welcome was endorsed in a few words from Dr. C. Hill, Secretary of the B.M.A. Dr. Alfie Cox then gave those present a most interesting short history of the Association Professionnelle Internationale des Médecins recalling how the proposal to hold the Annual Conference in Prague in 1938 was defeated by the German delegate, who considered this an insult to the master race. Dr. Cox felt now as he felt in the early days of the A.P.I.M., that an international organization of doctors should take as its field of activity what might be described as medical sociology or medical politics. Such an organization should provide a framework within which doctors of all countries could discuss common professional problems, and should not attempt to include medical science, which was well covered by various international congresses for various branches of medicine. The idea of the A.P.I.M. came originally from Poland and was enthusiastically taken up by Dr. Decourt of France.

The views of many were summed up by the Norwegian Minister of Health when he said that in the new kind of world which they were hoping to reconstruct after the war medical services would have to some extent to be reconstructed also. But they should remember that the medical profession, through its doctors, had over a period of hundreds of years become moulded into the society of which they formed a part, and that any attempt to break this mould might be harmful. That the doctor should prove a beneficial force in society outside his strictly professional sphere was a view put forward by another speaker. Among them all was a clear desire for common organization, so that in peace the profession of medicine at least could see that national rivalries were transcended. Those foreign delegates who spoke were: Dr. C. Meissner (Chairman of the Polish Medical Association), Dr. Karl Evan (Norwegian Minister of Health), Dr. J. Ungar (Czechoslovakia), Col. C. F. Koch (Dutch Army), Dr. M. Sekuli (Yugoslavia), Col. B. A. Osipov (Soviet Military Mission), Dr. A. D. de Smet (Belgium).

**P.T.O.**

## FOREIGN DOCTORS: A MEETING AT B.M.A. HOUSE

The University Extension and Tutorial Classes Council, in co-operation with the Provisional National Council for Mental Health, is prepared to hold this year, provided sufficient applications are received, the usual course on mental deficiency and allied conditions. It is hoped that the course can take place, as in recent years at the London School of Hygiene and Tropical Medicine, Keppel Street, Bloomsbury, and the date fixed is March 12 to 23, 1945. Students must arrange their own residence. The course is intended for qualified medical practitioners, more especially those who are engaged as school medical officers, certifying officers to local authorities under the Mental Deficiency Acts, or as medical officers in institutions. Detailed time-tables and other information will be sent out to each person proposing to attend the course about a week before it begins. As the course can be held only if sufficient applications are received, intending candidates should apply at the earliest possible date, but in any case by Feb. 24. The registration fee of 10s. 6d. must be paid at the time of application and the fee for the course before March 3. If applicants withdraw before this date the fee of £5 15s. 6d. will be returned or carried forward to another course as preferred. Should the course have to be cancelled all fees will be returned. Cheques should be made payable to the Provisional National Council for Mental Health, and crossed Barclays Bank, Ltd. All communications should be addressed to Miss Evelyn Fox, C.B.E., c/o University Extension Department, University of London, 39, Queen Anne Street, W.1.

## Correspondence

### Interchange of Medical Information

SIR.—The surgeons with the B.L. Armies are bitterly disappointed that so few of the follow up postcards (VF 13216) which they have enclosed in the envelope containing the field documents of wounded men evacuated to U.K. have so far been returned to them by E.M.S. surgeons treating these patients subsequently.

The Consulting Surgeon to this group (Brig. A. E. Porritt) has written (Oct., 1944) "If only the E.M.S. would realize how eagerly these cards are awaited over here, I am sure they would make a greater effort to return them. Not more than 1% have been returned since D Day. Quite apart from the natural interest and eagerness of individual surgeons to hear how their cases have progressed, this information together with comments and constructive criticism is a valuable factor in improving the standard of surgery in the field."

Instructions on the employment of the follow up postcard issued by the Army and E.M.S. are almost identical and quite explicit. Naturally enough, the Army surgeons cannot understand why a system which worked between the forward and base hospitals in M.E.F. and C.M.F. should not work equally well between the Army hospitals in France and Belgium and the E.M.S. hospitals in the U.K. It is scarcely surprising, therefore, that our surgeons are inclined to blame the E.M.S. for its failure in this instance. It would be a great pity if this mutually beneficial liaison between two large groups of the profession cannot be improved, particularly as both are doing such splendid work on the same job.

It is not easy to discover why these cards are not returned. I suspect that the different systems of documentation are mainly responsible. I believe the plan tends to break down at the point where the essential clinical information which should be written on the field card is first transferred to the E.M.S. case sheet. The follow up card is either missed or returned to the Army envelope to be dealt with later—and thereafter forgotten, because to the surgeon who has to plan the patient's treatment it is of little clinical importance.

Whatever the cause, I am quite sure that the majority of E.M.S. surgeons are quite unaware that there has ever been any complaint. I am equally convinced that as soon as their attention is directed to this a remedy will be found and this valuable system of interchange of information will work smoothly. Therefore, with the above object in view, and with the approval of the E.M.S. authorities I have decided to request you to publish this letter.

I feel that a personal and unofficial appeal on behalf of the surgeons of the B.L.A. in your popular and influential columns is assured of a wide individual attention and will receive a sympathetic hearing—I am, etc.,

D. C. MONRO  
Major-Gen. Consulting Surgeon to the Army

### Service Medical Officers and Demobilization

SIR.—The statement on demobilization by the Central Medical War Committee makes it clear that release of medical officers both in Class A and in Class B must depend to a large extent on the continued recruitment of medical practitioners who have not yet been called up for service.

At present there are considerable numbers of medical men holding appointments under the Emergency Medical Service who qualified in the earlier years of the war and in some cases several years before the outbreak of hostilities. Many of these are now well over five years qualified and most of them over the age of 28. This group of practitioners has worked hard and efficiently, but it must be borne in mind that in comparison with their contemporaries who joined the Services they have had exceptional opportunities for obtaining valuable clinical experience in all branches of medicine and surgery which have not been usually available to those in the Services. Moreover, a considerable proportion have been able to take higher qualifications. In addition, they have had little interference with their domestic lives and liberties.

Medical officers in the Services, many of whom have been overseas for years, unable to acquire higher qualifications, and often with few facilities for obtaining clinical experience, will feel themselves unfairly dealt with if they are retained in the Services while the younger members of the Emergency Medical Service remain in civilian life. I trust, therefore, that the Ministry of Health will accept the recommendation of the Central Medical War Committee with regard to the continued recruitment of doctors up to at least the age of 35—I am, etc.,  
Guy's Hospital London S.E.1 J. J. CONYBEARE

### National Thoracic Surgical Service

SIR.—In your leader of Nov. 11 (p. 633), which is devoted to an appeal for the formation of a national thoracic surgical service, it is suggested that the regional medical staff "should be composed of a director, or assistant director, a number of surgical officers of the standard of registrar, and house surgeons, physicians and radiologists." If the staff appointment is to be in the order of importance indicated by the first four, then it would seem that the two latter are considered the least important. Presumably the director is to be a thoracic surgeon who has had the training indicated as desirable in the second paragraph of the second column on p. 633, for we are told in an earlier paragraph that the time has passed, or should have passed, when the physician calls upon or directs his surgical colleague to perform some particular operation upon the chest.

The operative procedures necessitate a high degree of surgical skill and must be supported by an equally skilled anaesthetic technique.

The acquisition of skill in the highly specialized technique is no small achievement in this sphere, and the desirability of a co-operating team to assist must be acknowledged, but as "the understanding of thoracic diseases alone requires considerable experience," has the time passed when the direction should pass out of the hands of the physician? With the use of drastic and heroic surgical measures which the patient may now survive it would seem that more than ever it is essential for an experienced physician to be at the helm, and as so much depends on radiological interpretation he should preferably have the helpful co-operation of an experienced radiologist. They have the experience that even the graver chronic lesions in pulmonary tuberculosis can be cured or alleviated and endured often cheerfully for 20 or more years by patients who are able to continue to do their duties, and that pneumothorax, unilateral or bilateral may fail to collapse a cavity, that this may not be accomplished even with the aid of division or resection of pleural adhesions, avulsion of the phrenic nerve and/or pneumoperitoneum, that the lung may fail to re-expand that the pleura may become thickened and fixed, and that thoracotomy is not always successful in obliterating the empty space, and that when this is done the disease may then express itself in the opposite lung. To repeat the series of operations on the remaining side would logically appear to be as essential but alas—! We were always taught that the best method to assist the tuberculous patient was to build up his resistance. It is difficult to believe that a patient who could withstand such a series of operative measures and overcome the disease would not have done so without, even a fit man would have difficulty in surviving.

The history of a child who had been discovered to have clubbed fingers by the school doctor, who rightly suspected a pulmonary lesion, for which pneumothorax was followed successively during the next 18 months by bronchography, bronchoscopy, biopsy, an unsuccessful attempt at surgical removal, deep x-radiation, multiple tapplings for the removal of fluid, a second unsuccessful surgical attempt at removal, deep x-radiation, and finally death, makes one think there was great need for a kindly physician who would have treated the patient rather than the radiographic appearances.

From my experience I should say it was highly desirable that any surgical work on the chest should be directed by an experienced physician. The merit of the work of the general physician or surgeon is that it is within the reach and grasp of the student and general practitioner, but specialization such as this tends to keep aloof and avoid the criticism which is so desirable. Would not specialization under a State system be even further removed from criticism?—I am, etc.,

Birmingham

J. F. BRAILSFORD



### A National Renal Service?

SIR,—It is to be hoped that the recommendations of the Society of Thoracic Surgeons of Great Britain and Ireland for the institution of a national thoracic surgical service, as outlined in your admirable leading article, will soon be implemented. There is little doubt that such a service would be an immense boon to a large class of sufferers hitherto not able to receive the full benefits that current knowledge, modern technique, and specialist skill are able to supply.

Somewhat similar, and equally valuable, suggestions have recently been made, I believe, for national services based on area organization in the fields of orthopaedic surgery, maternity, paediatrics, and the rheumatic diseases. The principle is obviously one that could with advantage be extended to other special branches of medicine. In one, at least, I am certain that its adoption would prove of inestimable benefit: I refer to the not yet recognized specialty that deals with the medical diseases of the kidneys, and, more particularly, to those disorders generally included under the heading of "Bright's disease." This group is, directly and indirectly, probably responsible for more deaths in this country each year than cancer, primary heart disease, or, indeed, any other group of allied and commonly fatal diseases, and yet there is practically no organized provision for the special needs of its numerous victims.

If, Sir, your readers will substitute the words "renal medicine" for "thoracic surgery" and "renal surgeon" for "thoracic surgeon" in the leader to which I have referred I am sure they will be in no doubt as to the urgent need for a national renal service.—I am, etc.,

A. A. ÖSMAN.

### Incidence of Peptic Ulcer

SIR,—In your leading article on this subject (Nov. 18, p. 665) you stress the need for statistics of the total incidence of peptic ulceration in our population. An excellent opportunity for obtaining these figures presents itself at the moment, owing to the need for certificates for extra milk and eggs for cases of peptic ulceration. Figures of total applications over three months might be obtainable from the Ministry of Food; and general practitioners could keep records of their individual cases.

I have kept records of applications for these certificates in my practice over the last three months, in a largely industrial area of mixed types of occupation. Of my total panel 2.55% have gastric or duodenal ulcers proved by x-ray examination. My panel consists almost equally of men and women. Of all my ulcer patients 93% are men, and the age groups are made up as follows: 10-20, 2.5%; 20-30, 10%; 30-40, 10%; 40-50, 65%; 50-60, 12.5%. The absence of younger cases with this condition might be partly due to absorption in the forces, but such cases would be likely to be discharged by war.—I am, etc.,

elwyn Garden City, Herts

J. S. ROSB.

### Peptic Ulcer

SIR,—The article on this subject (Nov. 18, p. 655) is certainly disquieting, and it throws a great responsibility on the general practitioner. For the results of treatment in established cases are so unsatisfactory that the most hopeful outlook is diagnosis at a much earlier stage or, at least, recognition of those conditions that may be looked upon as the possible precursors of ulcer, where treatment might have a better chance of substituting a remedial course for a vicious circle. The great majority of peptic ulcers have some past history of dyspepsia, but, of course, the great majority of cases of dyspepsia are not embryo peptic ulcers, so it comes to be the hard task of the general practitioner to recognize conditions that may lead to trouble. Cases that recur in spite of treatment will suggest inquiry as to home surroundings, diet, social and economic conditions, hours of work, and the many psychological conditions that are putative progenitors of peptic ulcer.

The doctor will, or should, have the opportunity, if required, of treating his patient in a district hospital bed, where instructions as to rest, diet, and medicine will be carried out. The latter is of special importance, for, although the alkalis most valuable are now generally agreed upon, the time of administration is too often vaguely stated. This is especially important in cases treated at home, where the diet is so often, by force

of circumstances, to a large extent the ordinary family food. Lately, for another purpose, I asked a chemist with a "high-class" clientele to find out for me the directions given in 15 prescriptions of alkalis obviously for dyspepsia: of these, 11 were simply "t.d.s., p.c."; only two had any further instructions as to time in relation to food. "After food" is also the direction given with most of the proprietary alkali powders now so very largely used by the public. This direction, so far as I have generally found, is taken to mean soon after a meal, which, of course, is a convenient time from the patient's point of view. Some authoritative statement on this point might be useful. It has been stated that in general in the case of an ordinary or light diet the alkali should not be taken until at least two hours after the meal, as otherwise the essential acid process of gastric digestion would be interfered with.—I am, etc.,

Westbury, Wilts.

CHAS. E. S. FLEMING.

### Episiotomy

SIR,—In the correspondence on episiotomy which appeared in the *Journal* within recent weeks the importance of the operation as a means of avoiding subsequent prolapse was not emphasized. This omission has now been remedied by J. D. S. Flew in his article in your issue of Nov. 11. The fact that a woman is more fortunate in sustaining a perineal tear than in having her perineum preserved at the expense of a longer second stage, and consequent overstretching of the paravaginal muscular tissue and disruption of its attachments, has perhaps been recognized and taught more widely and for a longer time than Dr. Flew suggests. Yet the old idea dies slowly—particularly among the nursing profession—and he has rendered a service in again bringing the matter to notice. The immediate advantages to the mother and child (and obstetrician) and the remote benefits to the mother of a well-timed episiotomy are beyond question, and, being in entire agreement with Dr. Flew's main thesis, may I comment on some of the interesting side issues which he raises?

His statement that apart from vault prolapse, as in the nullipara, a low cystocele and low rectocele are the only types of vaginal prolapse cannot be accepted. Prolapse occurs in an infinite variety of forms, affecting both upper and lower vaginal walls and the uterus, sometimes with a hernial pouch or peritoneum, sometimes without. Moreover, a high vaginal prolapse, usually rectocele or enterocele, may be present without any uterine prolapse. Although vaginal and uterine prolapse often occur together in different combinations, it is nevertheless helpful to consider them separately.

Having reminded us of the well-established clinical observation that prolapse, particularly uterine, is rare in patients who have a complete perineal tear, even of long standing, it is a pity that Dr. Flew concludes that the pelvic floor forms the most important support of the uterus and vaginal walls. Apart from the evidence he gives, there is much to substantiate the view that the chief uterine supports are the cardinal and utero-sacral ligaments, together with the fibromuscular fascia which spreads down around the upper vagina, and that the vaginal walls are mainly supported by the fascia lying deep to them. The perineum offers only a subsidiary support; in the upright position the vaginal walls, lying in apposition and sloping upwards and backwards, rest on it, and so does the uterus to a lesser extent, but probably only when it is already in the first stage of prolapse. If the main supports are weakened a strong pelvic floor will not prevent prolapse, whereas if the main supports are intact complete destruction of the pelvic floor does not result in prolapse.

The nearest approach to pure uterine prolapse is seen in the nulliparous type, where the uterus, together with the vaginal vault, descends through an undamaged introitus and lower vagina. Although nulliparous prolapse is not common, it should not lightly be dismissed from consideration—it may have much to teach us regarding the aetiology of uterine prolapse in the multipara. Its predisposing and fundamental cause is an inherent weakness of the supports around the cervix and vaginal vault, this weakness becoming accentuated by atrophic changes associated with the climacteric. The activating factor is sometimes increased pressure from above which results from heavy physical work, a chronic cough, etc.



But not all women whose uterine supports are developmentally weak are destined to remain nulliparous, and the greater number marry and have children. In such case it takes very little damage to the cardinal and adjacent ligaments during pregnancy and childbirth to determine the onset of prolapse of the uterus, either at once or following the climacteric. This does not mean that all such women would ultimately have developed prolapse if they had remained childless, although some would undoubtedly have done so. It means that pregnancy may reveal even minor defects in the supporting system—defects which in themselves might not have resulted in prolapse had not the strain of pregnancy been imposed. It is open to dispute what part an inherent weakness in the uterine supports plays in the development of prolapse in multiparous women, but it is probably an important one. This explains why prolapse may follow an easy confinement and not necessarily a difficult and complicated one. Moreover, it is sometimes possible to foretell in girls and young women that they will subsequently develop uterine prolapse if they have a child. In such the weakness of the supports is indicated by the ease with which the cervix pulls down to the vulva with a vulsellum, and sometimes by an unusually short vagina with a low-lying cervix and generalized atony of the pelvic musculature. Another developmental feature—an unusually low pouch of Douglas—must at times also be an aetiological factor in prolapse—at least in the formation of an enterocele, which, again, is seen in both nulliparous and multiparous subjects.

It is usually stated that vaginal prolapse by pulling on the cervix may ultimately cause uterine prolapse. This is probably true when it is the upper vagina which is affected, especially as the fascia deep to the upper anterior vaginal wall appears to play a part in supporting the uterus, but it is difficult to believe that a low cystocele or rectocele, separated from the cervix by an upper vagina with intact supports, as postulated by Flew, can operate in this way. Indeed, it is difficult to say what particular mechanism operating during pregnancy or labour weakens the uterine supports. It can hardly be the softening and stretching of the ligaments occurring during pregnancy, followed by faulty involution; otherwise prolapse following Caesarean section would not be so uncommon. The injury occurs for the most part during the birth process, and, although many explanations as to how it happens have been attempted, none are thoroughly convincing.

From the above it would appear that not all cases of uterine prolapse can be prevented by episiotomy—some patients are destined to suffer it by reason of the supports of the uterus being insufficiently developed to stand even a minimal stress of pregnancy and labour. Yet there is little doubt that episiotomy does protect a large number of patients from uterine prolapse. How it does it is not clear, but probably by releasing the upper anterior vaginal wall and its underlying fascia and, indirectly, possibly the paracervical tissues as well, from the downward pull of the foetal head.

Vaginal prolapse is even more likely to be prevented by episiotomy, which, apart from reducing the risk of general overstretching of the vaginal walls and fascia, releases the anterior vaginal wall from the tendency of the descending head to drag the pubocervical fascia away from its attachments behind the pubis. In particular the patient is least likely to develop a cystocele when episiotomy is performed.

Flew mentions that infection, by leading to subinvolution, may cause prolapse. This is largely a theoretical consideration. The entrance of infection into the area around the cervix, particularly following a tear of the cervix and vaginal vault, nearly always fixes the uterus to some extent and is almost a guarantee against its prolapsing. Similarly, the vaginal wall which is torn and infected rarely prolapses—it is usually the area above it, which has avoided the tear but has been stretched, which descends.

Two further points merit comment. First, whilst agreeing that the duct of Bartholin's gland should be avoided in all operations if possible, if only to preserve the supply of normal lubricating secretion, yet it should be pointed out that if it is cut or ligatured a Bartholin's cyst rarely results. In some types of perineal repair the duct is always divided, and yet it is exceptional to see a cyst of either gland or duct develop. It would appear that complete severance of the duct results in the gland ceasing to function. Secondly, Flew's statement that the vagina is attached to the cervix about the level of the internal os should not be allowed to pass unchallenged. If it were so, the "supravaginal cervix" would cease to exist.

In conclusion, may I repeat that I hope the above comments on some of the more academic questions raised in Dr. Flew's paper will not detract in any way from his main contention—that prolapse, particularly cystocele, can to a large extent be avoided by episiotomy, and that in any case it is an operation which, in the interests of the immediate welfare of both mother and child, should be carried out whenever there is the slightest delay in the second stage of labour, and certainly in every forceps and breech delivery in a primigravida.—I am, etc.,

T. N. A. JEFFCOATE.

Liverpool.

Sir,—I should like to thank Dr. Flew for his article on episiotomy, and particularly for his advice "concerning the exact way in which it should be carried out." But one feels that his advice about "the cases in which it should be performed" can hardly be taken seriously.

Dr. Flew tells us that in a series of 135 primigravida private patients he performed episiotomy in 53.3%, and implies that the "practical result would be that an incision would be necessary" in multiparous patients episiotomized as primips, "since the old scar would rupture." Is it not a reasonable deduction that in over 50% of all labours perineal suture will be necessary?

Dr. Flew advocates that midwives be permitted to perform episiotomy, but the suturing of the wound should be left to a medical officer. I do not think many of us will agree with the former, and we might all be rather surprised by the large amount of extra work, remunerated by a meagre fee, produced by the latter.

One of the main reasons for early episiotomy brought forward by Dr. Flew is the prevention of vaginal tears at the time of labour and prolapse subsequently. Are not vaginal tears due to disproportion between the size of the baby's head and the diameter of the vagina? It is a little difficult to see how an episiotomy is going to alter either of these diameters.

One cannot help feeling that Dr. Flew is viewing this problem through his specialist glasses, which are perhaps a little too concave; but to show him how much I appreciated his article I am going to ask him to write a further article (with equally clear diagrams) telling us the exact details of the technique of suture of the perineal wound following episiotomy.—I am, etc.,

Rotherham

ERIC COLDREY.

Sir,—Dr. J. D. S. Flew is to be congratulated upon the firm stand he has taken with regard to episiotomy. I am particularly glad to see that he stresses that, in the primigravida, episiotomy is necessary in over 50% of cases to prevent irreparable maternal and foetal injury during labour, that a timely episiotomy will often make an otherwise unavoidable forceps delivery unnecessary, and that bilateral episiotomy must not be done under any circumstances.

Without wishing to detract from the value of his paper, I should like to point out that the "author's method" of episiotomy was described by Douglas Miller in the *British Medical Journal* (1936, 2, 4), and the harmful effects of conserving the perineum at the expense of the intracranial structures of the child and of maternal tissues more difficult to repair than the perineum, by myself in the *Journal of Obstetrics and Gynaecology of the British Empire* (1943, 1, 260), in both instances without any claim to originality by the author.—I am, etc.,

Newcastle-upon-Tyne.

WILLIAM HUNTER.

### Erb's Paralysis

Sir,—In your issue of Oct. 21 (p. 548) the query was put forward: "What is the treatment of Erb's paralysis in an infant—the result of a very difficult confinement?" From the way in which the question was framed I visualized the inquirer with an infant a few days old on his hands asking for a method of immediate treatment, and it seemed to me that the answer given would be of little help to him.

I doubt if any surgeon would advocate operative intervention in the newborn, and the application of an aeroplane splint is a practical impossibility in a child a few days old requiring bathing, feeding, and attention to the bowels and umbilical cord. The orthopaedic textbooks on the whole give little help in this important problem beyond advocating fixation in flexion, abduction, and supination without any definite explanation as to how it should be done. In this district, mainly owing to the early recognition of these conditions at child welfare centres, I rarely see these children later than a few days after birth, and the good results obtained by early and continuous fixation in the optimum position warrant, I think, a more widespread knowledge of the following simple procedure. It is almost certain to have been published before, although I have not come across it either in the literature or in practice since it was taught me as a student by the late Prof. Archibald Young of Glasgow many years ago.

wished their symptoms to recur. Sir Arthur Hurst wrote to the *Times* to call attention to his opinion that "excessive smoking is undoubtedly one of the most important causes of unexpectedly high incidence of duodenal ulcer." He also mentioned that Sir Maurice Cassidy had drawn attention to the same subject. My own experience is very small, but one patient told me that he could always get sick leave by smoking cigarettes for a week or two before his medical board.

In the articles referred to above no mention is made of tobacco, but with such authority supporting the suggestion that tobacco is of very great importance in the aetiology of duodenal ulcer I venture to hope that cigarette smoking may receive attention, while the psychological and nutritional causes are also investigated. I would like to relate that several years ago I asked a sympathetic medical friend why no one with a voice that would be heard and listened to had not raised this point. His answer was cynical: "Not likely, all Harley Street has its money in Imperial Tobaccos."—I am, etc.,

Newbury.

V. S. HODSON.

### The Metric System and Medicine

SIR,—Few medical men, if they give any serious thought to it, can doubt the advantages to be derived from the use of the metric system in medicine. At present it is used by a small minority of the profession, and this surely leads to confusion rather than simplification. Indeed, those who use it are still after many years using it either inconsistently or incompletely. One sees Gilbertian instances of this from time to time in certain wards. Aperients may be ordered in the metric system, but if they do not have the desired effect an enema is given, and being measured, always I believe, in good old-fashioned pints and ounces, it usually has a most gratifying result. I well remember looking at the chart of a patient who drank in cubic centimetres but vomited in ounces (the stomach is a true British die-hard). Even physicians who are most enthusiastic supporters and users of the metric system still speak of their patient's temperature in degrees Fahrenheit.

I agree with Surg. Capt. Lambert Rogers (Nov. 11, p. 639) that if we should make up our minds to change to the metric system it should be done overnight. But it must be after careful consideration and preparation and by the whole of the medical and nursing professions as well as by all pharmaceutical personnel. But even then some may say, and possibly rightly, that this is unwise so long as Britain does not adopt the metric system for everything.—I am, etc.,

London, W 1

JOHN HOSFORD.

### Débridement

SIR,—In teaching students and in other connexions I use the word "toilet" for the above. To students it has to be explained fully.—I am, etc.,

Cardiff.

A. W. SHEEN.

### R.M.B.F. Christmas Gifts

SIR,—You very kindly published my appeal in October on behalf of the Christmas Gifts Fund of the Royal Medical Benevolent Fund. I am very grateful to those who have already forwarded their contributions, but may I ask those of your readers who are in sympathy with our work and who have not as yet sent their donations to forward them as soon as possible to the Honorary Treasurer, Royal Medical Benevolent Fund, 1, Balliol House, Manor Fields, Putney, London, S.W.15, marked "Christmas Gifts." This appeal is urgent as we have not as yet received the sum required to meet the distribution of gifts.—I am, etc.,

THOS. BARLOW,  
President.

G. S. Erwin (*Tubercle*, 1944, 25, 35) records 14 cases of tuberculous tracheo-bronchitis in adults aged from 19 to 64. Factors contributing to the onset were fatigue, malnutrition, fevers, and silicosis. The cardinal symptoms and signs were cough, sputum, evening pyrexia, haemoptysis, pain in the chest, and loss of weight. X-ray examination showed no evidence of acute parenchymal disease, though occasional hilar adenitis of the type seen in childhood is

## Obituary

SIR ROBERT KELLY, C.B., F.R.C.S.

Sir Robert Ernest Kelly died at his home in Liverpool on November 16 at the age of 65. As a vice-president and member of the Council of the Royal College of Surgeons, a member of the General Medical Council, and a member of the Army Medical Advisory Board, regional consulting surgeon and chairman of the Local Medical War Committee, there was much for him to do in these troubled times. A man of peace, with a deep love of his country, he would be found giving a hand wherever the city had been "blitzed." His loss will be felt deeply by those who appreciated his kind disposition, engaging perseverance, and the whole-hearted enthusiasm to advance the art and science of surgery. He belonged to a rapidly diminishing group of craftsmen, who with ease turn from one branch of surgery to another and perform cranial, abdominal, vascular, and orthopaedic operations with admirable skill and success.

Born in 1879, he was educated at the Liverpool Institute. He took the B.Sc. Victoria, and was one of the first graduates of the University of Liverpool. His early training in physiology and association with Sherrington undoubtedly influenced his subsequent career, bringing with it a remarkable delicacy in the handling of tissues and a keen desire to further research. His research was objective and had the safety of the patient ever in view. An exponent of the open method of administering ether, he introduced the intratracheal method into this country following upon a visit to America.

The outbreak of the last war interrupted his career as assistant surgeon to the Liverpool Royal Infirmary. He went to Salonika, there to make Thomas splints and start rehabilitation centres. He became consulting surgeon to the British Salonika Force and was awarded the C.B. Shortly after his return he was appointed professor of surgery. His lectures were popular and practical and well illustrated, for his hobbies included colour photography in all its forms, in addition to golf and the 'cello. In 1937 he had the honour to be invited to take charge of the Surgical Unit at St. Bartholomew's Hospital for a period of one month.

Keenly alive to the changed circumstances under which the teaching hospitals were working, Robert Kelly urged a fusion of local hospitals to build one worthy of the city—the foundation stones of which he would have welcomed. Twice President of the Liverpool Medical Institution, he conducted its centenary proceedings in a manner worthy of the best tradition of that society. He could be relied upon to give all organizations interested in medical welfare his closest support. He received a well-deserved knighthood in 1939, and was appointed emeritus professor of surgery and honorary consulting surgeon to the Royal Infirmary. He leaves a widow and one daughter.

Prof. HENRY COHEN writes:

It is hard in the immanence of his passing to write soberly of Robert Kelly. Twenty-five years ago he was my teacher, and for nearly twenty years my surgical colleague. With the years the admiration of the student grew into the love of a friend for a gentle and unassuming personality, devoid of malice and guile, with never-failing tenderness and courtesy. His junior colleagues sought him out in their troubles and perplexities, and he was never too busy to give them encouragement and sympathy. Not Liverpool only but all British surgery is the poorer for his loss.

His career was one of unbroken success. He early recognized that an understanding of bodily function is no less significant to the surgeon than a knowledge of anatomy, so he interrupted his medical course to take an honours degree in physiology under Sherrington,



who was then at Liverpool laying the foundations of modern neurophysiology. One of the greatest of ancient lyricists wrote, "Principibus placuisse viam non ultima laus est"—if Horace did not err Kelly must have been a happy man when Sherrington testified in 1921 that "during my eighteen years at the University of Liverpool I never had a student of greater promise." Physiological principles permeated his surgical teaching and practice throughout, but did not prevent him from becoming a superb craftsman. His manual dexterity was proverbial, and with the simple tools of his work he was an acknowledged master; even in the tying of a knot he showed a consummate artistry. But he delighted especially in the mechanically ingenious instrument, many of his students spent laborious hours providing the motive power for a hand-driven de Martel's trephine, but they were rewarded by those eyes which shone in admiration whenever, with almost human prescience, the drill stopped at the dura. The skill with which he used Souttar's craniotome may be seen in a film, contributed to the Kodak Library, on the removal of a cerebral tuberculoma. His enthusiasm for intratracheal anaesthesia, which he introduced into this country after a visit to America in 1912, owed not a little to his admiration for the physical principles of the apparatus. His zest for new adventures in surgery never flagged. In his sixtieth year his keenness and enthusiasm would put to shame the complacency and contentment of many surgeons twenty years his junior. His surgical versatility and knowledge were outstanding; except for chest surgery, there was no branch of the art in which he would not have been regarded as a peer by those with narrower interests.

But his skill never outstripped his judgment. Nor did he fall a victim to the many conditioned reflexes of the surgery of his time. For him "peptic ulcer" was not a specific stimulus, with surgery as an inevitable response. Few surgeons realized earlier than he the impermanence of surgery in that ultimately unrewarding Platonic absolute—the "chronic appendix." By instinct and persuasion he was a true physician ever seeking to understand the workings of Nature, and never so arrogant as to believe that his plumbing, carpentry, or architecture were more than minor contributions to the processes of healing and repair.

He wrote little by which he will be remembered, but his example and influence have left something in the structure of surgery more durable than his own brief life. For he was a model teacher. Even his systematic lectures had the intimacy of the wards. His style was simple and direct. He lacked (or did he shun?) the felicitous phrase and polished period of the seasoned orator, but his teaching was no less effective and his apt similes and illustrations had more than local fame. His students will recall vividly the annually produced orange with which he demonstrated the sites of cleavage in compression fractures of the skull, and the stick of chalk which illustrated the mode of production and the difficulties of reduction of spiral fractures of the tibia. He was no mean artist, and his lucid line drawings made with the traditional multicoloured pencil, which his senior colleague Thelwall Thomas (to whose encouragement and training Kelly never failed to pay affectionate tribute) had introduced, were a regular feature of his demonstrations.

From the day of his appointment as professor of surgery in the University of Liverpool he threw himself wholeheartedly and with great energy into its academic life and into the medical life of the city. Not only here, but in the wider spheres of his college, the General Medical Council, and those Government Departments with which he was associated in an advisory capacity, he revealed qualities of statesmanship which did not surprise those who knew his original and reflective mind. His unexpected gifts as an administrator were untasked when, as consulting surgeon to the Salonika Army, he "controlled the surgical work and supervised the surgeons working in at one time as many as 21,000 hospital beds." There his "services were of the greatest value," and earned for him the highest praise from the Director of Medical Services, Major-Gen. M. P. Holt. A revealing comment on Kelly is that during the Salonika campaign his chief recreation lay in reading Bayliss's *Principles of General Physiology*.

His tact and the belief of his colleagues in his complete integrity and selflessness were major assets in the delicate negotiations which led to the formation of the Associated Voluntary Hospitals Board in Liverpool, and later to the conception and legal realization of the union of the four general teaching hospitals in Liverpool as the Royal Liverpool United Hospitals. In committee his sense of justice and his intuitive understanding of people and things made him an accepted leader; he never dominated, his sole aim was to help. He did not feign disinterestedness in the rewards of his professional labours. Each fresh honour—and few open to the surgeon were denied him—cheered and heartened him; but he gave his energies and laboured unstintingly in many fields which yield no laurels. His knighthood, conferred on his retirement from the chair of surgery, was a recognition of the spirit and example of a toiler during which many who now hold high places in the world of medicine came under the spell of his inspiration and magnetic personality.

Kelly's interests were not confined to medicine. He was a man of wide culture and diverse facets. He loved art and music. He

was a competent cellist, and though he rarely missed a philharmonic concert, he preferred the more intimate charm of chamber music. The theatre was one of his many hobbies; colour photography, both still and kinematic, another. He was a supporter of the Liverpool Playhouse, and not the least attraction of his frequent visits to London on official business was the opportunity of a night at the theatre. He played golf, but his captaincy of the Wallacey Golf Club mirrored the affection in which he was held rather than his prowess on the links. But his main recreation was reading. He read widely, not only in the literature of medicine, but in history, biography, travel, and especially modern science. The more popular works of Einstein, Rutherford, Bragg, Eddington, Jeans, Aston, Dingle, and other modern physicists were his mental stimulants when a long operation list had earned an evening's physical relaxation.

The sorrow of his loss was shown by the large and distinguished congregation representing his many scenes of endeavour which gathered to pay its tribute at the Liverpool Cathedral. Few men have by their lives more cogently compelled the epitaph: *Nihil quod tergit non ornavit*.

#### E. W. HEY GROVES, F.R.C.S.

Prof. G. GREY TURNER writes:

Your admirable notice of my old friend Hey Groves may be supplemented by mentioning that in 1916 he obtained the Jacksonian Prize at the Royal College of Surgeons for an essay on "The Methods and Results of Transplantation of Bone." At that time he was already attracted to bone surgery and had done much experimental work on the subject, but I think he was greatly encouraged by the award, and it had much to do with finally focusing his attention on bones and joints. Nevertheless, he remained a general surgeon, and almost the last time I saw him at work in Bristol, in April of 1939, he showed some cases in which he had transplanted the ureter, and in one of these he proposed to do a further operation for exploration of the kidney on the following day. More years ago than I care to mention Hey Groves rather startled a London audience at the Royal Medico-Chirurgical Society by a paper on gastrostomy, in which he advocated removal of the great omentum when that operation was carried out for malignant disease. During the last war one of his activities was the splint factory which he set up in Alexandria and supervised up to the time he left Egypt. It was wonderful to see the Arab workmen turning out splints in large numbers, mostly to patterns devised by Hey Groves. As long as he was there to supervise things all went well, and I shall ever feel grateful for the demonstration he gave us on gunshot limb injuries in the wards of the 21st General Hospital. But apart from the technical side of his work Hey Groves was a delightful personality. He loved foreign travel, and I think probably got more enjoyment out of our many tours on the Continent than most people. At the meetings of the editorial committee of the *British Journal of Surgery* Groves was usually in his best form, and except for the wartime (1914-18) I remember his being absent on one occasion only, and that was in consequence of illness. He and Moynihan, who was chairman of the *Journal* until his death, made a very good combination, but I always felt that Groves did not get quite enough credit for the enormous amount of tedious editorial work he undertook without the slightest complaint. He was always ready to shoulder more; and if ever there was difficulty in deciding who should review some book, often in a foreign language, he was willing to step into the breach.

FRANK ARTHUR HEPWORTH, F.R.C.S., died at his home in Saffron Walden, Essex, on Nov. 5, after a long illness, at the age of 65. He received his medical education at St. John's College, Cambridge, graduating B.A. (1st Class Natural Sciences Tripos) in 1900, and at St. Bartholomew's Hospital, taking the M.A., M.B., and B.Ch. in 1904, and F.R.C.S. Eng. in 1907. During the last war he served in the R.A.M.C. with the rank of major, and was appointed senior resident surgeon at Wharfedale, and later at the County of Middlesex War Hospital. For his services he received the O.B.E. In 1919 he came to Saffron Walden to take up general practice. He was elected to the staff of the hospital in 1920, and in 1940 he became senior surgeon, a post he held until his death. In the years that I have known Hepworth as a neighbouring practitioner I have always been struck with the quite remarkable devotion and affection that his patients felt for him. He was a good deal more than the family doctor to them. They brought him all their troubles, for they knew that he would apply himself to their problems in that thorough and painstaking way that was his particular characteristic. One may say that he did too much for his patients, for it was this excessive devotion to his work that finally undermined his health. As a colleague I shall always remember with gratitude his unflinching readiness to help at operation or in consultation, however awkward the hour or however tired he may have been.

\* Subsequently published in the *British Journal of Surgery*, vol. 5, p. 185.

Although he chose to remain in the ranks of the general practitioners, he was a surgeon of great competence. His judgment was sound and his knowledge very wide, for he somehow found time for extensive reading. This and his vast experience in general practice made him a mine of information to anyone needing his help, and in particular to his fellow practitioners at the hospital. He died in middle life, while still at the height of his powers. The name of Dr. Hepworth will be long remembered in Saffron Walden and in the surrounding villages, for he was one who combined in his personality the finest qualities of the traditional family practitioner with the progressive and scientific outlook of to-day.—A. G. S.

Dr. JAMES J. PATERSON, late medical officer of health for East Berkshire, died from illness in Italy on Oct. 24; he had been appointed to U.N.R.R.A. in June. He studied at the Cardiff Medical School, where he won a scholarship, and entered St. Bartholomew's Hospital as senior science scholar, graduating B.Sc.Lond. in 1903, M.B., B.S. in 1908, and M.D. in State Medicine in 1911. At Bart's he was for a time junior demonstrator in physiology. He entered the public health service as assistant R.M.O. to the Croydon Borough Hospital, then became assistant M.O.H. to the county borough of St. Helens, and moved to Maidenhead in 1911 as M.O.H. for the East Berks United Sanitary Districts, school medical officer for the borough of Maidenhead, and superintendent of the infectious diseases hospital. Dr. Paterson joined the B.M.A. in 1909, was honorary secretary of the Section of Public Health at the Annual Meeting of 1922, and chairman of the Windsor Division in 1928-9. A. T. writes: By the sudden and untimely death of Dr. J. J. Paterson, U.N.R.R.A. has lost an extremely valuable member of its medical staff. Everyone interested in public health work, particularly in its international aspects, knows how much he did to develop and foster it. The conclusion of his long and successful tenure of the post of M.O.H. to East Berkshire would have seemed to most men a fitting moment to retire from active work. Paterson, however, thought otherwise, and was one of the first to volunteer to work on Balkan relief. He survived a strenuous summer in refugee camps in the Middle East, and it was just as he was on the point of leaving Italy for Yugoslavia that he collapsed and died. Ten minutes before his death he had been busily engaged in discussing plans with the other members of the Mission, and seemed as bright and efficient as ever. He died, as he had lived, in harness, and those who knew him are satisfied that he would not have wished it otherwise. Our sympathy goes out to his widow, who, sharing his humanitarian views as she did, gladly spared him for the work on which his heart was set.

The following well-known medical men have recently died: Dr. LAWRENCE JOSEPH RHEA, professor of pathology at McGill University Faculty of Medicine, aged 67; and Dr. FREDERIC ATWOOD BESLEY, a founder member of the American College of Surgeons, aged 76.

## Universities and Colleges

### UNIVERSITY OF LONDON

The following candidates have been approved at the examination indicated:

THIRD M.B. B.S. : R. Harrison, Margaret E. Hughes, J. C. L. Adams, J. Andrew, F. M. Backett, E. W. Ball, J. A. Barlas, D. W. Barratt, R. G. Bird, J. A. H. Brown, Barbara G. Bull, A. Butterworth, R. D. Calcott, C. M. Carlyle-Gall, H. E. Claremont, A. A. Cochran, G. N. C. Crawford, R. Creese, J. S. Crowther, R. H. Cuthforth, Joan M. B. Davies, J. W. T. Dixon, M. H. N. Dixon, J. G. Domangue, R. L. M. Ferrari, Barbara W. Gerrard, Muriel M. Glover, L. W. Godfrey, Susanna Gordon, I. G. Gray, N. H. Gunn, P. J. Hare, H. F. Hills, G. N. Jones, Mary D. G. Jones, Barbara Law, D. Lawrence, G. L. Le Bouvier, T. P. Loke, D. R. Lucas, P. F. M. MacDonald, I. Macdonald, R. I. Meanock, I. B. Mehta, R. Milton, G. Monckton, R. E. Moore, J. A. Oddie, B. W. Orchard, K. Owen, K. W. E. Parne, H. W. Palmer, A. Percy, R. G. Pittman, A. H. Pote, A. G. Quinlan, K. J. Randall, Elizabeth V. Rohr, C. D. Routh, P. J. L. Sequeira, K. E. D. Shuttleworth, L. S. Simons, I. A. Sindell, C. H. Smith, W. H. R. Smith, Y. G. Sofer, Zena Stanley, S. J. Steel, B. S. Sweetman, J. M. Tanner, R. C. W. Thompson, Mary Townsend, D. Q. Trousne, C. H. Walker, Muriel C. Waterfall, Jean M. Watson, P. West, D. R. Wilkie, P. A. T. Wood, E. A. Wright, Betty C. Zoob, M. Zoob.

1 With honours. 2 Distinction in obstetrics and gynaecology.

### SOCIETY OF APOTHECARIES OF LONDON

At a recent meeting of the Court of Assistants, with Dr. J. P. Hedley, Master, presiding, an illuminated address was presented to Sir Stanley Woodward upon the completion of three years as Master of the Society. Surg. Rear-Adm. C. P. G. Wakeley delivered a lecture in the hall on "War Surgery in 1944" in place of Col. Elliott Cutler, who was unable to lecture owing to military duties.

The diploma of the Society was granted M. J. Blunt, D. A. Cox, D. I. F. Edwards, E. D. C. Jones, R. A. Leeming, I. A. Nazroo, and the diploma of Mastery of

## Medical Notes in Parliament

### Tuberculosis and Health Services in Nigeria

In a reply on Nov. 8 Col. STANLEY reported that detailed statistics of the incidence of tuberculosis in Nigeria as a whole were not available, but the position gave cause for concern. Facilities for the treatment of tuberculosis, and indeed medical facilities as a whole, obviously needed to be widely extended, but the expansion of the activities of the medical department had inevitably been limited during the war by the staff shortage. This had been accentuated by releases for military service, by invalidings, and by recruitment difficulties. In Nigeria as an essential preliminary towards preparing a comprehensive tuberculosis prevention scheme the Nigerian Government made provision for the establishment of a Tuberculosis Investigation and Survey Unit under the charge of a tuberculosis officer. The unit would include a mobile mass radiography section. The survey would start as soon as staff and equipment could be obtained. When these had been completed it would be possible to prepare for the needs of the country as a whole. Steps were also being taken to appoint a venereologist to take charge of a campaign against venereal disease. Venereal disease clinics would be opened in Lagos and elsewhere as soon as facilities were available. Meanwhile treatment for tuberculosis, venereal disease, and pneumonia was available to the public at existing hospitals and clinics. Expansion of general medical facilities would form an important part of the post-war development programme for Nigeria.

In one part of his reply Col. Stanley said that Government medical officers in Nigeria provided their own transport, but were eligible for assistance in the form of an advance of salary towards the purchase of motor vehicles. Maintenance and mileage allowances were paid. He was not aware of any difficulties.

### Industrial Injury Insurance

Sir DAVID MAXWELL-FYFE resumed the debate on Nov. 9. He said there was an absence from the present system of provisions for medical and post-medical rehabilitation. All agreed that must be changed. The present scheme proposed grants for maintenance in hospitals, treatment, and constant attendance. Medical treatment and rehabilitation of the injured workman and post-war rehabilitation and training would be provided as part of the general medical and post-hospital rehabilitation services organized by the Ministry of Health and the Ministry of Labour. There would be a duty on the Ministry of Social Insurance to co-ordinate these activities with those of the Department, to assure free information, and to see the best services were provided for rehabilitation and training. The House had seen light work used as a method of stopping compensation. That was wrong and destroyed what work could do to restore and rehabilitate. The Government's proposals eliminated the idea of deciding how far a workman had recovered his earning capacity. They eliminated the grievance that an increase in earning capacity resulted in an automatic reduction in pension. Many M.P.s had seen the mental harm which that system caused in the past. The proposals also removed the suspicion that the workman would be pressed to undertake unsuitable work, with the result that he hesitated about rehabilitation and his recovery was retarded. The Government system gave a workman a right to his pension whatever work he did. It also met to some extent the complaint that there was no compensation for mutilation and disfigurement except in strict relation to earning capacity. By the system proposed, the workman would notify the pensions officer of the accident and would send the certificate of the doctor who had examined him for the injury. There would be confirmation from the employer, or, if there was a dispute, an appeal to the local appeal tribunal. When the Bill was drafted the Government would bear in mind the allocation of onus of proof. Clear working instructions would cover the vast majority of cases. When the change came from allowance to pension the question of disability would go to a medical board, against whose decision there could be an appeal to the local appeal tribunal, with the same chairman but with medical instead of ordinary members. That procedure would get rid of one-man decisions by a medical referee as was now done under Section 19 of the Act. He suggested that the words "arising out of and in the course of" employment should be retained when drafting the new Bill. Interpretation of those words had changed in favour of the workman.

Mr. BOWLES cited the case of a workman who had twice got dermatitis at a factory when unloading machinery which was oiled with oil. This man had great difficulty in

## The Services

Cpts. L. J. Calvert, D. G. Cameron, C. B. Caswell, and R. C. Mellow, R.C.A.M.C., have been awarded the M.C., and Major (Temp. Lieut.-Col.) E. J. Selby, O.B.E., R.A.M.C., has been mentioned in dispatches in recognition of gallant and distinguished services in Italy.

Capt. S. Gopalakrishnan, Lieut. (Temp. Capt.) C. J. Pinto, Lieut. (Acting Capt.) C. S. Rao, and Subadar H. M. Yaqub, I.A.M.C., have been awarded the M.C. in recognition of gallant and distinguished services in Burma.

Capt. J. P. Irwin, R.A.M.C., has been mentioned in dispatches in recognition of gallant and distinguished services in the field.

The Efficiency Decoration of the Territorial Army has been conferred upon Col. R. I. Poston, Lieut.-Col. (Temp. Col.) J. P. J. Jenkins, Lieut.-Col. (Acting Col.) I. G. W. Hill, and Majors (Temp. Lieut.-Cols.) N. Capstaff, W. M. Evans, M.C., A. J. King, and H. S. Ward, O.B.E., R.A.M.C.

### CASUALTIES IN THE MEDICAL SERVICES

*Killed in Western Europe.*—Lieut. David Michael de Reuda Winer, M.C., R.A.M.C.

*Died.*—War Subs. Capt. Ian William Barclay, R.A.M.C.

*Died of wounds.*—Capt. Philip Augustus Robinson, R.A.M.C.

*Wounded.*—War Subs. Capt. A. Anderson, T. G. Gray, D. R. Hughes, G. P. Mitchell, and H. B. S. Warren, R.A.M.C.

*Wounded or injured.*—Temp. Surg. Lieuts. R. C. Carr, J. P. W. Grant, B. H. Hand, and E. V. Mackay, R.N.V.R.

*Missing, presumed killed.*—Temp. Surg. Lieut. Horace Edward Dunning Gale, R.N.V.R.

*Missing presumed lost from Japanese transport.*—Capt. Matthew Joseph McNamara, A.A.M.C.

*Reported missing, now prisoner of war.*—Major T. R. B. Courtney, R.A.M.C.

*Previously reported missing at Arnhem, now known to be a prisoner of war.*—Capt. R. E. Bonham Carter, R.A.M.C.

### EPIDEMIOLOGICAL NOTES

#### Discussion of Table

In *England and Wales* there was a general increase in the notifications of infectious diseases. There were 925 more cases of measles than last week, 162 more of whooping-cough, 64 more of dysentery, and 63 more of acute pneumonia.

The rises in whooping-cough and acute pneumonia notifications were greatest in Lancashire, 88 and 35 respectively more than last week, and this county had the greatest fall—47 fewer cases—in scarlet fever. Notifications of diphtheria fell by 24 in Cheshire, and by 13 in Lancashire, but rose in Staffordshire by 12, and in Warwickshire by 14.

Measles is still rising in incidence in the north. Increases over last week's totals were as follows: Lancashire 450, Warwickshire 218, Staffordshire 92, Southampton 51; the only drop of any size was in Devonshire, where 73 fewer cases occurred. Lancashire had 36% of the measles notifications for the country. The 2,055 cases recorded made the largest weekly total in the country since the end of 1942, when 2,096 cases were notified, this number being only 14% of the total for the country.

The notifications of dysentery rose to 320. The principal centres of infection remain unchanged. The largest returns were London 64 (Wandsworth 29); Lancashire 57 (Prestwich M.B. 17, Prescott 15); Middlesex 27 (Sunbury-on-Thames U.D. 20); Glamorganshire 19 (Cardiff C.B. 17); Essex 17; Gloucestershire 14; Cheshire 12.

In *Scotland* notifications for acute primary pneumonia rose by 42, measles by 38, diphtheria by 29, and dysentery by 10. Glasgow had 11 more cases of dysentery than last week, and Aberdeen County 8.

In *Eire* the incidence of measles again fell, only 11 cases being reported. The incidence of diphtheria remained unchanged at the relatively high level of 123.

In *Northern Ireland* the most notable feature of the returns was the increase of 62 in the notifications of measles; 200 cases were reported in Belfast C.B. during the week.

#### Week Ending November 18

The returns of infectious diseases in England and Wales during the week included: scarlet fever 2,335, whooping-cough 1,410, diphtheria 619, measles 6,001, acute pneumonia 626, dysentery 217, paratyphoid 18, typhoid

### INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended Nov. 11.

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year, for: (a) England and Wales (London included), (b) London (administrative county), (c) Scotland, (d) Eire, (e) Northern Ireland.

Figures of Births and Deaths, and of Deaths recorded under each infectious disease, are for: (a) The 126 great towns in England and Wales (including London), (b) London (administrative county), (c) The 16 principal towns in Scotland, (d) The 13 principal towns in Eire, (e) The 10 principal towns in Northern Ireland.

A dash — denotes no cases; a blank space denotes disease not notifiable or no return available.

Disease	1944					1943 (Corresponding Week)				
	(a)	(b)	(c)	(d)	(e)	(a)	(b)	(c)	(d)	(e)
Cerebrospinal fever .. ..	37	3	12	3	—	41	4	24	2	1
Deaths .. ..	—	—	1	—	—	—	—	—	—	—
Diphtheria .. ..	642	14	198	123	26	819	50	181	117	48
Deaths .. ..	12	—	5	4	—	13	1	3	5	—
Dysentery .. ..	320	64	100	—	—	158	35	87	—	—
Deaths .. ..	—	—	—	—	—	—	—	—	—	—
Encephalitis lethargica, acute .. ..	1	—	2	—	—	1	—	—	1	—
Deaths .. ..	—	—	—	—	—	—	—	—	—	—
Erysipelas .. ..	—	—	41	15	2	—	—	53	5	1
Deaths .. ..	—	—	—	—	—	—	—	—	—	—
Infective enteritis or diarrhoea under 2 years .. ..	41	3	14	35	1	64	7	11	20	2
Deaths .. ..	—	—	—	13	—	—	—	—	15	—
Measles* .. ..	5,752	57	345	11	207	557	50	67	56	2
Deaths .. ..	6	—	—	—	—	—	—	—	—	—
Ophthalmia neonatorum .. ..	66	4	14	1	—	89	6	22	—	—
Deaths .. ..	—	—	—	—	—	—	—	—	—	—
Paratyphoid fever .. ..	3	—	1(B)	—	—	4	—	—	—	—
Deaths .. ..	—	—	—	—	—	—	—	—	—	—
Pneumonia, influenza† (from influenza) .. ..	583	30	9	3	7	781	48	45	—	7
Deaths .. ..	25	2	1	—	—	46	6	20	3	1
Pneumonia, primary .. ..	—	22	221	18	9	—	37	259	12	12
Deaths .. ..	—	—	—	15	—	—	—	—	4	—
Polio-encephalitis, acute .. ..	2	1	—	—	—	2	—	—	—	—
Deaths .. ..	—	—	—	—	—	—	—	—	—	—
Polionyelitis, acute .. ..	13	—	1	2	—	20	4	1	3	—
Deaths .. ..	—	—	—	—	—	—	—	—	—	—
Puerperal fever .. ..	—	1	12	4	—	—	2	26	—	—
Deaths .. ..	—	—	—	—	—	—	—	—	—	—
Puerperal pyrexia‡ .. ..	161	2	13	2	1	158	7	11	—	4
Deaths .. ..	—	—	—	—	—	—	—	—	—	—
Relapsing fever .. ..	—	—	—	—	—	—	—	—	—	—
Deaths .. ..	—	—	—	—	—	—	—	—	—	—
Scarlet fever .. ..	2,132	46	351	43	80	3,236	246	403	56	87
Deaths .. ..	1	—	1	—	—	1	—	—	—	—
Smallpox .. ..	—	—	—	—	—	—	—	—	—	—
Deaths .. ..	—	—	—	—	—	—	—	—	—	—
Typhoid fever .. ..	4	—	1	9	4	5	—	2	8	2
Deaths .. ..	2	—	—	1	—	—	—	—	—	—
Typhus fever .. ..	—	—	—	—	—	—	—	—	1	—
Deaths .. ..	—	—	—	—	—	—	—	—	—	—
Whooping-cough* .. ..	1,297	34	97	16	13	1,902	174	220	21	24
Deaths .. ..	2	—	—	1	—	7	—	2	1	—
Deaths (0-1 year) .. ..	290	26	53	46	23	316	34	67	32	22
Infant mortality rate (per 1,000 live births) .. ..	—	—	—	—	—	—	—	—	—	—
Deaths (excluding stillbirths) .. ..	4,338	598	627	220	153	4,368	695	638	200	126
Annual death rate (per 1,000 persons living) .. ..	—	—	14.4	1.7	5	—	—	14.4	13.1	5
Live births .. ..	6,414	552	888	383	256	5,836	697	861	353	245
Annual rate per 1,000 persons living .. ..	—	—	18.1	24.8	5	—	—	17.6	23.2	5
Stillbirths .. ..	209	15	30	—	—	199	23	35	—	—
Rate per 1,000 total births (including stillborn) .. ..	—	—	33	—	—	—	—	39	—	—

\* Measles and whooping-cough are not notifiable in Scotland, and the returns are therefore an approximation only.

† Includes primary form for England and Wales, London (administrative county), and Northern Ireland.

‡ Includes puerperal fever for England and Wales and Eire.

§ Owing to evacuation schemes and other movements of population, birth and death rates for Northern Ireland are no longer available.







America for the Referee Board of the Council of Pharmacy and Chemistry of the American Medical Association. They found that large doses (0.75 to 1.5 g., or 12 to 20 gr., daily) occasionally produced hyperacidity and increased intestinal putrefaction. There were no such effects with small doses. It can, therefore, be safely used in ordinary amounts by patients with peptic ulcer. An antipyretic action is not described, but in large dose—e.g., 10 gr. (20 tablets)—it might well have one, judging by its composition.

### Hepatic Cirrhosis

**Q.**—[Is there any treatment available along new lines for hepatic cirrhosis, such as are envisaged in your annotation of Sept. 9 (p. 346)? Dietary considerations in this case can, I believe, be solved in accordance with that annotation, but tell me which preparation "containing all the members of the vitamin B complex carefully balanced" is recommended? Is methionine available for clinical use?

**A.**—The analogy between cirrhosis of the liver in man and hepatic injury from dietary deficiencies in animals can be overstrained, and there is little evidence that cirrhosis in man is specifically improved by vitamins or food principles. The improvement is not greater than might be expected from good nutrition in any chronic disease. Yeast is probably the best-balanced source of the vitamin B complex, and it is possible to give as much as 3 oz. a day in the form of bakers' yeast, dried yeast, or food yeast. Unfortunately the total vitamin content is not very high. In any event no convincing results have been seen in a controlled therapeutic trial of yeast in hepatic cirrhosis (unpublished observations). More concentrated proprietary preparations of the B complex are available in the form of wheat germ, autolysed yeast, or extracts of rice polishings. Liver extract is also a very good source. Alternatively, the separate elements in the complex—aneurin, riboflavin, and nicotinic acid—may be given simultaneously in high dosage, but this means omitting elements of the B complex such as folic acid, and is likely to be extraordinarily costly. No report of any controlled trial of methionine in cirrhosis is available, but it is known that it has not had any noteworthy success in large-scale trials in infective hepatitis. A recent fine chemical manufacturer's catalogue quoted methionine at 7s. a gramme. The therapeutic dose is of the order of 5 g., or 35s. a day. There is reason to believe that stocks are not sufficient for clinical trial apart from officially sponsored research, nor are they likely to become available during the war in view of the high cost of production of methionine and the scant evidence of therapeutic effects in man.

### Nephrotic Syndrome in Childhood

**Q.**—Has the work of Farr *et al.* in America on casein hydrolysate in the treatment of the nephrotic syndrome in children proved of any use in nephrotic crises, and if so, where could I get a suitable preparation?

**A.**—Farr believed that injections of casein hydrolysate were of special value in the treatment of infectious episodes in the nephrotic syndrome in childhood, but no confirmation of his work has been published. A theoretical disadvantage of protein hydrolysates in the treatment of hypoproteinaemia of renal origin is the fact that, if the material is given parenterally, large quantities of water and mineral salts are given at the same time. The final concentration of hydrolysate administered is usually 5% or less, so that 1,000 c.cm. of fluid must be given to inject 50 g. of protein. Amounts of this order would need to be given for many days, and in practice this difficulty seems greatly to have limited the application of parenteral treatment to children with oedema. Oral therapy is often difficult owing to loss of appetite or nausea. More hope is therefore being placed in the possibility of using purified serum albumin for injection in these cases, but this is still a project for the future. Several research groups are at present co-operating with British manufacturers on the preparation and use of protein hydrolysates, but the technique is still in the experimental stage, and there are apparently no preparations on the open market in this country.

### Oxalated Blood for Cell Counts

**Q.**—Is the practice of sending blood (oxalated) by post for estimation of Hb. cell count, etc., likely to give true results? It is presumed that the sample reaches the laboratory within about 15 hours after withdrawal from a vein.

**A.**—While oxalated blood is adequate for rough haemoglobin estimations and red cell counts, an accurate complete blood count cannot be carried out by this method, and it should be discouraged.

### B.M.R. Estimations and Thiouracil

**Q.**—Are B.M.R. estimations essential in treating a patient with thiouracil provided a watch is kept on the white cell count?

**A.**—No. B.M.R. estimations are certainly useful, but in experienced hands they are not necessary. The general condition of the patient, his nervous state and autonomic function, his pulse rate,

temperature chart, and skin temperature, are all important indications of progress. Probably the most important sign is his weight. It has been reported that the blood cholesterol (the absolute value of which is too variable to be useful) is valuable in a relative way, and that in any individual patient changes in blood cholesterol run parallel to changes in B.M.R. This statement has not been fully corroborated, but appears often to be true.

### Treatment of Rodent Ulcer

**Q.**—What is the best line of treatment for a somewhat doubtful rodent ulcer, apart from excision?

**A.**—Provided that there are reasonable grounds for the diagnosis of rodent ulcer and that the situation is appropriate, intensive radiotherapy is called for, which can be carried out only by an expert. It is often desirable to remove a small portion for microscopical examination before the treatment is carried out.

### Disturbed Sleep in a Child

**Q.**—Could you advise me on the treatment or causation of disturbed sleep in a boy of 3? After three to four hours' sleep the child begins rocking in the "knee-elbow" position, eventually waking up after the bedclothes have been thrown off. If laid on his side he quietsens for a quarter to half an hour, and then begins again. So far no treatment has been of any avail.

**A.**—Should there be any doubt of the child's intelligence not being normal, mental testing even at this age can be done by an educational psychologist at a child guidance clinic. In children of normal intellect in the first three years rhythmic movements in the state between sleep and wakefulness are common. The first essential is to reassure the parents that such movements, though annoying, are of no importance and will disappear. To hasten their departure and help to break the habit, a sedative for two or three weeks to provide deeper sleep is the only form of treatment necessary. For a child of 3 years luminal gr. 1/4, or, if well tolerated, even gr. 1/2, at bedtime is usually effective.

## LETTERS, NOTES, ETC.

### Mental Hospitals

Dr. OTHO FITZGERALD (Shenley Hospital, Herts) writes: It surprised me when reading the *Journal* of Oct. 28 to note the title or reference of "Asylum Doctors' Pay" applied to the letter which was signed "A.M.O." Apparently your attention has not been drawn to Section 20 of the 1930 Mental Treatment Act, which rules that the term "asylum" should be replaced by the term "mental hospital." I am sure you will admit the wisdom of that ruling, since institutions catering for the mentally disordered are no longer merely places of rest and detention but provide active and specific forms of treatment. "A.M.O." pleads that "niggardly remuneration is not likely to increase the repute of a branch of medicine which in the past has not enjoyed the prestige it deserves." It is surely very unkind of you, Sir, further to lash poor "A.M.O.'s" injured sense of prestige by insinuating that he is employed in institutions which are worthy only to be designated "asylums."

### Flea Bites

Dr. THOMAS FENTON (Bushey, Herts) writes: I have read the note under the above heading (Oct. 14, p. 520). Unfortunately I am one of those who appear to attract fleas, and it may be of some comfort to others similarly attractive to think that may be one reason why others are immune. However, I found years ago that if I took a 5-grain tablet of sulphur, at first daily and then at longer intervals, the flea, though he might irritate by running about, would not bite. A few drops of chloroform, a sort of depth charge, in the neighbourhood of his walk but on the outside of the clothes, sufficed to put him out.

### Arsenic in Malaria: Correction

Prof. D. B. BLACKLOCK writes: By an oversight on my part a phrase of some importance was omitted from the typescript of my letter published in your issue of Nov. 18. The fourth paragraph should read: "This evidence, so far as it goes, is against the probability of organic arsenic alone, in the form of neokharsivan and in the dosage suggested, proving curative. . . ." The phrase which was omitted is in italics.

### Pure-tone Audiometer: Correction

Dr. MARY D. SHERIDAN writes: May I correct an inaccuracy in my article of Aug. 26, to which my attention has recently been drawn? The first pure-tone audiometer in this country was used by Dr. A. W. G. Ewing at Manchester University in 1927. Dr. Ewing's original paper on "High-frequency Deafness" was read before the Physical Society in London in 1930. His book *Aphasia in Children*, describing still earlier researches in this subject, was also published in 1930.

## TREATMENT OF HYPERTHYROIDISM WITH THIOURACIL

BY

A. M. NUSSEY, M.D., M.R.C.P.

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Until recently partial thyroidectomy was the treatment of choice for thyrotoxicosis. X rays and radium had their advocates, and some continued to pin their faith to iodine, either alone or in combination with various sedatives. It is true that in quite a number of mild cases of thyrotoxicosis the disease would abate spontaneously, but only too often, especially in severe instances the patient treated medically for too long would become a physical, sometimes a mental, wreck, or fall an easy prey to intercurrent infection. The advent of thiourea, and especially of thiouracil, bids fair to alter the position radically. These preparations may represent only a milestone in the approach to a problem the real key to which may be a substance acting through the pituitary, but at present, to say the least, they offer a serious challenge to the hitherto undisputed sway of surgery in the treatment of hyperthyroidism. The use of thiourea and thiouracil in thyrotoxicosis is an example of how seemingly unrelated research may sometimes, almost by accident be turned to advantage in treatment of disease. This research began when the Mackenzies and McCollum (1941), working on the effects of sulphaguanidine in rats, discovered that it had the property of inducing a hypothyroid state and enlargement of the thyroid gland in the experimental animals. At about the same time similar results were obtained by Richter and Chisby (1941, 1942), who used phenyl thiourea, and by Kennedy (1942) who used allyl thiourea which he isolated from rape seed. Later the Mackenzies (1943), and Astwood and his colleagues (1943), proved that, besides sulphaguanidine, other sulphonamide derivatives, and to a lesser degree sulphanilamide itself, also had the power to depress metabolism and cause hypertrophy of the thyroid gland in rats. In an endeavour to find a metabolic depressant suitable for clinical use these workers then tested a large number of compounds, and found that thiourea and thiouracil were the most effective and least toxic. These observations led to the first clinical trial by Astwood (1943).

The original workers and those who followed are all agreed that thiourea and thiouracil probably act by preventing the union of tyrosine and iodine into diiodotyrosine, which is a precursor of thyroxine. Once thyroxine is present in the body thiourea and its derivatives cannot stop its action. This explains the lag observed in clinical response of thyrotoxicosis to thiourea and thiouracil and is in keeping with the observation that desiccated thyroid gland is capable of counteracting the effects of these substances in experimental animals. Further light on the mode of action of thiourea is thrown by the paper of Campbell Landerebe, and Morgan (1944), who pointed out the great affinity of thiourea for iodine and have shown that thiourea given by mouth is quickly absorbed from the intestine, widely diffused through the tissue fluids, and very rapidly excreted unchanged in the urine. Williams and Bissell (1943), who successfully treated 9 cases of thyrotoxicosis with thiouracil, noted equally rapid absorption and excretion of this substance. They stated that blood analyses of 4 of their cases showed in each a fall of the protein bound iodine to a normal or subnormal level. More recently Williams and his

associates (1944a, 1944b) devised a method for the estimation of thiouracil in the blood, tissues, and urine, but whether such biochemical tests will prove a help in regulating the dose of the drug remains to be seen.

At present it is possible when treating patients, inadvertently to exceed the optimum dose and to cause an increase in the size of the thyroid gland and a condition resembling myxoedema. The reason for these complications is presumably the same as that put forward by the experimental workers—namely that when the supply of thyroxine falls below the needs of the body the pituitary gland is stimulated to excessive secretion of the thyrotrophic hormone, which in turn causes hyperplasia of the thyroid gland. This must have happened to the first patient described by Astwood (1943), to another given in detail by Himsworth (1943) in his first series of 6 cases treated with thiourea and to several patients in the present series. Other complications known at present are granulopoia, thrombocytopenia, enlargement of lymph glands and spleen, fever and skin eruptions, but these have been more frequently noted when thiourea was used (Newcomb and Deane, 1944; St Johnston 1944; and Astwood's first case 1943). Now that the more palatable and less toxic thiouracil is freely available there is no reason why thiourea should be employed any longer. It is true that using thiouracil, Gabrilove and Kert (1943) found that out of 9 cases they treated for thyrotoxicosis one developed fever, generalized enlargement of the lymph glands and dermatitis, another fever and dermatitis and a third moderate leucopenia, but their patients were all given rather heavy doses of the drug in addition to an unspecified quantity of barbiturates.

In a discussion on thiouracil at the Royal Society of Medicine, Himsworth (Himsworth *et al.* 1944) drew a distinction between idiosyncrasy to the drug, which is liable to occur early, and toxic effects which follow prolonged overdosage. Under manifestations of idiosyncrasy he listed the complications mentioned above, and the toxic effects of overdosage he described as superficially resembling myxoedema. Of those taking part in the discussion Drs H. P. Himsworth, E. P. Sharpey-Schafer, and H. Evans were favourably impressed with thiouracil. One of Himsworth's patients, who had rather large doses, died of agranulocytosis, and two of his other patients, whose goitres increased unduly as a result of the treatment, had to be operated on. Mr C. Joll (Himsworth *et al.* 1944) who used thiourea and thiouracil in 20 to 30 cases, presented results in 9, in which, in his opinion the length of treatment justified making deductions. His failure to achieve success in 3 out of the 9 subjects was criticized at the discussion by Himsworth on the ground that in these iodine was used before thiouracil and that the latter was not given a sufficiently long trial. Himsworth stated that he found no difference in response to thiouracil in either primary or secondary thyrotoxicosis. The cases mentioned in the discussion at the R.S.M. bring up the number of those fully reported to over 100.

It is obvious that further and more prolonged observations will be required before the treatment of thyrotoxicosis with

thiouracil can be placed on a more satisfactory basis. As a contribution to the problem a presentation is made of the data obtained from personal observations on 27 patients treated at Selly Oak Hospital for periods varying from a year down to 3 weeks. The results are summarized briefly in the accompanying table

### Discussion

The cases are classified into very severe, severe, moderate, and mild, partly on clinical grounds and partly on the basis of a routine preliminary B.M.R. estimation. The majority of

patients had general enlargement of the thyroid gland, others had a nodular goitre, and both types responded to thiouracil equally well—a point already noted by Himsworth. In every instance except in Nos. 8 and 12 the initial treatment was administered while in hospital, thus making possible day-to-day observation of progress. Periods varying from 2 to 11 weeks passed before satisfactory clinical response was noted. The average stay in hospital was about 3 weeks. During that time no other drug, not even a simple sedative, was allowed. Where iodine was found to have been given, it was discontinued

TABLE OF RESULTS

A	B	C	D	E	F	G	H	I	J	K
1	35 F	18 mths.	Moderate	+29%	23/10/43	23/11/43: +15 11/5/44: +2 25/8/44: +11	—	23/11/43: 6,200, 71% 11/12/43: 7,600, 61% 8/1/44: 5,800, 69% 26/2/44: 5,200, 66% 1/11/44: 5,800, 71%	23 lb.	Initial treatment with thiourea tolerated badly. Transient rash when changed to thiouracil. At one time considerable swelling of neck, which disappeared on reducing the dose. Possible to omit treatment for 4 mths., but it had to be resumed a month ago.
2	54 F	6 "	"	+27%	23/10/43	4/11/43: +19 17/11/43: +5 3/2/44: +21 9/8/44: +10	—	26/11/43: 6,055, 55% 19/1/44: 7,200, 41% 1/2/44: 7,800, 51% 2/5/44: 6,200, 58% 1/11/44: 5,600, 74% 19/11/43: 9,600, 71% 4/10/44: 9,200, 70%	10 lb.	Given 53 g of thiourea before change to thiouracil on 11/11/43. Tolerated both well. Now on 0.05 g. of thiouracil daily
3	40 F	12 "	"	+31%	25/10/43	8/11/43: +16 20/11/43: +12 3/5/44: +10	—	25/11/43: 5,600, 62% 7/12/43: 8,600, 75% 3/2/44: 4,600, 66% 17/3/44: 4,000, 58% 14/6/44: 5,200, 36% 6/9/44: 10,600, 59% 4/10/44: 5,600, 64% 1/11/44: 6,800, 57% 4/12/43: 6,200, 48%	Nil	Had 25 g. of thiourea. Changed to thiouracil on 11/11/43. After end of Jan did not attend till May, 1944, when there was no evidence of relapse. Now recurrence of mild features of thyrotoxicosis and 0.2 g. thiouracil resumed on 4/10/44
4	28 F	15 "	Severe	+45%	22/11/43	7/12/43: +26 12/1/44: +8 19/6/44: +29	—	30/11/43: 5,000, 45% 10/1/44: 4,400, 62% 3/5/44: 4,200, 47% 8/7/44: 4,200, 47% 2/8/44: 3,600, 55%	6 lb.	Some days before treatment with thiouracil admitted with influenza bronchopneumonia and given sulphathiazole. Has rheumatic mitral disease; her auricular fibrillation reverted to normal during treatment. At one time excessive increase in weight and enlargement of neck noted. This subsided when dose of thiouracil was reduced. Now on 0.05 g. daily
5	53 M	12 "	Very severe	+67%	23/11/43	6/12/43: +41 20/12/43: +18 17/1/44: +20	—	25/11/43: 5,600, 62% 7/12/43: 8,600, 75% 3/2/44: 4,600, 66% 17/3/44: 4,000, 58% 14/6/44: 5,200, 36% 6/9/44: 10,600, 59% 4/10/44: 5,600, 64% 1/11/44: 6,800, 57% 4/12/43: 6,200, 48%	15 lb.	Temporary increase in size of goitre reversed by reduction in dose. Treatment omitted for 2 months, after drug given for 5 months, but had to be resumed; now on 0.1 g. daily. Able to do heavy work
6	65 F	18 yrs	Severe	+45%	25/11/43	13/12/43: +42	—	14/12/43: 6,300 13/1/44: 8,700, 75% 2/3/44: 7,600, 74% 19/6/44: 5,000, 53% 4/8/44: 7,000, 34% 10/1/44: 7,000, 84% 19/2/44: 10,000, 49% 17/4/44: 10,400, 59%	Nil	Partial thyroidectomy 18 years before. In-patient for 1 month. Died early in Jan., 1944, 3 weeks after leaving hospital
7	29 F	1 yr	Mild	+19%	11/12/43	22/12/43: +9 29/4/44: +25 7/7/44: +11	5,600; 79%	21/1/44: 6,200, 55% 1/2/44: 3,600, 48% 5/2/44: 4,800, 44% 14/6/44: 6,000, 52% 4/10/44: 4,700, 61% 9/2/44: 3,300, 43% 2/2/44: 4,200, 52% 2/3/44: 5,600, 51% 11/3/44: 14,200, 51%	Nil	Tachycardia was an outstanding feature, pulse of 100-120 per min down to 90 after 8 months of treatment. Now on 0.05 g. thiouracil daily
8	40 F	18 mths	Moderate	+30%	20/12/43	13/1/44: +28 7/2/44: +2 21/6/44: Normal	7,600, 60%	21/1/44: 6,200, 55% 1/2/44: 3,600, 48% 5/2/44: 4,800, 44% 14/6/44: 6,000, 52% 4/10/44: 4,700, 61% 9/2/44: 3,300, 43% 2/2/44: 4,200, 52% 2/3/44: 5,600, 51% 11/3/44: 14,200, 51%	14 lb.	Partial thyroidectomy on 2/2/43, followed by thyrotoxicosis on face, omitting treatment 24/5/44
9	40 F	1 yr	Severe	+52%	6/1/44	25/1/44: +17 21/6/44: +5	4,400; 45%	21/1/44: 6,200, 55% 1/2/44: 3,600, 48% 5/2/44: 4,800, 44% 14/6/44: 6,000, 52% 4/10/44: 4,700, 61% 9/2/44: 3,300, 43% 2/2/44: 4,200, 52% 2/3/44: 5,600, 51% 11/3/44: 14,200, 51%	22 lb.	Goitre increased for a time; went back to previous size on reducing the dose of thiouracil. No treatment since 4/10/44
10	32 F	4 mths.	"	+67%	14/2/44	8/2/44: +63 2/3/44: +10 5/7/44: +12	6,200; 32%	21/1/44: 6,200, 55% 1/2/44: 3,600, 48% 5/2/44: 4,800, 44% 14/6/44: 6,000, 52% 4/10/44: 4,700, 61% 9/2/44: 3,300, 43% 2/2/44: 4,200, 52% 2/3/44: 5,600, 51% 11/3/44: 14,200, 51%	14 lb.	No treatment required since 5/7/44
11	21 F	3 "	"	+75%	1/3/44	16/3/44: +33 28/3/44: +22 13/4/44: -7 25/7/44: +17	11,100	21/1/44: 6,200, 55% 1/2/44: 3,600, 48% 5/2/44: 4,800, 44% 14/6/44: 6,000, 52% 4/10/44: 4,700, 61% 9/2/44: 3,300, 43% 2/2/44: 4,200, 52% 2/3/44: 5,600, 51% 11/3/44: 14,200, 51%	6 lb.	At one time weight up by 23 lb.; neck much increased in size, and mild myxoedema. Relieved by adjusting dose of thiouracil. No treatment since 1/9/44
12	49 F	Over 5 yrs	Moderate	+36%	5/3/44	17/10/44: +13	—	20/3/44: 6,800, 58% 30/8/44: 7,500	4 lb.	Congestive heart failure and auricular fibrillation dealt with first, before the initial B.M.R. and thiouracil treatment. Thiouracil omitted 2/8/44
13	23 F	2 mths.	Severe	+63%	16/3/44	20/5/44: +10	7,600, 47%	17/4/44: 6,000, 53% 5/7/44: 11,000, 48% 7/9/44: 12,000, 52% 18/4/44: 7,600, 54% 17/6/44: 7,300, 45% 4/8/44: 5,000, 65% 30/8/44: 4,000 13/10/44: 6,600, 71% 18/4/44: 8,800, 51% 14/6/44: 10,800, 59% 19/5/44: 4,000, 38% 7/9/44: 3,800, 33% 4/10/44: 3,800, 36% 6/6/44: 3,300, 69% 13/6/44: 4,600, 71% 4/8/44: 4,800, 71% 1/11/44: 7,600, 68% 29/6/44: 6,400, 54% 24/7/44: 5,000, 59% 9/8/44: 5,600, 59% 8/9/44: 5,900, 44% 20/9/44: 5,900, 48% 1/11/44: 5,600, 55% 29/6/44: 9,000, 68% 30/8/44: 6,900	8 lb.	No treatment required since 5/9/44
14	43 F	6 "	Moderate	+38%	30/3/44	14/4/44: +26 30/4/44: +18 17/8/44: +7	9,069	18/4/44: 7,600, 54% 17/6/44: 7,300, 45% 4/8/44: 5,000, 65% 30/8/44: 4,000 13/10/44: 6,600, 71% 18/4/44: 8,800, 51% 14/6/44: 10,800, 59% 19/5/44: 4,000, 38% 7/9/44: 3,800, 33% 4/10/44: 3,800, 36% 6/6/44: 3,300, 69% 13/6/44: 4,600, 71% 4/8/44: 4,800, 71% 1/11/44: 7,600, 68% 29/6/44: 6,400, 54% 24/7/44: 5,000, 59% 9/8/44: 5,600, 59% 8/9/44: 5,900, 44% 20/9/44: 5,900, 48% 1/11/44: 5,600, 55% 29/6/44: 9,000, 68% 30/8/44: 6,900	4 lb.	Tachycardia of 100 per min. persists. Now on 0.1 g. of thiouracil daily
15	27 F	2 "	Mild	+23%	8/4/44	20/5/44: +10	6,200; 47%	18/4/44: 7,600, 54% 17/6/44: 7,300, 45% 4/8/44: 5,000, 65% 30/8/44: 4,000 13/10/44: 6,600, 71% 18/4/44: 8,800, 51% 14/6/44: 10,800, 59% 19/5/44: 4,000, 38% 7/9/44: 3,800, 33% 4/10/44: 3,800, 36% 6/6/44: 3,300, 69% 13/6/44: 4,600, 71% 4/8/44: 4,800, 71% 1/11/44: 7,600, 68% 29/6/44: 6,400, 54% 24/7/44: 5,000, 59% 9/8/44: 5,600, 59% 8/9/44: 5,900, 44% 20/9/44: 5,900, 48% 1/11/44: 5,600, 55% 29/6/44: 9,000, 68% 30/8/44: 6,900	Nil	Had a partial thyroidectomy in 1936. Treatment omitted 5/9/44
16	72 F	8 yrs.	"	+21%	8/5/44	22/5/44: +7	5,200; 45%	18/4/44: 7,600, 54% 17/6/44: 7,300, 45% 4/8/44: 5,000, 65% 30/8/44: 4,000 13/10/44: 6,600, 71% 18/4/44: 8,800, 51% 14/6/44: 10,800, 59% 19/5/44: 4,000, 38% 7/9/44: 3,800, 33% 4/10/44: 3,800, 36% 6/6/44: 3,300, 69% 13/6/44: 4,600, 71% 4/8/44: 4,800, 71% 1/11/44: 7,600, 68% 29/6/44: 6,400, 54% 24/7/44: 5,000, 59% 9/8/44: 5,600, 59% 8/9/44: 5,900, 44% 20/9/44: 5,900, 48% 1/11/44: 5,600, 55% 29/6/44: 9,000, 68% 30/8/44: 6,900	7 lb.	Thyrotoxicosis of long standing. B.M.R. known to have been +54 in 1939. Treatment omitted 4/10/44
17	52 F	15 "	Severe	+35%	25/5/44	7/6/44: +27 26/6/44: -7	7,000, 70%	18/4/44: 7,600, 54% 17/6/44: 7,300, 45% 4/8/44: 5,000, 65% 30/8/44: 4,000 13/10/44: 6,600, 71% 18/4/44: 8,800, 51% 14/6/44: 10,800, 59% 19/5/44: 4,000, 38% 7/9/44: 3,800, 33% 4/10/44: 3,800, 36% 6/6/44: 3,300, 69% 13/6/44: 4,600, 71% 4/8/44: 4,800, 71% 1/11/44: 7,600, 68% 29/6/44: 6,400, 54% 24/7/44: 5,000, 59% 9/8/44: 5,600, 59% 8/9/44: 5,900, 44% 20/9/44: 5,900, 48% 1/11/44: 5,600, 55% 29/6/44: 9,000, 68% 30/8/44: 6,900	11 lb.	Had radium treatment in 1934. Moderate tachycardia persists. Now on 0.1 g. thiouracil daily
18	52 F	18 mths.	Very severe	+71%	16/6/44	3/7/44: +78 24/7/44: +65 7/9/44: +58 4/10/44: +34	6,200; 46%	18/4/44: 7,600, 54% 17/6/44: 7,300, 45% 4/8/44: 5,000, 65% 30/8/44: 4,000 13/10/44: 6,600, 71% 18/4/44: 8,800, 51% 14/6/44: 10,800, 59% 19/5/44: 4,000, 38% 7/9/44: 3,800, 33% 4/10/44: 3,800, 36% 6/6/44: 3,300, 69% 13/6/44: 4,600, 71% 4/8/44: 4,800, 71% 1/11/44: 7,600, 68% 29/6/44: 6,400, 54% 24/7/44: 5,000, 59% 9/8/44: 5,600, 59% 8/9/44: 5,900, 44% 20/9/44: 5,900, 48% 1/11/44: 5,600, 55% 29/6/44: 9,000, 68% 30/8/44: 6,900	28 lb.	Rather resistant to treatment. In all was an in-patient for 11 weeks. Auricular fibrillation which was present restored to normal rhythm with quinidine. Now on 0.1 g. thiouracil daily
19	40 M	2 yrs.	Moderate	+39%	18/6/44	12/7/44: +17 25/10/44: -7	6,700, 44%	18/4/44: 7,600, 54% 17/6/44: 7,300, 45% 4/8/44: 5,000, 65% 30/8/44: 4,000 13/10/44: 6,600, 71% 18/4/44: 8,800, 51% 14/6/44: 10,800, 59% 19/5/44: 4,000, 38% 7/9/44: 3,800, 33% 4/10/44: 3,800, 36% 6/6/44: 3,300, 69% 13/6/44: 4,600, 71% 4/8/44: 4,800, 71% 1/11/44: 7,600, 68% 29/6/44: 6,400, 54% 24/7/44: 5,000, 59% 9/8/44: 5,600, 59% 8/9/44: 5,900, 44% 20/9/44: 5,900, 48% 1/11/44: 5,600, 55% 29/6/44: 9,000, 68% 30/8/44: 6,900	12 lb.	Frequent extrasystoles before treatment; almost disappeared after it. Now on 0.05 g. thiouracil daily
20	29 F	6 mths	Mild	+23%	26/6/44	17/7/44: +14	8,000; 57%	12/7/44: 7,800, 54% 4/10/44: 9,000, 69%	6 lb.	Transient irritating papular rash; disappeared on reducing dose of thiouracil. Now on 0.05 g. daily

TABLE OF RESULTS (continued)

A	B	C	D	E	F	G	H	I	J	K
21	52 F	2 yrs	Severe	+47%	10/7/44	25/7/44 +22 18/8/44 +14	3,400 47%	24/7/44 5,000 57% 9/8/44 5,400 51% 20/9/44 4,600 51% 1/11/44 6,800 71% 18/11/44 4,500 44% 6/9/44 6,900 4/10/44 5,800 38%	7 lb	Auricular fibrillation which was present reverted to normal rhythm while under treatment with thiouracil. Now on 0.1 g daily.
22	45 F	9 mths	"	+29%	14/7/44	3/8/44 +26 19/9/44 +9	4,400 61%	18/8/44 5,800 71% 6/9/44 6,900 4/10/44 5,800 38%	4½ lb	Case ruled out as severe on clinical grounds. Irritation of skin on arms and legs. Later slight eczematous eruption confined to hands. Now on 0.05 g of thiouracil daily.
23	42 F	7 yrs	"	+48%	1/8/44	10/8/44 +16	2,800 56%	15/8/44 4,700 38% 7/9/44 5,500 68% 26/8/44 6,400 49% 26/9/44 7,700 62% 27/10/44 6,200 53% 10/10/44 5,200 38% 20/10/44 5,000 51%	6 lb	WBC rose with treatment. Now on 0.2 g daily. Rise in WBC with treatment.
24	22 F	2 mths	Moderate	+41%	14/4/44	30/8/44 +7	4,500 58%	26/8/44 6,400 49% 26/9/44 7,700 62% 27/10/44 6,200 53% 10/10/44 5,200 38% 20/10/44 5,000 51%	17 lb	Treatment omitted 1/11/44.
25	21 F	2	"	-36%	4/4/44	28/9/44 +21 27/10/44 +12 19/10/44 +17	7,600 72%	26/8/44 6,400 49% 26/9/44 7,700 62% 27/10/44 6,200 53% 10/10/44 5,200 38% 20/10/44 5,000 51%	6 lb	Now on 0.2 g of thiouracil daily.
26	45 F	2	Severe	+50%	2/10/44	19/10/44 +17	3,600 40%	24/10/44 7,500 48%	8 lb	Rapid clinical response to thiouracil. Now on 0.2 g daily. Rise in WBC with treatment.
27	29 F	4	"	+64%	13/10/44	23/10/44 +24	6,600 40%	24/10/44 7,500 48%	5½ lb	Able to leave hospital after a fortnight, much improved. Now on 0.2 g thiouracil b.d.

Key to Table—A Case number B Age and sex C Duration of illness D Degree of thyrotoxicosis E % of B.M.R. above normal F Date of start of treatment with thiouracil G Later B.M.R. readings H Initial total white cell count and % of polymorphs I Later white cell counts and % of polymorphs J Gain in weight K Remarks.

for at least a month before thiouracil was administered. With the exception of Nos 3, 6, and 18, who were seriously ill at the beginning of their treatment, strict confinement to bed was not practised.

During the initial in-patient phase the dose of thiouracil was generally 0.2 g t.d.s. Three early cases also had thiouracil in doses of 1 g t.d.s. before thiouracil became available. Thus No 2 received 32 g of the substance and No 3 had 35 g No 1, after only 7 g of thiouracil, developed toxic symptoms resembling those described by St Johnston (1944), including extensive skin eruption, vomiting, headache and fever. She was subsequently given thiouracil, when a much milder maculopapular rash appeared on the parts of the skin exposed to light. The rash disappeared after the dose was reduced, and eventually she did exceptionally well. Skin rashes were caused by thiouracil in a few other instances. No 8 had a papular eruption on the face, lasting one week which cleared up of its own accord without having to modify the treatment. No 20 had a transient papular rash which disappeared after the dose of thiouracil was reduced. No 22 complained of occasional itching of the limbs at first without any actual skin changes, later the parts exposed to light showed a scaly erythematous eruption, and it was interesting to note that as soon as she began to wear stockings the skin of the legs cleared rapidly, while the lesions of the hands and wrists disappeared much more slowly with a reduction in the dose of thiouracil. Only in No 22 was there a moderate degree of leucopenia while the rash was present.

Signs of improvement were usually apparent 10 to 14 days after starting treatment. Severe thyrotoxicosis frequently responded to thiouracil as quickly as the moderate type but in some of the former—e.g. Nos 5, 17 and 18—one sometimes had to persevere for several weeks before the patients began to show a change for the better. Restlessness was usually the first to go, and then the flushed and moist skin would become paler and drier. The staring expression and the shiny appearance of the eyes, which are such striking features of thyrotoxicosis, would fade. The weight would begin to go up and the tremor of the fingers would become less. Then the vascularity of the thyroid would diminish as shown by lessening or disappearance of the bruit over the gland and finally the tachycardia would subside. Oddly enough it was in the milder cases—e.g. Nos 7 and 14—that tachycardia tended to persist longest. In every instance, with the exception of No 6, the patient would admit to feeling better after a few weeks' treatment and all those gainfully employed previous to their illness were back at work long before it would have been possible had they had a partial thyroidectomy. Reduction of the B.M.R. was roughly parallel in each case with signs of clinical improvement. In nearly all patients the B.M.R. came down to within normal limits. Only in Nos 6 and 19 has this not been achieved. In No 6 the period available for treatment was probably too short while in No 19 it is almost certainly a matter of time before a normal basal metabolic rate is reached. Exophthalmos which was present in only a few of the patients was not appreciably influenced by treatment neither did enlargement of the thyroid diminish to any extent. Four

instances of auricular fibrillation were noted, two of which—Nos 4 and 21—reverted to normal rhythm spontaneously in the course of the treatment and another—No 18—in whom this was achieved by means of quinidine. In the fourth—No 12—auricular fibrillation persists, and owing to the fact that it is probably of at least 5 years' standing no attempt at conversion to normal rhythm with quinidine was made. The gain in weight was negligible in a few, appreciable in the majority and in two it amounted to almost 2 st. since starting treatment. Only No 3 lost weight. Excessive gain was sometimes accompanied by a bloated appearance, listlessness, and an increase in size of the thyroid gland. In contrast to the view held by Himsworth, I could see no difference at all between these manifestations and mild myxoedema. By a suitable reduction of the dose of the drug it was possible rapidly to reverse the pathological depression of metabolism, the excessive increase in weight and the enlargement of the neck. The size of the neck was recorded in each case and checked at regular intervals, this proving an additional guide to the dose of thiouracil required. In fact experience showed that the maintenance dose on which the pulse rate and general condition remained satisfactory varied from individual to individual, thus proving the value of periodic inspection. All patients were seen regularly after discharge—first at 2, then at 3 and finally at 4 weeks intervals. There was only one patient—No 3—who did not co-operate satisfactorily. She turned up only twice after discharge from hospital and ceased taking thiouracil of her own accord after 3 months. She was seen again in May 1944 when her condition was found to have remained satisfactory and the B.M.R. was +10. More recently this patient came up again with symptoms of a slight recurrence of thyrotoxicosis and her treatment was resumed.

As for the maintenance dose the patients were usually given 0.2 g of thiouracil b.d. for 2 to 4 weeks after leaving hospital. Later most of them were maintained on 0.2 g and some on 0.1 or 0.05 g daily. In a few instances it was found possible to omit treatment altogether—e.g. in No 8 since May 24 1944, No 10 since July 5, 1944, No 12 since Aug 2 1944, No 13 since Sept 5 1944, No 15 since Sept 1 1944 and No 16 since Oct 24 1944. In No 5 treatment had to be resumed because the man began to lose ground once more and the same had to be done in No 1 after omitting treatment for 3 months. Astwood (1943) mentions a patient in whom after a relatively short period of treatment he omitted thiouracil for a few weeks and had to resume it because of a recurrence of symptoms. Himsworth (1944) reported that in 3 mild cases he was able to leave off thiouracil for periods of from 7 weeks to 7 months.

Observations on the white cell count proved interesting. With the exception of Nos 1-6 and 12 a preliminary count was always made before treatment was started and low initial readings were not at all infrequent. These although sometimes borderline on frank leucopenia were not taken to be a bar to giving thiouracil and surprisingly in those the white cell count usually showed a rise as the treatment proceeded. In no case was there an alarming fall of the white cell or polymorph count. Consistently low figures were seen only in Nos 4 and 16. In this connexion it is worth noting the findings of

Goldsmith and associates (1944), that when liver extract is given to rats simultaneously with thiourea it protected them from neutropenia.

Three patients had operations of partial thyroidectomy before they came under the present review. No. 6, operated on 18 years before, had a nodular goitre, and a recurrence of symptoms 9 years after operation. About 12 months before coming to hospital she became short of breath, experienced nausea and vomiting, and when admitted her heart showed marked enlargement to the left and a systolic murmur at the apex. She showed no appreciable response after 4 weeks' treatment, and, unfortunately, although she was urged to stay, insisted on going home. It was reported later that she had died suddenly 3 weeks after leaving hospital. In No. 8, in which partial thyroidectomy failed to cure the condition, 5 months' treatment with thiouracil appeared to complete what surgery had left undone. Another milder recurrence, 8 years after partial thyroidectomy—No. 15—did equally well. No. 17, radium treatment of which 10 years before had been a complete failure, responded satisfactorily to thiouracil.

### Conclusion

We have now in thiouracil a potent weapon for overcoming thyrotoxicosis. The drug, although not entirely devoid of risks, is much safer than operation. All patients suffering from thyrotoxicosis should therefore be given thiouracil. At some future date it may be possible to assess the initial and maintenance dosages on a more scientific basis, but at present, in the light of experience, a satisfactory working rule is to give 0.2 g. of thiouracil thrice daily for the first 3 to 5 weeks, after which the dose should be gradually reduced, and kept at the lowest possible level compatible with the patient's well-being. Slow response to treatment calls for patience, and not for increasing the dose beyond a safe limit. Leucopenia before the treatment should not be taken as a contraindication to the use of thiouracil. All patients treated with thiouracil should be kept under adequate supervision. Only more prolonged observations will tell whether thiouracil is capable of effecting a permanent cure within a measurable period.

### Summary

A series of 27 unselected cases of thyrotoxicosis treated with thiouracil for periods varying from 3 weeks to 12 months are described.

Good response, with the exception of one long-standing instance, was noted in all.

The importance of continued supervision of the treatment is stressed.

It is submitted that the hitherto almost unrivalled surgical treatment of thyrotoxicosis may, in the light of further experience, have to give way to medical treatment.

Grateful thanks are due to both my medical and my surgical colleagues, who kindly passed on to me their patients with thyrotoxicosis, and thus made this series much larger than it would otherwise have been. Our biochemist, F. Morton, M.Sc., F.R.I.C., carried out the B.M.R. estimations, and Messrs. British Drug Houses generously supplied, free of charge, most of the thiouracil used in this investigation.

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## THE HAEMOGLOBIN LEVEL IN MUNICIPAL SCHOOL CHILDREN

EFFECT OF IRON THERAPY, SCHOOL DINNERS,  
AND SEASON

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The lack of knowledge of normal haemoglobin levels in school children, of the physiological rise with age, and of the effect of iron therapy, diet, and economic circumstances has recently aroused attention in this country. The present paper represents an effort, only partially successful, to increase our knowledge of this subject.

### Clinical Material

Children at two municipal schools were examined. One—school B—was in a London suburb, where 127 children, aged 7 to 12 years, were examined in Oct., 1942. Many of the pupils' fathers were black-coated workers in moderately comfortable circumstances. The other—school A—was in a small town near London where the children had repeated haemoglobin examinations during a period of over a year, beginning early in 1942. The number of children examined at this school was 325. Here economic standards were more varied, but very few families were below the poverty line, as shown by the supply of free milk or free dinners. About half the fathers were industrial or transport workers (mechanics, skilled craftsmen, unspecified munition workers, railway workers, etc.); about 23% were in the armed Forces, and another 13% were clerical workers or shop-assistants. About 43% of the mothers did paid work, part- or full-time, outside their own homes.

### Technique, and Some Sources of Error

Estimations were made with a Haldane standard by the three of us, and figures are given with the National Physical Laboratory B.S.I. corrections applied for colour tube and pipettes. Apart from the percentage correction for the dilution tubes (a correction required because the distance between the 20 and 140 marks, and hence the diameter, differed from the B.S.I. standard), the mean N.P.L. correction for the tubes was  $-0.3$  at 80%. This correction was obviously negligible, and was omitted. The maximum correction thus omitted on any one dilution tube was  $-0.9$  at 80%. The blood was taken from a prick in the thumb after soaking the hand in hot water. The earliest estimations were made during a period of extremely cold weather in January and early February of 1942. The children at the time nearly all had chilled extremities, and, in spite of soaking the hand in hot water, there were wide discrepancies in the results, presumably because of capillary changes and stasis. All readings taken during this period have been discarded as doubtful. It is probable that cold limbs, in spite of precautions to get a warm hand and a free flow of blood, produced inaccurate estimations at other periods, but it is difficult to see how this can be prevented under the conditions of field work. Another source of misleading results is, we believe, anxiety or apprehension on the part of the child: it was noticed that children showing anxiety often registered wide fluctuations in haemoglobin level.

### Haemoglobin Level in Relation to Age and Sex

Table I shows that there was a fairly steady rise in haemoglobin level with age, though the numbers in the different subdivisions were not sufficient to even out chance fluctuations. Taking the mean haemoglobin level for the combined results at school A in Feb., 1942, and again in Feb. or March, 1943, together with school B in Oct., 1942, there was a rise from 87.8% at 7 years to 92.1% at 10 years—that is, a rise of 4.3 in three years, or an average rise of 1.4 per year of age; and each subdivision in Table I shows a rise with age of a similar order. The haemoglobin levels at school B were slightly

M. J. MacNeal and M. C. Place (*Amer. J. Dis. Child.*, 1944, **68**, 30) record a case of fulminating meningococcaemia in a boy aged 8 years, who recovered after treatment first with sulphadiazine intravenously and later with the calcium salt of penicillin intravenously and intramuscularly.

TABLE I.—Changes in Haemoglobin Level with Age

Age (years)	School A				School B		Schools A and B 3 Previous Series Combined							
	Feb., 1942		Feb. or Mar., 1943		Oct., 1942		Boys and Girls				Boys		Girls	
	Mean Hb	No. of Children	Mean Hb	No. of Children	Mean Hb	No. of Children	Mean Hb	No. of Observ.	S.D.	Range	Mean Hb	No. of Observ.	Mean Hb	No. of Observ.
7	87.1	31	89.2	20	88.0	25	87.8	76	5.68	77-101	86.8	35	88.9	41
8	88.7	44	87.9	58	89.0	24	88.4	126	6.00	73-101	89.0	60	87.8	66
9	88.4	37	89.8	45	91.4	37	89.8	119	5.47	74-104	89.9	55	89.7	64
10	91.3	9	91.4	60	93.4	36	92.1	105	4.76	76-101	91.4	47	92.6	53
11	—	—	92.1	44	88.4	5	91.6	49	6.06	79-103	89.5	26	94.1	23
Total		121		227		127		475				223		252
Over 7 and under 11	88.9		89.6		90.5		89.5				89.3		89.7	
Average of means														

higher than at school A, which may be a reflection of a slightly higher economic status.

The average of the mean Hb levels of boys and girls aged over 7 and under 11 (all figures in Table I combined) was 89.3 and 89.7% respectively—that is, the means for the sexes were all but the same. In the small group of 26 boys aged 11 the haemoglobin level (89.5%, S.D. 6.24) was lower than in girls of the same age (94.1%, S.D. 4.7) and also slightly lower than in girls or boys aged 10. However, the difference between the sexes at 11 years of age is not statistically significant, and the lower mean level of the boys' haemoglobin is probably quite fortuitous and due to inadequate numbers. So that, like other investigators (Osgood and Baker, 1935; Mugrage and Andresen, 1936), we have found no evidence of a difference in haemoglobin between the sexes at these ages.

#### Haemoglobin Level in Relation to Year and to Season

Children living in or near London and of similar economic class to those attending school A were examined by us in the second half of 1941 (Wills *et al.*, 1942). The average of the mean haemoglobin values for children aged 7, 8, 9, and 10 years respectively was in 1941 distinctly lower than that of the children of the same age examined in 1942 and 1943: the values were 83.4% in 1941, 88.9% in Feb., 1942, and 89.6% in Feb. and March, 1943 (The value for 1941 has

TABLE II.—Changes in Mean Haemoglobin Level during Year 1942-3 in a Group of Children at School A given No Iron

Date of Examination	No. of Children	Mean Hb	Change in Hb since Previous Examination	Change in Hb since Feb., 1942
1942: Feb.	50	89.8 ± 0.68	—	—
March	80	87.5 ± 0.40	-2.3 ± 0.84*	-2.3
April-May	76	89.1 ± 0.56	+1.6 ± 0.75*	-0.7
July	79	91.7 ± 0.47	+2.6 ± 0.73*	+1.9
Nov.	67	91.4 ± 0.58	-0.3 ± 0.72	-1.6
1943: Feb.-March	53	91.1 ± 0.62	-0.3 ± 0.83	-1.3

\* The change in haemoglobin level is more than twice the standard error of the difference; in July it is more than 3½ times the standard error of the difference.

been corrected so as to conform to the same standard as these later estimations.) Thus at school A in Feb., 1942, and a year later in Feb., 1943, the mean haemoglobin level of children of corresponding age differed little (Table I). There was, however, a rise of haemoglobin level with age during this period of 1942-3. The mean haemoglobin level of our control group, who received no medicinal iron, was 89.8% in Feb., 1942, and 91.1% in Feb. and March, 1943, when the average age had increased by a year (see Table II). This is a rise of 1.3, which is just about equivalent to the mean increase in

haemoglobin level with each year of age shown in Table I. The year's increase in haemoglobin was not evenly spread over the year, but occurred between March and July. There was actually a fall in haemoglobin level between Feb. and March, 1942, a rise between March and July, 1942 (these changes being statistically significant), and thereafter no significant change up to the following Feb. and March, 1943.

#### Effect of Iron Therapy on Haemoglobin Level

Iron medication was given to about half the available children at school A from Feb. to July, 1942. The iron preparation used was fersolate (Glaxo), and each child in the iron group was ordered one pill daily, increasing in seven days to 4 pills daily for 5 days in the week, to be taken in the classroom with the school milk. Four pills provided 4 gr., or 260 mg., of iron (ferrous), 0.04 gr. of copper and 0.04 gr. of manganese. Most children took their dose regularly. In a few cases it probably gave rise to some abdominal discomfort or looseness of stools and was consequently stopped, or sometimes it was stopped for quite irrelevant reasons.

The head master's allocation of children to classes in this school was determined by age and the age groups were then subdivided according to ability. Thus nearly all the 11-year-olds would be in class 1A, 1B, or 1C—the brightest in class 1A and the least advanced in class 1C, and similarly for each age group.

The children were given iron medication by classes. For example, all children whose haemoglobin had been estimated in class 2A acted as controls; those in 2B and 2C received iron pills. In the next age group the allocation was reversed, and 3A children (the brightest of this age group) received the pills, and 3B and 3C acted as controls. It so happened that the children examined in the A divisions were often about equivalent in numbers to those in divisions B and C of the same age group. By this means it was hoped to prevent any possible confusion in iron administration and to keep the groups evenly balanced. Children on the iron list have been included in the tables as having iron irrespective of their absences from school (during which time iron medication ceased), as otherwise selection of both controls and iron cases would have been necessary. The effect of iron medication is shown in Table III. The children given fersolate showed an immediate rise in haemoglobin, which continued until July, when treatment was stopped, the mean total rise being 7.0%. The children not given iron showed a fall in haemoglobin till March, and then a rise; but measured from February the total rise of the control group was only 1.9% (Table II). However, as the initial haemoglobin level of the children given

TABLE III.—Effect of Iron Medication on Mean Haemoglobin Level of Children at School A

Date of Examination	Iron Group					Control Group		
	Iron Therapy	No. of Children	Mean Haemoglobin	Change in Hb since Previous Examination	Change in Hb since Feb., 1942	No. of Children	Mean Haemoglobin	Difference in Hb, Iron minus Control
1942: Feb.	Started	46	86.8 ± 0.96	—	—	50	89.8 ± 0.68	-3.0 ± 1.20*
March		69	89.0 ± 0.68	-2.2 ± 1.20	-2.2	80	87.5 ± 0.40	-1.5 ± 0.84*
April-May		71	91.8 ± 0.58	-2.8 ± 0.89*	-5.0	76	89.1 ± 0.56	-2.7 ± 0.81*
July	Stopped	62	93.8 ± 0.66	-2.0 ± 0.83*	-7.0	79	91.7 ± 0.47	-2.1 ± 0.81*
Nov.		55	90.6 ± 0.36	-3.2 ± 0.87*	-3.7	67	91.4 ± 0.55	-0.8 ± 0.73
1943: Feb.-March		56	90.5 ± 0.67	-0.1 ± 0.87	—	73	91.1 ± 0.62	-0.6 ± 0.91

\* The difference in haemoglobin level in these groups is about 2½ to 3½ times the standard error of the difference.



TABLE IV.—Effect of Iron Medication on Mean Haemoglobin Level of Children at School A Examined in Feb. and also in March, 1942

Date of Examination	Iron Group		Control Group	
	No. of Children	Mean Hb	No. of Children	Mean Hb
1942: Feb. ..	41	87.0	48	89.9
March ..		89.9		87.6

ferrisolate, was lower than that of their controls, the difference in haemoglobin level between the controls and iron-treated cases in July was only 2.1%. Even so, the iron group had significantly higher haemoglobin values than the controls from March till July. In July iron medication was stopped, and by November the haemoglobin level of the iron cases had dropped and was within 1% of the mean for the controls but 3.8% above their own mean before iron medication was begun 9 months previously. The difference in the trend of haemoglobin values between iron cases and controls over this period is confirmed by examining subdivisions of the main groups, for in each age group in the iron series the mean haemoglobin value showed a rise between Feb. and March, 1942, whereas in each age group in the controls the mean haemoglobin fell over the same period; moreover, if the comparison is limited to children who supplied observations in both February and March (see Table IV) the result is practically the same as for the whole group shown in Table III. Hence we can safely assume that iron medication prevented a fall in haemoglobin and produced instead a fairly steady rise, continuing till medication was stopped in July, but that once medication was stopped there was a fall in haemoglobin to about the level of the controls.

Iron medication over this period of five months did not reduce the absentee rate. Between February and July (i.e., during two terms) the mean attendances of control cases and iron cases were almost identical; each child in the iron group averaged 237.9 attendances, while each child in the iron group averaged 237.3.

#### Effect of School Dinners on Haemoglobin Level

The effect of school dinners on haemoglobin level was investigated (see Table V). At school A the midday meal

TABLE V.—Effect of School Dinners on Mean Haemoglobin Level of Children who had had School Dinners for Over 3 Months

Age in Years	School A, Feb. or March, 1943				School B, October, 1942				Schools A and B Combined			
	Dinner Children		Controls		Dinner Children		Controls		Dinner Children		Controls	
	No.	Hb	No.	Hb	No.	Hb	No.	Hb	No.	Hb	No.	Hb
	No.	Hb	No.	Hb	No.	Hb	No.	Hb	No.	Hb	No.	Hb
7	8	88.6	9	90.3	4	92.6	18	87.8	12	89.9	27	88.6
8	30	89.1	25	87.3	6	89.6	17	88.7	36	89.1	42	87.9
9	24	89.7	19	90.2	13	90.4	19	89.3	37	89.9	38	90.7
10	32	90.9	26	92.0	11	93.1	23	93.7	43	91.4	49	92.5
11	18	94.0	21	90.9	2	94.3	3	84.5	20	94.0	24	90.1
7-12	112	90.5	100	90.9	36	91.5	80	90.4	148	90.7	180	90.2

when first instituted was the so-called Oslo, or modified Oslo, meal, which proved unpopular. From June, 1942, an ordinary hot dinner was provided, usually consisting of meat and two vegetables and a sweet course. This at first was not quite adequate in quantity for the older children, but by the end of 1942 the calorie value seemed ample. A similar meal was provided at school B. Table V shows the mean haemoglobin level of children who had had school dinners of this type for not less than three calendar months, many for much longer periods. At school B, in 1942, the children having school dinners had a mean haemoglobin level approximately 1% higher than the controls; but this slight superiority was not constant in the subdivisions, and was presumably the result of chance. At school A the difference between the haemoglobin of "dinner children" and controls was less than 0.5%, the controls being slightly higher this time. Thus these figures provide no evidence that school dinners had any influence on haemoglobin level. The suggestion we previously made that school dinners caused a slight but significant rise in haemoglobin level in school A in the summer of 1942 (Mackay *et al.*, 1942) is not supported by the present findings.

#### Effect of Home Circumstances on Haemoglobin Level

It has already been stated that many of the children's mothers did paid work outside their homes. Of 235 mothers of children examined in Feb. or March, 1943, 57% were housewives working only in their own homes; about 28% did part-time and 15% did full-time work outside their own homes. Over a half of those earning wages were engaged in some form of paid domestic work. As one might expect, mothers were more likely to go out to work when their children were older; thus 10% of mothers of 7- and 8-year-old children, and 18% of mothers of 9- to 12-year-old children, did full-time paid work. In Table VI the mean haemoglobin levels of children

TABLE VI.—Effect of Home Circumstances on Haemoglobin Level of Children examined at School A in Feb. or March, 1943

	Mother's Occupation			Three or More Earners	No. of Non-earning Children in Household			
	Housewife Only	Part-time Earner	Full-time Earner	1-2 Children not Earning	1	2	3	4 or More
No. of children ..	134	65	36	18	73	87	47	19
Actual mean Hb ..	89.5	90.8	90.9	92.0	90.4	90.1	89.7	88.5
Expected Hb for age	89.8	90.4	90.4	92.0	90.0	89.8	90.4	90.2
Actual less expected Hb	-0.3	+0.4	+0.5	+1.7	+0.4	+0.3	-0.7	-1.7

are shown according to whether or not the mother went out to work. In each of the three subdivisions the mean haemoglobin level is within 0.5% of the expected figure according to age. Hence haemoglobin levels in this series of children were not affected by the mother working outside her home. We have no information as to the relative financial status of these three groups, but there is little doubt that economic causes play a large part in determining whether a mother shall go out to work and that paid work considerably enhances her means.

The next five groups shown in Table VI suggest that economic factors were influencing haemoglobin level, though, unfortunately, numbers are too small to provide proof. In these five groups the highest mean haemoglobin level was in households with three or more wage-earners and not more than two non-earning children, and the mean haemoglobin level of these children—namely, 92.0%—was 1.7% above the expected level for age. The lowest mean was in households with four or more non-earning children, and their mean haemoglobin level was 1.7% below the expected figure. The mean haemoglobin level of children in households with one, two, or three children was intermediate, and showed a progressive fall, the figures being 90.4, 90.1, 89.7, and 88.5%. It was thought that children of men in the Forces might, for economic reasons, have a lower haemoglobin level than the children of civilians, but the difference was negligible—only 0.4%: children of men in the Forces, 89.7%; children of civilians, 90.1%. Further investigations on the effect of home circumstances on the haemoglobin level were planned, but have fallen through for the time being owing to the evacuation of school-children.

#### Discussion

The children examined at school A in the present investigation were of similar economic status to the small group of school-children included in our 1941-2 investigation. We found a rise in mean haemoglobin level between the second half of 1941 and early in 1942, but little change between early 1942 and early 1943. On the other hand, our 1941 values are similar to Davidson's values for municipal-school children in Edinburgh in the next year—i.e., 1942—and he observed a rise between 1942 and 1943 (Davidson *et al.*, 1943). Our 1942 values for municipal-school children are nearly as high as Davidson's 1942 values for private-school children (Davidson *et al.*, 1943). The causes for the changes in haemoglobin level are probably to be found in the food available to the children. It seems probable that the haemoglobin levels of school-children were lowered by food shortages accentuated by uneven distribution in 1940-1. Possibly food supplies improved more quickly for the children examined by us, or perhaps, as they lived

in a small town with many gardens, there was more opportunity for augmenting their diet from home-grown produce than existed for the Edinburgh children, and this may have accounted for the higher levels in our group in 1942. The following official account of food available in the United Kingdom before our 1941 investigation is taken from *Food Consumption Levels in the United States, Canada and the United Kingdom* (Combined Food Board Committee, 1944): "In the United Kingdom there was a sharp fall in food supplies in 1940 and 1941, particularly of meat, visible fats, sugar, and fruit, which greatly reduced the palatability as well as the nutritional value of the diet. At the period of greatest shortage in the first half of 1941 calorie supplies fell to 2,680, animal protein to 33 g., and fat to 105 g. per head per day, and there were indications that the diet was inadequate." It is a curious fact that the haemoglobin of children showed little increment between the ages of 5 and 11 years in our earlier series (last six months of 1941) or in Davidson's 1942 series, yet in Feb., 1942, in Oct. 1942, and in Feb. and March, 1943, in our present investigation, there is a steady increase in haemoglobin with age. A possible explanation is that our earlier investigation included small batches of children in a number of different schools and immunization clinics in different seasons, and that the rise with age was masked in this more heterogeneous group. Whether the same holds for the Edinburgh children we do not know.

It is well known that school-children's rate of growth in height and weight is not even throughout the year. Widdowson and McCance (1944) for example, have recently demonstrated that boys at two public schools grew much more rapidly in height and weight in holidays than in term-time. Our figures suggest that the rise in haemoglobin level with age also shows fluctuations during the course of the year. The main increment in haemoglobin level in our series occurred between March and July. We have no evidence as to whether variations in the physiological rise in haemoglobin level were directly due to seasonal differences in the incidence of droplet or other infections, or were associated with changes in the diet or were dependent on a variety of factors. Vitamin C has been thought to influence the absorption or utilization of iron, and a sharp summer rise in the level of blood ascorbic acid has been demonstrated in this country during the war years, the rise occurring as a result of the consumption of new potatoes. This change in ascorbic acid intake, however, could not account for the rise in haemoglobin level as the increase in haemoglobin occurred too early in the year.

Though the group of children given iron at school A had haemoglobin levels only 2.8% lower than Davidson's private-school children, iron medication produced a mean rise of 7% in 1942. Iron produced a rise within a month and at a time when the haemoglobin level of controls was falling, but in the spring and summer the haemoglobin level of controls also rose, and the difference in level between treated cases and controls in July, 1942, before medication was stopped, was only 2.1. Though this small difference in level was statistically significant, the absentee rate of controls and treated cases did not differ. With so small a difference in haemoglobin level perhaps an increased resistance to infection in the treated group could scarcely be expected in this period. The superiority of the treated cases in haemoglobin level was not maintained after treatment was stopped. A similar rise in the haemoglobin level of Edinburgh municipal-school children given iron therapy was shown by Davidson and Donaldson in 1944.

There is at present little or no evidence to show whether or not children having dinners in school commonly get in addition a large share in their own rations at home. If they do, their diet should, of course, be better than that of children who have only their home rations and no school dinners. Our investigation shows no improvement in haemoglobin level as a result of school dinners, though children in better economic circumstances may have somewhat higher haemoglobin levels even under our system of rationing (Wills and Bingham, not yet published).

The fact that a mean rise of 7% was produced in the group receiving iron medication and that the haemoglobin level in our municipal-school children was lower than that of children of higher economic status certainly suggests that there were

many children in our group with subnormal levels, but does not establish what the normal level should be. A few children had persistently high haemoglobin levels; for example, a boy aged 9 years who received no iron treatment had the following values in the course of a year: 100.7, 101.1, 100.0, 97.9, 100.0, 101.1, and 99.1. But such a case was an exception; most children even those with several consecutive high readings, showed fluctuations in the course of a year. Some fluctuations were no doubt due to errors in technique, others to illness of the child but it is probable that physiological changes due to exercise differences in temperature and emotion also caused fluctuations.

### Summary

The haemoglobin levels of children at two municipal schools were estimated with the Haldane haemoglobinometer. At school B 127 children were examined in Oct., 1942, at school A haemoglobin estimations were repeated at intervals for over a year in 1942-3 and 125 children in all were examined. The mean haemoglobin level at 7 years was about 88%, and there was an increase with age to approximately 92% at 10 years. The mean haemoglobin level for each age was approximately the same in Feb., 1942, as in Feb. or March 1943. The age increment for this twelve-months period occurred between March and July, after a drop in haemoglobin level between February and March. Iron therapy for five months in 1942 produced a mean rise of 7.0%, but when treatment was stopped the haemoglobin fell to approximately the level of the controls. Dinners provided in school had no effect on the haemoglobin level. Children who had eaten a midday dinner in school for three months and upwards had a mean haemoglobin level within 0.5% of controls who had no school dinners. Results suggest that in families where there are three or more children not earning wages the haemoglobin levels are likely to be lower than the average, but numbers were too small to be more than suggestive. The haemoglobin levels in 1942 and in 1943 were higher than they were in the latter half of 1941 for children of similar economic status examined by us.

Our sincere thanks are due to the medical officers of health and their staff for their help. The head masters and their teaching staffs assisted us most generously in spite of all the extra work thrown upon them and we are glad to express our gratitude. We are much indebted to Dr W. J. Martin for certain statistical analyses.

[POSTSCRIPT.—Since this paper was written there has appeared in the *Journal* (1944, 2, 334) an interesting paper by Davidson and his co-workers on haemoglobin levels in 1944 as compared with 1942 and 1943. In this two-year period they found a mean rise in haemoglobin of about 4% at one municipal school in Edinburgh and about 13% at another. Allowing (as found by us) for a rise with age of 2.8% in two years this means an increment of about 2% and 10% respectively between 1942 and 1944. We, on the other hand, found a rise at an earlier date, children examined early in 1942 had a haemoglobin level 5% higher than similar children examined in the second half of 1941, and between 1942 and 1943 we found little change. The Edinburgh workers conclude that the compulsory use in bread of 85% extraction flour and a consequent increase in iron intake "has been the chief factor responsible for the raised haemoglobin levels." The use of flour of 85% extraction was made compulsory all over Great Britain from March 23, 1942, and very little such flour was used anywhere in the country before that date, hence this cannot have been responsible for the rise in haemoglobin observed by us by Feb. 1942. Moreover, the use of this flour had little, if any, effect on the haemoglobin level in our group between Feb., 1942, and Feb. and March, 1943, since the levels at these dates differed by only 0.7%. Their haemoglobin level was, however, responsive to iron, for iron given in large doses produced a rise of 7%. The addition of calcium carbonate to the national bread was started gradually from April, 1942, so presumably much of the bread consumed by the children under our observation between April, 1942, and Feb. and March, 1943, contained this addition. Our observation therefore makes us hesitate to accept the view that the rise in haemoglobin level observed in Edinburgh school-children was attributable to changes in the composition of bread, although, like Prof. Davidson, we feel certain it was due to an improvement in the diet.]

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# THE DIETARY CONTROL OF ALLOXAN DIABETES IN RATS

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The importance of fat in lessening the severity of diabetes has long been known, but still receives little emphasis. Recently it has been underlined by observations in dogs made diabetic by the daily injection of anterior pituitary extracts. Marks and Young (1939) have found that when these dogs are given a diet which is almost exclusively fat the glycosuria and the ketonuria are greatly diminished. It seems as if on a fat diet the metabolism of these dogs ceases to be abnormal. Recently we have studied the production of diabetes in rats by the injection of alloxan, and have taken the opportunity to observe the effect of dietary changes, in particular of a high-fat diet, upon the glycosuria so produced. Our first experiments showed that the abrupt substitution of a high-fat diet for a normal diet caused a disappearance of glycosuria which was accompanied by some ketonuria. Although this ketonuria was transitory, we endeavoured to avoid it altogether by introducing fat in the diet in stages. In our first attempt to do this we used an unpalatable diet, and the results served only to demonstrate that a reduced calorie intake reduces glycosuria. In other experiments we successfully demonstrated the inhibitory effect of fat on glycosuria when the calorie intake was maintained.

Alloxan has the formula shown, and is closely related to the purines chemically. It is a substance which may arise in the natural course of metabolic processes in the body, and may be one actual cause of diabetes in man.



It is a substance which may arise in the natural course of metabolic processes in the body, and may be one actual cause of diabetes in man.

Shaw Dunn and McLetchie (1943) produced permanent glycosuria in rats by injecting a succession of doses of varying size at varying intervals. Working in April, we observed that two doses given subcutaneously on two successive days, each 16 mg 100 g., produced glycosuria in 8 rats of about 200 g. weight. In two of these the glycosuria disappeared after 4 days, but in 6 rats it persisted. Alloxan seems to be inactive by mouth, for, in 3 rats, four times the above dose on four successive days, followed by eight times the dose on two days, did not cause glycosuria.

## Effect of Diet on Glycosuria

In the accompanying Chart is shown the onset of glycosuria in two rats which were kept in the same cage. On the 2nd day, after the injection of the second dose of alloxan, the dextrose excretion rose to 5 g. in 24 hours, and on the 7th day to 7.7 g. The average excretion for the first 13 days was 5.5 g. in 24 hours. During this time the rats received a mixed diet, the composition of which was as follows: 19% ground wheat, 19% bran, 19% oats, 9% ground maize, 9% ground barley, 5% fish meal, 10% meat and bone meal (this being 50% protein), 10% skimmed-milk powder, plus yeast, cod-liver oil, and salt. The calorie value was estimated to be 3.8 cal. per gramme. On the 13th day the diet was changed to a high-fat diet of 90% margarine and 10% casein, plus a salt mixture. As the Chart shows, the glycosuria dropped to 0.5 g. on the first day and disappeared thereafter. In two other pairs of rats the same prompt disappearance of glycosuria was seen on changing from the normal diet to one consisting of 20% casein and 80% margarine. In one pair the dextrose excretion on the normal diet rose during 9 days to 10.9 g. per 24 hours, the mean figure being 7.0 g. On the high-fat diet it fell at once to 0.3 g., 0.2 g., and 0.2 g. on three successive days. On restoration of the normal diet it rose again to a mean figure of 7.6 g. for the next four days. In another pair of rats the normal diet was given for 30 days before it was changed, to observe whether any spontaneous arrest of glycosuria

occurred. The mean dextrose excretion was 3.5 g. daily during this period, and showed no sign of declining. When the diet was changed to a high-fat diet, glycosuria disappeared in the first 24 hours and, save for traces on four occasions, remained absent for 6 weeks, until the rats were again given the normal

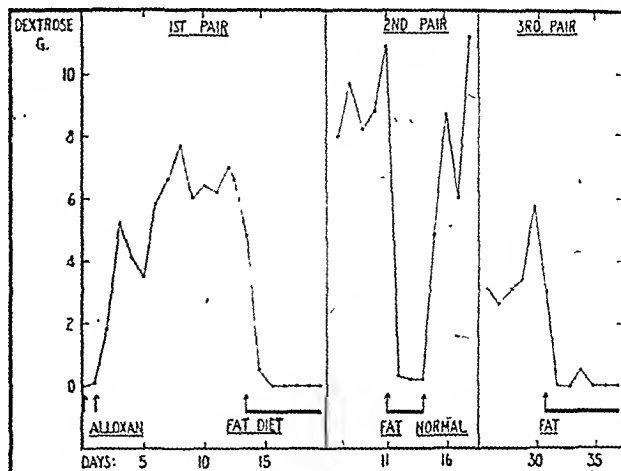


Chart showing the daily excretion of dextrose (ordinate) in the urine of three pairs of rats. In the first pair the onset of glycosuria is shown after two injections of alloxan. On the 13th day a high-fat diet was given. In the second pair the effect of 3 days of high-fat diet is shown. In the third pair the effect of high-fat diet is shown after 31 days of normal diet. The high-fat diet abolished the glycosuria in all three pairs.

diet. These observations show clearly that the substitution of a high-fat diet for a normal diet abolishes the glycosuria in rats as found by Marks and Young in the dog.

## Fat Diet and Ketonuria

The sudden change to a high-fat diet produced ketonuria in varying degree, as shown in Table I. The ketonuria was

TABLE I.—Ketonuria on High-fat Diet. (Mg. Acetone per Day.)

Rats	Fat in Diet	Days of Fat Diet				
		1	2	3	4	5
1st pair ..	90%	2	12	132	49	24
2nd .. ..	80%	2	9	4	—	—
3rd .. ..	80%	0	6	15	0	0

determined by the gravimetric method of van Slyke (1917). Table I shows that the ketonuria in the rats given 90% of fat reached the high figure of 132 mg. on the 3rd day, thereafter declining; it was, however, much less in the two pairs which were given 80% fat.

**Gradual Change to Fat Diet.**—The rat is an animal which develops ketonuria less readily than man, and, indeed, outside the spring months can eat a diet wholly fat for a week or more with little or no ketonuria (Burn and Ling, 1928). An attempt was therefore made to introduce fat in the diet gradually in order to avoid the occurrence of ketonuria: if ketonuria could not be avoided in the rat it certainly could not be avoided in man.

## Importance of Total Calorie Intake

The first experiments were made by changing from the normal diet to a diet of casein, margarine, starch, and a salt mixture. The proportion of casein was kept constant at 20%, while the proportions of carbohydrate and fat were altered: diet of any, one composition was continued for a period of not less than 5 days, for which the food consumed was measured and the calorie value calculated. The results in a pair of rats are given in Table II. In the column headed "Diet" the letter S indicates the diet of casein, margarine, and starch, as distinct from N, the normal diet. The figure following S is the percentage of fat in the diet. For each period the mean daily calorie intake and the mean daily dextrose excretion are recorded, and, finally, the body weight of the two rats at the end of each period is shown.

At first, with a diet containing only 40% of fat, the food intake was reasonably good and the dextrose excretion high. On raising the fat percentage to 60 the dextrose excretion dropped very low, but coincidentally with this change the rats ate much less food and the calorie intake fell to little more than half. That the main cause of the diminution of glycosuria was the drop in calories rather than the increased fat was shown by the fact that when the fat percentage was decreased

TABLE II

Diet	No. of Days	Mean Daily Cal. res.	Mean Daily Dextrose Excretion (g)	Body Weight at End (g)
S 40	5	143	3.0	364
60	5	50	0.2	333
60	5	52	0.02	305
60	5	50	0.2	293
60	5	52	0.1	253
60	11	152	2.2	373
60	12	190	5.55	420
60	6	75	0.6	342

in stages to 50, 40 and 30% glycosuria remained very slight. The low calorie intake was reflected in a serious fall in body weight, for at the end of the fifth period the rats had together lost more than 100 g. They were then given the normal diet, 40% per day. They ate all of this and dextrose excretion rose to a mean figure of 2.2 g. In the next period the normal diet was increased, and the calorie intake rose to 190, as a result the dextrose excretion more than doubled. At the end of this period the body weight was fully restored. A final demonstration of the importance of calorie intake on the amount of dextrose excreted in the urine was provided by reducing the diet to 20 g per day. The dextrose excretion again fell to a low figure.

#### Effect of Fat on Dextrose Excretion

The attempt to demonstrate the importance of fat had so far failed because the mixture of casein, starch, and margarine was not liked by the rats and they ate very little. In another pair of rats the experiment was performed by adding fat to the normal diet. The result is shown in Table III. During

TABLE III

Diet	No. of Days	Mean Daily Calories	Mean Daily Dextrose Excretion (g)	Body Weight at End (g)
S 20	6	65	0.3	378
60	6	212	4.9	443
60	6	212	4.0	450
60	6	203	2.8	492
60	6	188	2.3	493
60	10	172	1.0	503
60	16	157	0.3	500
60	6	165	Nil	455

the first period the rats were eating the unpalatable mixture and were then given the normal diet (N). Although the diet was of approximately the same composition the calorie intake rose to about three times the previous value, the body weight increased, and the dextrose excretion rose from 0.3 to 4.9 g per day. Margarine was then incorporated in the normal diet—first 20%, then 30%, until, finally, 70% was included.

As the percentage of fat rose the mean daily excretion of dextrose steadily fell. With 60% of added margarine the dextrose was as little as 0.3 g per day, and with 70% the urine became completely sugar-free. While this occurred the calorie intake fell only a little. On the normal diet without added fat the calorie intake was 202 per day at a time when the dextrose excretion was 4.9 g. When the diet contained 70% added fat the calorie intake was 165—that is to say, about 80% of the previous intake—and since 5 g dextrose, representing 20 calories, was no longer lost in the urine, the calorie usage was 90% of that on the normal diet. The maintenance of the calorie intake was reflected in the maintenance of the body weight, which remained near 490 g on the diets containing 30, 40, 50, 60, and 70% of added fat. After each change in the diet the urine was examined for acetone bodies on three or more successive days. Ketonuria occurred on only one day of the whole period, which was approximately 8 weeks. It amounted to 19 mg acetone, and occurred after the rats had

been given 50% of added fat. Strangely enough, there was no ketonuria when the added fat amounted to 60 or 70%. Thus in this experiment glycosuria was abolished by a high fat diet which did not reduce the calorie intake sufficiently to affect the body weight.

#### Permanence of the Diabetes

When these diabetic rats were given alternate periods of a normal diet and a high fat diet it was found that the glycosuria recorded when they were eating the normal diet gradually diminished in successive periods. Figures illustrating this change in one pair of rats are given in Table IV. It is

TABLE IV

Period when Diet Normal	Mean Dextrose Excretion in 24 Hours (g)
2nd 13th day	5.5
13rd-42nd	4.4
10th-127th	2.3
161st 171st	1.6

The first day was the day on which glycosuria first appeared.

uncertain at present whether this decrease in dextrose excretion was due to intervening periods of high fat diet or not. Perhaps diabetes produced in rats by alloxan diminishes in course of time even on a normal diet. Further work is in progress to determine whether a high fat diet not only prevents glycosuria but also restores functional islet tissue in rats.

#### Discussion

These experiments show how convenient a tool alloxan is for the study of diabetes in groups of animals. Most experimental studies hitherto made have been carried out in dogs or in cats made diabetic either by removal of the pancreas or by Young's method of repeated injections of anterior pituitary extract which has the great advantage that the pancreas remains. Even so, the production of diabetes takes a considerable time and requires much anterior lobe material. Two injections of alloxan are enough to produce diabetes in the rat, so that diabetes can be studied in groups of animals with ease. We have been able to demonstrate that glycosuria is eliminated by diets of high fat content. Allen (1917) recommended high fat diets for the treatment of human diabetes, as did Newburgh and Marsh (1920), and Petren (1925). Later Haist, Campbell, and Best (1940) from their studies of the insulin content of the pancreas conclude that fasting, fat-feeding and the injection of insulin are three factors which allow the pancreatic islets to rest. As already stated, Marks and Young (1939) found that a diet of beef suet diminished both glycosuria and ketonuria in dogs made diabetic by anterior lobe extracts, and Dohan and Lukens (1939) have confirmed this. A diet exclusively fat could not, of course, be given indefinitely. While we have not found it possible to make a sudden transition to a high-fat diet without increasing ketonuria we have found that by a gradual increase in the fat content of the diet it is possible to abolish glycosuria without producing ketonuria and at the same time to provide a diet containing enough calories to maintain body weight reasonably well. Thus we have been able to demonstrate that alloxan diabetes in the rat can be brought under complete control by diet.

The difficulty in applying these results to man is that most people do not believe that man (in particular, a diabetic patient) can eat a high fat diet without developing ketonuria and exposing himself to the risk of coma. Our knowledge of the mechanism of ketonuria is still small. Petren (1925) stated that a diet of butter diminished acidosis, whereas a protein diet increased it. Marks and Young (1939) also say: "The results of our investigations have shown that the ketonuria is at a maximum when a meat diet is given and is lowest with the prolonged feeding of fat." It seems clear that further progress in the dietary control of human diabetes must await a clearer understanding of ketonuria.

#### Summary

Rats have been made diabetic by the injection of alloxan. When a high fat diet was substituted for the normal diet the glycosuria disappeared and remained absent until the normal diet was resumed. This abrupt change to a high fat diet was accompanied by some

per ml. had survived in 2-aminophenol and only 300 in proflavine. After 24 hours both compounds had killed all the organisms. In a control tube consisting of a similar suspension of organisms in water slight multiplication occurred.

**Antibacterial Action in Blood in Slide Cells.**—As Fleming (1930-1) has shown, most of the antibacterial agents used before the discovery of sulphanilamide destroy leucocytic function in dilutions which have no effect on bacterial growth. Many bacteriostatic compounds are also inactivated by blood or serum. The following experiment was carried out to determine whether either of these statements applied to 2-aminophenol. Two series were set up in parallel; in one case fresh defibrinated blood was used, and in the other blood 1:1000 liquid. It was assumed that 1:1000 liquid would destroy all leucocytes. Serial dilutions of 2-aminophenol and proflavine were made in isotonic saline, mixed with equal quantities of blood, and a suitable inoculum of streptococci added. Controls consisting of saline, blood, and organisms only were included. The mixtures were transferred to slide cells, which were sealed and incubated for 24 hours. Table III gives a typical result with a small inoculum of *Str. pyogenes* consisting of approximately 30 viable organisms per slide cell. These figures show that 2-aminophenol has a considerable antibacterial activity in the presence of 50% blood, and the compound does not interfere appreciably with phagocytosis in greater dilutions than it is bacteriostatic.

**Action of 2-aminophenol on Penicillin.**—The effects of mixtures of penicillin and 2-aminophenol on *Staph. aureus* were studied. A large inoculum of staphylococci will grow in a concentration of 1:8000 2-aminophenol, although much greater dilutions are inhibitory to smaller inocula. Serial dilutions of penicillin were made in plain broth and in broth containing a final concentration of 1:10,000 and 1:100,000 2-aminophenol. An inoculum of approximately 4 million staphylococci was then added to each tube. The results are shown in Table IV. It will be seen that even a dilution of 1:100,000 2-aminophenol increases the antibacterial activity of penicillin.

TABLE IV.—Effect of Penicillin + 2-aminophenol on *Staph. aureus* when an Inoculum of Approximately 4 Million Organisms was used

Penicillin, Units per ml. (approx.)	Plain Broth	1 : 100,000 2-aminophenol in Broth	1 : 10,000 2-aminophenol in Broth
None	—	++	++
1/4	0	0	0
1/8	0	0	0
1/16	0	0	0
1/32	0	0	0
1/64	—	0	0
1/128	—	—	0
1/256	—	++	0
1/512	—	++	0
1/1000	—	—	0

Plus signs indicate degree of growth as observed by turbidity. 0 = No growth.

**Toxicity.**—(1) *Skin sensitivity*.—This was tested on 6 human volunteers. A 1:500 solution of 2-aminophenol in water was rubbed into the same area of skin every day for a week. No reactions of any kind were observed and no irritation was felt. (2) *In mice*.—A series of 18 mice were given varying doses of 1% solutions of 2-aminophenol and proflavine respectively by subcutaneous injection. Doses of 0.4 g. 2-aminophenol per kg. of body weight were tolerated, but 0.5 g. or more per kg. was fatal. Proflavine was fatal in doses of 0.2 g. per kg.

**Activity of Allied Compounds.**—The antibacterial activity of 2- and 4-aminophenol (I, II) suggested a further investigation designed to determine the effects of molecular substitution in these

(I) Activity among the substituted 2-amino- (o-amino-) phenols (I) was limited almost entirely to substances of the class (III), but was absent where R was  $-\text{COOH}$ ,  $-\text{COOCH}_3$ ,  $-\text{COOC}_2\text{H}_5$ ,  $-\text{COOCH}(\text{CH}_3)_2$ , or  $-\text{NO}_2$ . The most active substituted 2-aminophenol was 4-methyl-2-aminophenol (3-amino-*p*-cresol; III; R =  $-\text{CH}_3$ ), and the activity of this substance was of the same order as that of 2-aminophenol itself.

So far we have not discovered a substance in which substitution has enhanced the activity of 2- or 4-aminophenol. Compounds of formula III, however, should be worth further investigation, and this is being undertaken.

### Discussion

The mode of action on bacteria of 2-aminophenol is not known. Like the sulphonamides, the compound is mainly bacteriostatic in action, and is very much more effective *in vitro* against a small number of bacteria than it is against a large number. 2-aminophenol in strong solutions, however, is slowly bactericidal. 4-aminophenol (*p*-aminophenol) has been shown by Bernheim *et al.* (1937) to have a considerable effect on tissue oxidations. These workers found that this compound, compared with a large number of similar substances, was the most active in inhibiting the oxygen uptake of liver suspensions.

Williams (1938, 1943) has studied the fate of 2-, 3-, and 4-aminophenol in the body. He has shown that 2-aminophenol when fed to rabbits by stomach-tube is excreted in conjugation with both sulphuric acid and glucuronic acid. No free aminophenol was excreted. He gave 1-g. doses of 2-aminophenol to 6 rabbits of 2.5 kg., apparently without toxic effect. He also showed (Williams, 1943) that 2- and 4-aminophenol glucuronides were methaemoglobin-formers *in vitro*.

Further observations on this group of compounds are required, but its low toxicity and its bacteriostatic activity against the Gram-negative bacilli suggest that 2-aminophenol may be of value as a local antiseptic.

We are glad to acknowledge the help of J. D. Oriel, of Guy's Hospital Medical School, in the preparation of substituted aminophenols.

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## MEDIASTINAL TERATOMA SUCCESSFULLY REMOVED BY OPERATION

BY

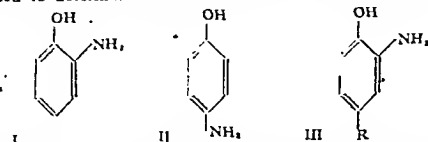
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The following rare case is of interest, being that of a teratoma in a child aged 7, which was successfully removed.

### Case History

In Jan., 1944, the patient was referred to me by Prof. E. J. Wayne and Dr. Thompson. The history was somewhat scanty, but the child had complained of shortness of breath while playing and on going uphill, and the mother, wondering if her heart was at fault, brought her to the Children's Hospital, Sheffield. Examination of the chest showed that the cardiac area of dullness was considerably increased to the right, and a radiograph disclosed that there was a tumour which occupied a large part of the right hemithorax. Further investigation revealed that it was roughly oval and lying in the anterior mediastinum. Scrutiny of the film showed that the shadow was not of homogeneous consistency, but was an irregular fine one which was very suggestive of bone. A diagnosis of mediastinal teratoma was made. The child was transferred to the Royal Infirmary, Sheffield, and was about to be operated upon when she developed scarlet fever and had to be sent to the local fever hospital.

She was readmitted on March 13, and the operation took place on March 21. The anaesthetic was ether-oxygen administered by an Oxford vaporizer. The chest was opened by an incision running parallel to the second rib, then down the margin of the sternum



substances. The following compounds were therefore prepared and tested for antibacterial activity: 2- and 3-methyl-4-aminophenol, 5-methyl-2-isopropyl-4-aminophenol (6-aminothymol), 2-methoxy-4-aminophenol (3-aminoguaiacol), 2-aminoanisole (o-anisidine), N-acetyl-2-aminophenol, 3-, 4-, 5-, and 6-methyl-2-aminophenol, 4-carboxy-2-aminophenol and its methyl-, ethyl-, and iso-propyl esters, 4-phenyl-2-aminophenol, and 4-nitro-2-aminophenol (sodium salt, B.D.H.).

As a result of this work, the conclusions reached were: (1) The 4-amino- (*p*-amino-) phenols (II) are generally so unstable that their use as therapeutic agents would be seriously limited. Work on them was not pursued, although 4-aminophenol as well as 2- and 3-methyl-4-aminophenol showed antibacterial activity of the order of that of 2-aminophenol itself. The remaining substituted 4-aminophenols were inactive.



and outwards along the sixth rib. The costal cartilages were cut on the bevel to prevent overlapping when the chest was closed. The right pleural sac was stripped away and a window raised of

bulk by removing a series of wedges of tissue until it had reached reasonable proportions. It was finally removed by further digital dissection. As the upper pole seemed to be the most likely place for a blood supply, since none had been encountered, a clamp was placed across the last piece of tissue which held the tumour. To avoid infection the window in the chest was closed without drainage and the air aspirated out of the cavity to prevent surgical emphysema. Sero-sanguinous fluid collected during the next few days, which I aspirated on one occasion, but, as is so common in all chest operations, could not find any fluid on a subsequent attempt. The fragments of tumour when collected were found to weigh 12 oz.

My colleague, Dr. L. C. D. Hermitte, undertook the examination of the specimen, and his report is as follows:

"Sections from various parts of the tumour show the structure of a multipotential teratoma. The following structures are present: (1) fatty areolar tissue; (2) cartilage; (3) ossifying cartilage; (4) bone marrow; (5) thymus gland tissue complete with epithelial pearls; (6) branching tubules lined by semi-stratified ciliated epithelium with plain muscle, cartilage, and numerous glands in the walls suggestive of bronchial epithelium; (7) tubular collections of melanin pigment; (8) cystic spaces lined by cubical epithelium forming papillary processes, the nature of which is not clear: they resemble the pink-celled cyst of the breast; (9) areas of connective tissue containing calcospheres."

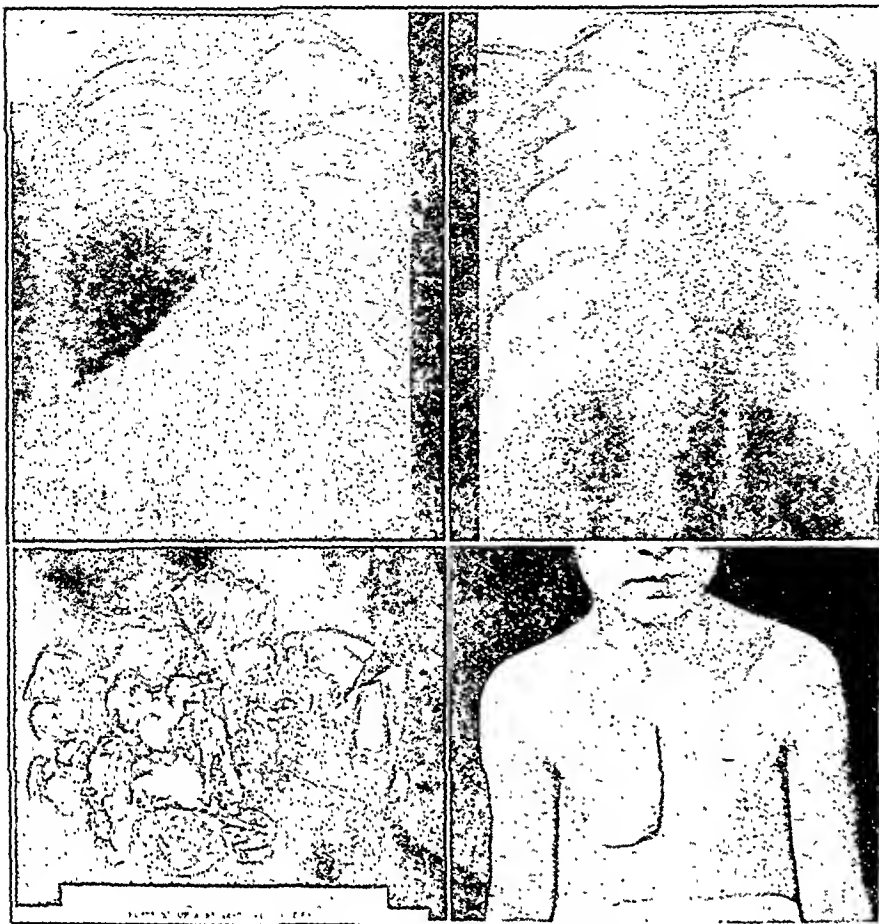
The child made an uninterrupted recovery, and was discharged on April 6.

A radiograph taken three months after operation showed a perfectly normal chest. There appeared to be a tendency to form keloid in the scar, so x-ray therapy was instituted.

In a review by Lloyd Rusby (1944) of dermoid cysts and teratomata of the mediastinum based on a study of the world's literature, it is stated that only some 245 cases, exclusive of six original cases, had been published between 1827 and 1939.

#### REFERENCE

Rusby, N. Lloyd (1944). *J. thorac. Surg.*, **13**, 169.



chest wall. This revealed a large yellowish-white tumour, which was found to be relatively free on blunt dissection below, but was more firmly attached towards the upper pole. Owing to its large size it would have been necessary to enlarge the opening in the chest so, to overcome this difficulty, the tumour was reduced in

## Medical Memoranda

### The Incomplete Antibody in Rh Immunization

The recognition of an Rh antibody which combines with homologous red cells *in vitro* but does not agglutinate them was announced independently in June of this year by Wiener and by one of us.

The "blocking" antibody (Wiener, 1944) or "incomplete" antibody (Race, 1944) is specific for one part of the antigen complex of Rh-positive cells. If this antibody could agglutinate it would be of the type which has been variously called anti-Rh standard anti-Rh 85%, anti-Rho, Δ, and rho. It reacts with the antigen common to the genes Rh<sub>1</sub>, Rh<sub>2</sub>, Rh<sub>0</sub>, and the rare Rh. However, the complexities of antigenic components, genes, antibodies, and nomenclatures need not be gone into here.

Wiener has pointed out that this "blocking" antibody can be detected in some cases in which immunization is suspected and the mother or recipient is Rh-negative, but in which no antibody can be found by the ordinary means. The purpose of this note is to draw attention to this latest method of detecting immunization of an Rh-negative person and particularly to Wiener's technique, which is more sensitive than that described by Race. The following is Wiener's description of the test.

"The technique of the test is simple. First, one drop of a 2% suspension of Rh-positive cells and a drop of the patient's serum are mixed in a small test-tube and allowed to react in a water bath at 38° C. for 30 to 60 minutes. Then a drop of a suitable dilution of an active anti-Rh serum is added, and after an additional incubation period of 30 to 60 minutes the reactions are read. If blocking antibodies are present no agglutination will occur, or the clumping will be markedly weakened."

The example given of a suitable dilution of an anti-Rh serum is 1:5, when the original titre was 60.

We have tried Wiener's technique on a number of sera collected from Rh-negative women over about two years and stored at minus 20° C. Whereas Wiener placed the tubes in a water bath we used an incubator at 37° C., re-suspending the sedimented cells when adding the active anti-Rh serum after the first period of incubation. Of 19 cases in which the history sounded typical of haemolytic disease and yet in which no anti-Rh had been detected the incomplete antibody was found in 6. Of 26 cases in which a trace of anti-Rh had been detected the incomplete antibody was found in 19.

These results confirm the importance of testing for the presence of the incomplete antibody in any serum from an Rh-negative woman in which no anti-Rh can be found. The less sensitive the technique for detecting anti-Rh agglutinin the more useful will be the test for the incomplete antibody. In some cases it will yield the only evidence of immunization, and in others will strengthen that given by the finding of only a trace of agglutinin.

A fairly extensive search involving more than 100 mothers with histories suggesting haemolytic disease has failed to give any evidence of incomplete forms of the other three types of anti-Rh agglutinins.

R. R. RACE, M.R.C.S., L.R.C.P.  
G. L. TAYLOR, M.D., PH.D.

Cambridge.

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## Reviews

### EXPERIMENTAL BASIS FOR NEUROTIC BEHAVIOUR

*Experimental Basis for Neurotic Behavior: Origin and Development of Aristotle's Proof of the Burden of Behavior in Dogs.* By W. Horsley Ganitt. M.D. Assistant Lecturer and Head of the Pavlovian Laboratory, Johns Hopkins University. (Pp. 211, 54/60.) New York and London: Paul B. Hoeber, Inc.

The full title of this volume conveys almost as much as can be put into a brief review. The book deals very largely with observations on one dog, Nick, which was under observation for 12 years and has been in a state of nervous imbalance for a decade. Considerable additions have been made to the original observations of the Pavlov school particularly in the study of aberrations of sexual function. The author claims that, in animals, the origin and spread of nervous imbalance can be detected before it is properly expressed, can be traced in its development and followed as it extends to the various physiological systems. Social and personal relationships can also be studied.

The book is stimulating and conveys a challenge, and probably marks the beginning of an epoch of productive work in this important new field. For, as the author rightly points out, in such a periodically recurring chaotic world state of affairs any approach to the question of emotional imbalance is important. Although the most detailed observations have been made on one animal, Dr. Horsley Ganitt lays special stress on the fact that individual variations are very great. We feel irresistibly drawn to his conclusion that there is in these experiments much that is applicable to the problems of tortured mankind. We congratulate the author on a work full of interest.

### DRUGS AND THEIR ACTIONS

*A Concise Pharmacology and Therapeutics of the More Important Drugs together with the Art of Prescribing.* By F. G. Hobart, Ph.D. and G. Meacham, M.D. (Pp. 168, 2s. 6d.) London: Lloyd-Luke Ltd. 1944.

The title of this book is misleading, for pharmacology is an experimental science which is not expounded by giving a list of drugs and saying a little about the action of each. While it is a useful work for the doctor in practice who wants a book of reference handy than the *Eviva Pharmacopoeia*, yet because it is called "Pharmacology" it is unlikely to be bought by the qualified man, and its main sale is likely to be to the student for whom it is much less suited. The actions of the substances dealt with are almost always well described, and the information is reasonably up to date. But this is not a book on which the student should rely, because no space is given to mechanism of action, with which a work on pharmacology should be primarily concerned. For example, it is not enough to say that "ephedrine delays the destruction of adrenaline in the tissues and so prolongs its action." As an explanation of the mechanism of ephedrine action this is wholly inadequate.

There are a number of points where the best information is not given. Thus it is stated as was formerly believed, that sulphaguanidine is only slightly absorbed from the alimentary tract. It is now known that though it is absorbed slowly much sulphaguanidine is absorbed, unlike sulphasuxidine which remains in the intestine. Acridavine is said not to affect phagocytosis, this again is erroneous for antiseptic concentrations kill polymorphonuclear leucocytes.

### A SURGEON'S PHILOSOPHY

*Meaning and Purpose.* By Kenneth Walker. (Pp. 170, 7s. 6d.) London: Jonathan Cape.

This book represents another rung on the ladder by which Mr. Kenneth Walker is climbing, from the contemplation of the genito urinary system of the human being to a philosophy of the universe, and a very interesting rung it is. It is written with all the clearness and lucidity of style we have come to

expect from Mr. Walker. In this book he reviews the various doctrines which he has accepted with greater or less enthusiasm during his life and for the most part found wanting. It he has not yet reached a complete, satisfying philosophy to put in their place how shall we blame him?

He points out that in spite of close observation, scientific knowledge is necessarily indirect and that Western civilization has not made a sufficient attempt to improve the faculties of reasoning and reflection. Science firmly rejected metaphysics when it began to make real advances but now we find that physicists have been compelled to become philosophers. After all, Plotinus said that intuition transcends experiment and reason and this was accepted till the nineteenth century, when the real fight between science and religion began with the efforts of science to explain everything in terms of materialism, then of vitalism then of mechanism. But all these approaches were one-sided because they forgot or ignored mind and epistemology (knowledge). With Darwin the scientists thought they had won battles and the *Origin of Species* became for a time as authoritative and uncriticized as was the Bible for the richard religions. With the growth of exact genetics, and the discovery of mutations the majority of which did not persist Darwinism became difficult to accept, in fact it could not be accepted unless some form of central purpose in the evolution of the universe was admitted. The next step was the rise of the various psychologies based on (a) biology—the observation of animal behaviour (b) physiology—the conditioned reflex of Pavlov and the behaviourism of Watson, and (c) medicine—Freud and those who followed him. All these are incomplete though all contain truth. In spite of what the scientists have said meaning, purpose, and intelligence do exist and these are concerned with the "why" of evolution whereas science is concerned with the "how." Attempts to answer this "why" were made by Bergson with his *élan vital* and by Ouspensky with his "Great Laboratory." Man is conscious of a purpose and this is the province of religion which he cannot do without. Faith is essential to man and the solution may be found through the mystics and the affective realization that God is Love.

Mr. Kenneth Walker then goes on to discuss the three religions of modern times. First humanism—the worship of man with the corollary of the emergence of a superman. This may be hastened by the second religion, the worship of race—the herrenvolk. But the psychology of the crowd is always at a lower level than that of the individual and is bound to produce war. The causes of war are economic circumstances, man's social state and his acquisition of wealth. The third religion is that of communism—a rung at an aristocracy of power rather than of wealth which may also lead to war. The promise of the future does not lie in these or in science which alone cannot achieve truth, yet modern physics makes possible a liaison between science and philosophy and an integration of philosophy into something higher than has yet been reached is necessary to avoid war and lay the foundations of a brighter world order.

### MEDICAL LEXICOGRAPHY

*The American Illustrated Medical Dictionary.* By W. A. Newman Dorland, M.D. F.A.C.S. Two tenth editions revised and enlarged. (Pp. 1665, with 450 illustrations, including 750 plates. Price 10s. 6d. (hard) 4s. 6d. (flexible). Philadelphia and London: W. B. Saunders Company, 1944.

The ever useful Dorland's *Medical Dictionary* appears in its twentieth edition on thoroughly revised and brought up to date. All departments of medicine and surgery have been covered and hundreds of fresh terms used in the fields of biochemistry, chemotherapy, allergy, specific therapy, endocrinology, vitamin research, tropical and parasitic diseases and mycology have been incorporated together with the names of a host of new synthetic and medical preparations. The vocabulary of war medicine and surgery, too has received special attention. It is to be noted that the terminology employed is that of the *Standard Nomenclature of Diseases and Operations* published by the American Medical Association, and edited by Dr. Edwin O. Jordan.

A close study of Dorland's dictionary seems to indicate that there are broadly two kinds of definition, one supplied by experts in the particular branch of medicine represented by

the word defined, and the other supplied by men with lexicographical talent but no expert medical knowledge. For example, the word "enteric" is defined as "pertaining to the intestines," but no reference is made in this entry to the common use of this word in "enteric fever": "enteric fever" does appear under the general entry "fever," as a synonym for typhoid fever, but not in the entry for "typhoid fever." Some definitions are tantalizing because they are incomplete. "Vitapathy," for example, is defined as "a modern system of quack medicine," but the definition does not tell us what the system is; as it is probably of limited interest, it seems unnecessary to give a separate entry: "vitapathic," with the definition "pertaining to vitapathy." In these days medical terms spring up like mushrooms in the night, and one of the great merits of Dorland's dictionary is the speed with which new words are incorporated in successive editions. At the same time we feel that this excellent work could be made still more serviceable if some of the dead wood were cut away, and if words not strictly medical were omitted. There would seem, for example, to be no point in including the word "voluptuous," well defined in any English-language dictionary, and still less reason for including the delightful but unusual word "volupty," the meaning of which is defined as "sensual enjoyment"—less bashfully defined in Webster's dictionary as "sexual enjoyment." Among the relatively new terms we note the word "geriatrics"—"that department of medicine which treats of the clinical problems of senescence and senility, geriatric medicine." There is, incidentally, no separate entry for the word "geriatric," but there is one for "geratic." Pursuing other cognate words, we note "geratology" and "gereology," both of which mean "the science which deals with old age and its phenomena." Then there is the word "gerantology"—"the scientific study of the ageing process, its phenomena, diseases, etc." The compilers of the dictionary are to some extent bound to follow the current usage of words among medical writers. But that editorial pruning hook—the blue pencil—might perhaps have been used more ruthlessly; and, too, the word "geratology" was some time ago given a definition which would seem worth preserving. The *Shorter Oxford* defines it as "the science of the phenomena of decadence, esp. in a species of animals approaching extinction." Those who share the reviewer's taste for dipping into dictionaries will find they get as much pleasure out of a medical dictionary as out of any other, and may even share his delight at discovering the word "gephyrophobia," which means "fear of walking on a bridge, river bank, or other structure near the water."

### Notes on Books

Prof. ARNOLD SORSBY's thoughtful and stimulating book *Medicine and Mankind* was reviewed in these columns on Dec. 13, 1941. An abridgment from the fuller work has now been published by Watts and Co. as No. 104 of their series, the Thinker's Library, at 2s. 6d. This will ensure a wider public for the author's account of the meaning and mechanism of health and disease, and of the conceptions and aims of medicine.

The pamphlet by Lord HORDER (in collaboration with the Empire Rheumatism Council) entitled "Rheumatism. Notes on its Causes, its Incidence, and its Prevention; with a Plan for National Action" was first published in March, 1941. A fourth edition, the text practically unchanged but with a new preface, makes the total printing 7,000 copies. It is published by H. K. Lewis and Co. at 2s.

Three pamphlets by Dr. EDWARD F. GRIFFITH (H. K. Lewis and Co.; 1s. 6d. each) are the lectures which form the second part of his book *The Road to Maturity*, reviewed in these columns on June 3 (p. 754). They are useful guides in sex education, though it is not desirable that lectures on such subjects should be stereotyped, since their form and substance must vary with both the audience and the lecturer. *Facts in Development* is a biological account of reproductive function from the amoeba to man. *Emotional Development* deals with the mental side of sex and touches on masturbation, homosexuality, and the guilt feelings which are liable to arise from them and the emotional differences between the sexes. *Towards Maturity* deals with the problems of preparation for marriage, family limitation, premarital relationship, prostitution, and other related questions.

## Preparations and Appliances

### CONTINUOUS PENTOTHAL ADMINISTRATION

Dr. W. G. MCKINNEY (Londonderry) writes:

I have found the actual giving of continuous pentothal solution simplicity itself by means of the apparatus illustrated. There is nothing very original about it except the little tap mount, in which the 20-c.cm. syringe securely fits. The introduction of the tap into the apparatus is obvious, as allowing the syringe to be detached for refilling during the course of a prolonged operation, especially if 2½% solution is being used. By the agency of the tap the whole system can be left charged with pentothal solution during detachment of the syringe; and clotting definitely does not take place, either in the needle or in the tubing.

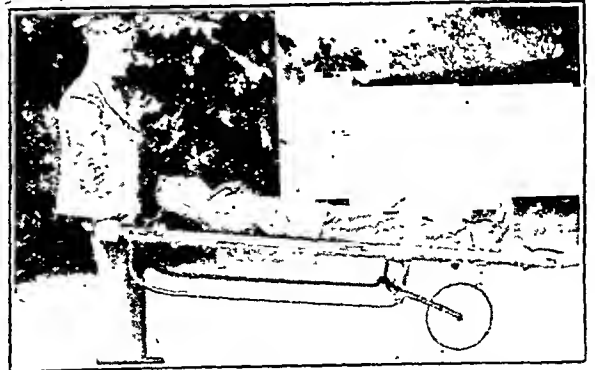
The tubing used is of very fine bore, and is most easily obtainable as an infant's catheter cut into suitable lengths or portions. It is advisable to have some four inches of tubing between the window and the tap to allow for free and unhampered use of the syringe, which may be held comfortably in hand or, if desired, fixed to some simple rack fitting. The window is of the type used frequently as a syringe attachment for the injection of varicose veins, and serves admirably as a visual guide to the true intravenous position of the needle.

Of the needles which I have used, size 12 intravenous, made by Allen and Hanburys, is without doubt the best and most satisfactory. When properly in position it is securely fixed to the arm by means of a piece of narrow strapping passing over the mount. Another piece of strapping at the lower end of the window gives extra stability and freedom from worry about drag on the needle-point. The syringe may be either eccentric or concentric nozzled; it makes no difference. The patient's arm is supported on an arm-rest and firmly fixed thereto by means of a wrist-strap or bandage.

Using this simple and readily procurable apparatus I have given pentothal continuously on numerous occasions and have had no trouble with needle blockage, leakage, or air bubble.

### UNDER-CARRIAGE FOR SLEDGE STRETCHER TRANSPORT

Lieut.-Col. D. G. DUFF, F.R.C.S. Ed., writes: The advantages to be got from sledge stretcher transport in minimizing shock to the patient and hard labour to the bearers are undeniable. A practical test against any other stretcher assembly (especially in hill country) will quickly convince anyone. The incorporation of sledge runners, especially in a tubular metal stretcher, need not add much to the weight. It adds greatly to the utility, while preserving all the traditional usages (*Lancet*,



Sledge-wheel under-carriage for standard stretchers

June 17, 1944). Since, however, there may be reluctance to scrap existing stretchers, an under-carriage has been designed and made to fit the standard wooden stretcher. It weighs about 9 lb., but will save many foot-pounds of energy expenditure. With a central wheel applied, it will take practically all the strain off stretcher-bearers. On occasion it will allow the wheel-barrow *modus operandi*, so that one bearer can carry his patient with less exertion than is required from either of the normal two bearers. The accompanying photograph shows the wheel-barrow position. The central position with vertical wheel-forks is better, as it takes all the weight from the two bearers.



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## BRITISH MEDICAL JOURNAL

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SATURDAY DECEMBER 9 1944

## THE GERMINAL EPITHELIUM AND THE PROSTATE

A hormone secreted by the germinal tissue of the testicles has often been postulated but never hitherto proved. The question is one of more than academic importance, for one hypothesis advanced by Lower<sup>1</sup> to explain senile prostatic enlargement involved the assumption of such an internal secretion. Lower and his colleagues assumed that with advancing years this secretion decreased, and that the anterior pituitary was thus induced to increase its output of gonadotrophin, just as in the menopausal woman the output of gonadotrophin is increased by ovarian failure. The gonadotrophin acting on the still functional interstitial cells of the testicles gave rise in their hypothesis to an increased output of testosterone, which caused enlargement of the prostate. Unfortunately for this neat hypothesis, it is impossible to produce by the administration of testosterone a condition resembling benign enlargement as it occurs in man. The prostate hypertrophies but remains histologically normal. A second hypothesis is diametrically opposed to that of Lower. It takes no account of an internal secretion of the germinal epithelium, and is based on the fact that the normal man secretes both androgenic and oestrogenic hormones, the former from testicles and adrenals and the latter from some tissue or tissues hitherto unknown. That the oestrogen-producing tissue also is within the testicle is made probable by the observations that animal testicles contain an oestrogen and that the testicles and urine of stallions are very rich sources of oestrogens. It assumes that with advancing years the secretion of testosterone diminishes with no corresponding decrease in oestrogen and that the unopposed oestrogen is responsible for the prostatic enlargement. That oestrogen does in fact cause prostatic enlargement was independently shown by Lacassagne, by de Jongh, and by Burrows and Kennaway. The hypothesis was given still further experimental support by the work of Zuckerman and his colleagues, who showed that the changes induced were due largely to the sensitivity of the prostatic utricle and its bed (the "middle lobe" of the surgeon) to oestrogenic stimulation; that in the dog there occurs spontaneous prostatic enlargement indistinguishable from that induced by oestrogens; and that the effects of oestrogens can be prevented by the simultaneous administration of androgens, especially testosterone propionate. The changes induced in animal prostates by oestrogens bear some resemblance to benign enlargement in men, and the dissimilarity may possibly be explained by species differences in the embryology of the uterus masculinus. Treatment based on this hypothesis has unfortunately not proved wholly satisfac-

tory, and such "successes" as have been reported have been uncontrolled.

Whether or not either hypothesis represents part of the truth, it is obviously of the greatest importance to elucidate further the endocrine function of the testicles. Törnblom<sup>1</sup> has described a series of beautifully planned experiments with this in view. He showed that giving testosterone to young castrate rats in such quantity that the weight of the prostate and seminal vesicles exceeded somewhat the weight of these organs in whole animals did not prevent the increase in weight of the pituitary which occurs after castration. It follows that some other hormone must be normally formed in the testicles the effect of which on the pituitary is greater than its effect on the prostate and seminal vesicles. By treating the testicles of rats with x rays it is possible to cause atrophy of the germinal tissue without affecting the interstitial cells. In such animals the weights of the prostate and seminal vesicles are unaffected, but the weight of the pituitary is increased. It follows from this that the hormone the absence of which causes the increase in weight of the pituitary is formed in the germinal epithelium. Moreover, when the difference in radiosensitivity of the two testicular tissues was increased by stopping the testicular circulation during treatment, a weight increase occurred in both the pituitary and the accessory sex organs. This may possibly be explained on the supposition that the inhibition of secretion in the germinal epithelium causes overactivity of the pituitary and thus of the interstitial cells, with the resulting enhanced androgenic effect upon the prostate and seminal vesicles. In his next series of experiments Törnblom succeeded in isolating a fraction from testicular tissue which prevented the increase in weight of the pituitary in castrate rats without influencing the weight of the accessory sex organs. It therefore possessed the postulated properties of the germinal-tissue hormone. When isolated it was found to possess all the biological properties of oestradiol, and all its actions could be exactly reproduced by oestradiol. No evidence of any non-oestrogenic substance having the postulated properties of germinal-tissue hormone could be found.

An attempt was next made to show directly an increase in gonadotrophic hormone by a new experimental method. An increased formation of gonadotrophin causes the ripening of follicles in infantile ovaries implanted into the kidneys and a secondary oestrous reaction in pieces of vagina implanted in muscle. By this method the enhanced production of gonadotrophin after castration can be demonstrated. Unfortunately no such increase could be demonstrated after inhibition of the germinal-tissue secretion only. This is the only gap in the experimental proof of Törnblom's thesis, but it is not a very serious one, for, as he points out, the production of pituitary gonadotrophin is inhibited by both testicular hormones, and it is naturally not so stimulated by the absence of one as by the absence of both.

It is only in his last chapter that Törnblom leaves the straight path of close reasoning which he has clearly set himself. Having established that the cessation of the

internal secretion of the germinal tissue causes an increased secretion by the interstitial tissue, he asks the question: "Is hypertrophy of the human prostate due to a corresponding functional disturbance?" To answer this question he treated dogs with testosterone propionate, choosing dogs because they are the only animals known to suffer from spontaneous prostatic enlargement. He confirmed the work of previous investigators who have shown that it is possible by such means to cause prostatic enlargement and even urinary obstruction. Histologically the enlargement was found to be due to a diffuse homogeneous hyperplasia. It resembled one type of spontaneous enlargement seen in dogs, but it did not resemble human benign enlargement. Zuckerman and Groome have already pointed out that in most instances the spontaneous prostatic enlargement of dogs is not histologically abnormal and have suggested that it may well be due to excess of male hormone. They described, however, a case in which the enlargement was histologically abnormal and similar to that which can be experimentally induced by oestrogens. They point out, also, that, on the assumption that the common type is due to excess of testicular androgen and the less common type to excess of testicular oestrogen, Hobday's successful treatment by castration is readily understandable in both conditions. Without committing himself to a definite statement, Cornblom appears to suggest that his proof that the germinal epithelium of the testicles of rats elaborates oestradiol supports the hypothesis of Lower that human prostatic enlargement is due to excessive androgenic stimulation. It may equally well be taken as supporting the contrary proposition. It is clear that no final decision can be reached until more is known about the effects on the human prostate of administered androgens and oestrogens.

## EGGS AND SALMONELLA INFECTIONS

Knowledge of the reservoirs of *Salmonella* infections in different animals is steadily growing, and explains both their wide distribution as a cause of animal diseases and the various ways in which the causative bacteria can obtain access to man. Ducks' eggs were known as a source of *Salmonella* food-poisoning as far back as 1926, but their significance was not realized in this country until the publication of an important paper by the late Dr. W. M. Scott<sup>1</sup> in this *Journal* in 1930. Since that date more facts have come to light. It is now known that ducks may suffer from epidemics of *Salmonella* infections, and that, while the bacilli may be extraneous organisms passing from contaminated material through the porous egg-shell, others are present in the egg yolk and are derived from specific infections of the ducks themselves. Certain varieties of ducks seem to be especially liable. While outbreaks are commonest in some Continental countries, particularly Holland and Germany, they are not unknown in Great Britain. J. S. Garside and R. F. Gordon<sup>2</sup> described an extensive outbreak in 1938-9 in which *B. enteritidis* and *B. typhi murium* were recovered from 44 ducks whose blood contained *Salmonella* agglutinins; but *Salmonella* strains were not recovered from the eggs of the infected birds. This was not the experience in other outbreaks, and several strains have been isolated; by far the most prevalent are *B. enteritidis* (variety Essen) and *B. typhi murium*. In Holland the duck industry is an important

one, and in 1940 C. F. Van Oigen<sup>3</sup> described the extensive investigations undertaken by the Netherlands Egg Control Bureau to stop the spread of *Salmonella* infections. Their report shows that there is no one ready remedy which is satisfactory, but that by blood agglutinin tests, segregation, and examination of eggs the number of infected eggs can be reduced to small proportions. The use of pasteurized frozen eggs is quite satisfactory.

The egg of the hen has a much cleaner record. There have been at the most only one or two food-poisoning outbreaks which might be ascribed to the use of infected eggs (excluding dried eggs). While infections with *Salmonella* strains in hens have been fairly numerous—and expensive to breeder and owner—almost always the source of infection has been *S. pullorum* or *S. gallinarum*, strains not pathogenic to man. Recent work shows, however, that more toxic strains may be present. For example, W. L. Mallmann, J. F. Ryff, and E. Matthews<sup>4</sup> isolated a variety of *Salmonella* strains from diseased hens sent to them from various parts of Michigan, U.S.A., including such types as *S. oranienburg* known to have caused human food-poisoning. None of them, however, produced any symptoms when fed in large doses to monkeys. With a true bill against the duck and something of a "non-proven" verdict against the hen, the question of infection from dried eggs and egg powders has to be considered. N. E. Gibbons and R. L. Moore<sup>5</sup> have recently given some important information on the subject. They examined for *Salmonella* types 380 lots of Canadian egg powder produced from November, 1942, to December, 1943. Organisms were found in 28 samples (7.4%): 9 different types were isolated—*S. bareilly* (11 lots), *S. pullorum* (5), *S. oranienburg* (4), *S. typhi murium* (3), *S. thompson* (2), *S. minnesota* (2), *S. newport* (1), *S. potsdam* (1), and *S. manhattan* (1). Except *S. pullorum* all strains are potentially pathogenic to man. In the samples for which numerical estimations were made the actual number of *Salmonella* organisms present was low, mostly less than 1-10 per gramme, but one sample contained 54 per gramme. Their presence was not related to general contamination as judged by coliform estimations. No information was available as to how these *Salmonella* strains gained access to the egg powder. In a second paper<sup>6</sup> the authors investigated the effect of drying, storage, and cooking on the *Salmonella* content. They found that over 99% of the organisms in heavily inoculated liquid egg were killed on drying in an experimental spray drier, and concluded that similar results would be obtained in commercial driers. Storage also is inimical to their survival, and they rapidly diminish in number, surviving the longer the lower the temperature. In cooking experiments with reconstituted eggs heavily inoculated with *Salmonella* organisms they found that the bacilli were all destroyed in egg powder cooked as scrambled eggs and omelettes, and in sponge cakes, custards, and muffins. They therefore consider it is debatable whether the contamination of egg powder with *Salmonella* organisms can be regarded as a health hazard. But F. Sieke<sup>7</sup> found that

<sup>3</sup> *Tijdschr. v. Diergeneesk.*, 1940, 67, 280. Summary in *Bull. Hyg., Lond.*, 1940, 15, 437.

<sup>4</sup> *J. infect. Dis.*, 1942, 70, 253.

<sup>5</sup> *Canad. J. Res.*, 1944, 22, 48.

<sup>6</sup> *Ibid.*, p. 58.

<sup>7</sup> *Arch. Hyg. Bakt.*, 1943, 129, 108.

<sup>1</sup> *British Medical Journal*, 1930, 2, 56.  
<sup>2</sup> *J. comp. Path.*, 1940, 53, 50.



boiling ducks' eggs in the shell for shorter than 8 minutes would not make an infected egg harmless.

The present position would seem to be that we cannot entirely exonerate dried eggs from the possibility of acting as a vehicle for the spread of *Salmonella* poisoning, although the risk is probably small. The actual outbreaks in this country of *Salmonella* food poisoning associated with dried eggs are not unusual during the present war, although none has apparently been the subject of a scientific paper.

## THIOCYANATES AND THIOURACIL

Sodium and potassium thiocyanate have been used for the treatment of hypertension since Pauli in 1903 discovered the property of lowering blood pressure. While many doubt their efficacy, others are certain that some patients derive benefit. The mode of action of thiocyanates does not appear to have been defined but the recent evidence concerning substances like thiouracil which affect the thyroid gland probably throws some light upon it.

Astwood<sup>1</sup> has shown that when thiouracil is given to rats an enlargement of the thyroid gland follows. From the work of the Macenzies<sup>2</sup> and of Astwood and his colleagues it is known that this effect occurs only when the pituitary gland is present, and that it is accompanied by a fall in the basal metabolic rate. Thiouracil, it is concluded, depresses the formation of the thyroid hormone in the thyroid gland and because of the consequent fall of thyroxine in the blood, the anterior pituitary stimulates the thyroid gland so that this becomes hyperplastic. Thiouracil is now used in thyrotoxicosis because it diminishes the formation of thyroxine and therefore causes the B.M.R. to fall.

Among the substances which Astwood found to cause hyperplasia of the thyroid gland of rats was potassium thiocyanate. It is evident, then, that if patients receive potassium thiocyanate for long periods of time for the relief of hypertension the same symptoms will probably appear in them as have been observed in rats. Foulger and Rose<sup>3</sup> describe precisely this occurrence in one patient, and Rawson, Hertz, and Means<sup>4</sup> describe it in two others, citing more from the literature. In Foulger and Rose's case—that of a woman treated with 0.3 g. potassium thiocyanate daily from March, 1938, to July, 1939—the blood pressure fell from 210/110 mm. to 175/110 mm. In September, 1940, when she was still receiving thiocyanate, she had diffuse enlargement of the thyroid, the B.M.R. was -11%, and there were general symptoms of hypothyroidism; she was therefore given thyroid together with the thiocyanate, with the result that the symptoms cleared up. Later the thyroid was stopped and the symptoms then reappeared. It was finally recognized that the thiocyanate was responsible for the hypothyroidism, and when thiocyanate was stopped the puffiness of the face, the swelling of the gland, and the low B.M.R. disappeared. It is clear from this and other cases that so far as their effect on the thyroid gland is concerned thiocyanates, thiourea, and thiouracil are identical.

The question remains why thiocyanates benefit hypertension. Is it because of this action on the thyroid gland? Does the blood pressure fall because the B.M.R. falls? Rawson, Hertz, and Means<sup>4</sup> apparently do not think so, at least they state that "thiocyanate goutte can be relieved by the administration of thyroid even when thiocyanate

administration for hypertension is continued." Perhaps they have not considered the point in the form in which it is now presented. It is to be remembered, however, that Blumgart, Levine, and Berlin introduced total thyroidectomy as a treatment for angina pectoris, a condition not unconnected with hypertension. If thyroidectomy benefits patients with angina pectoris, and if thiocyanates, which diminish thyroid function, benefit patients with hypertension there is some likelihood that thiocyanates act in hypertension by diminishing thyroid function. If so, thiouracil should also be of value in hypertension, and might suitably be tried. Astwood, to whom we owe the introduction of thiouracil for thyrotoxicosis, chose it in preference to thiocyanates and other substances because of its lower toxicity.

## SUPPLY OF MEDICAL BOOKS

As fellow-sufferers under the rationing of paper and the shortage of skilled labour we sympathize with medical publishers in their wartime plight. A memorandum on the inadequacy of the supply of medical books in relation to present and future needs has been drawn up by the Medical Group of the Publishers Association (28, Little Russell Street, W.C.1). This explains the present serious situation with regard to the supply of books on medicine and its basic sciences, nursing, pharmaceuticals, veterinary science, etc. It urges that adequate measures should be taken to remedy the acuteness of the long existing shortage of such books. No improvement can occur until the Government makes more paper and labour in the printing and binding trades available for educational books. Medical publishers are responsible for maintaining the supply of textbooks, works of reference, and monographs for doctors, research and laboratory workers, medical and dental students, nurses, pharmacists, veterinarians, and all classes of medical auxiliaries. The growth in the numbers of students and practitioners has greatly increased the demands of the medical profession, and the same is true of nurses, pupil midwives, and students of first aid. Meanwhile the requirements of the overseas market are at least twice as great as in pre-war years, for the Empire very largely depends for its supplies on publishers in Great Britain. Various economies have been, and are being, achieved in book production by medical publishers, but these cannot effect a substantial saving. Some medical books are out of print solely because the paper for them is lacking, this applies to textbooks of major importance, and particularly to nursing textbooks. The need for providing reprints and revised editions on the limited paper quota has diminished the production of new medical works, more particularly books on war medicine and surgery wanted urgently for the higher professional education of medical officers in the Forces and the E.M.S. Having already made the point that a distinction should be drawn between "medical books" as understood by us and popular books on medical matters for the general public, the memorandum shows how the shortage of medical books is due to a diversity of causes. Early release of key men to the printing, engraving, and binding trades would have a profound influence if coupled with a less meagre supply of paper. We are at one with the Medical Group of the Publishers Association in urging that the special problems connected with the production of medical books and journals demand full and early consideration. Medicine cannot advance without books and reputable periodicals. Even if the existing difficulties were remedied to-day the demand would long continue to outrun productive capacity. There is bound to be an increasing call both for books that have gone out of print during the war and for new books designed to meet the needs of the

<sup>1</sup> *J. Pharmacol. exp. Ther.*, 1943, 78, 79

<sup>2</sup> *Endocrinol.*, 1943, 32, 185

<sup>3</sup> *Ibid.* 1943, 32, 210

<sup>4</sup> *J. Amer. med. Ass.* 1943, 122, 1072

<sup>5</sup> *Ann. intern. Med.*, 1943, 19, 529

changing curricula of the medical and nursing professions ; moreover, the activities of the British Council are stimulating the market for British medical books abroad.

### LOGIC AND MEDICAL RESEARCH

Of some men it can be said that whatever they write is valuable, whether the conclusions reached are right or wrong. Nobody doubts now that *The Conduct of the Allies* was bitterly partisan and that *Reflections on the Revolution in France* was coloured by prejudice and violent emotion ; but nobody could read either without pleasure and intellectual profit, because Swift's power of lucid and telling argument commands admiration and Burke cannot write a page without some flash of beauty or of insight into human nature. The writings of a third great Irishman, Sir Almroth Wright, have the same effect. Like Swift and Burke, he has been engaged in many controversies and, like them, he has not always been just to points of view with which he has no sympathy ; but whatever he has written bears the hall mark of genius. His reprinted paper on Induction<sup>1</sup> contains some passages which a reader familiar with the statistical methods despised by laboratory workers, and indeed in their early childhood a generation ago, but now almost universally adopted, must think inexact ; but even statisticians can learn something of value from the censures. There is a danger—not threatening statisticians alone—that some men will believe that Nature's secrets can be wrested from her by anybody who has learned a sufficiently elaborate technique. "Pray, what do you mix your colours with, Mr. Opie?" "With brains, Mam." Brains are as important in the art of medical research as in that of painting ; in both technique is important too, but secondary. The Wrights, like the Opies, are contemptuous of mass-produced research. Blackmore, better known as a versifier than as a physician, was a pupil of Sydenham, and when he asked his master what he should read was told to read *Don Quixote*. Dr. Johnson reproved Sydenham for jesting, but perhaps the great man intended to convey to his pupil the truth that it is not by reading books one becomes a physician. One cannot learn from books how to become a great researcher. Something can be learned by study of masterpieces, although even then there is the difficulty familiar to students of the noble game of chess. One need not be an adept to be thrilled by the way in which a Morphy or a Lasker destroys his antagonist in a few moves, by, shall we say, a crucial experiment. But the student—unless himself a Morphy—only learns a little, a very little, of the process which enabled Morphy to make the crucial experiment, and will not learn it from treatises on "openings." That is one of Sir Almroth's lessons: the amount of pains, imagination, and hard thought which prepare the way to a crucial or decisive experiment. It is possible to help a beginner by a logical analysis of methods of discovery. Here again the humble analogy of a mere game is serviceable. A famous teacher of chess of the last generation, James Mason, once said that a careful study of a few of the stock methods of beginning a game was of much more value than trying to learn the tricks of this or that gambit. Sir Almroth helps the student by contrasting the various senses or connotations of the term "induction" and the shades of meaning of "control" as used in clinical or laboratory research. He proposes a new terminology which seems to us good, although the modern prejudice against "dead"

languages may hinder its adoption. He makes good play with the dangers of under- or over-simplification in experiment ; in his terminology, hypoclastration and hyperclastration. The former he illustrates by the conclusion of the Victorian physiologists that nutrition was explicable on quite simple physical analogies ; the experimenters had not realized adequately that there was a difference between supplying calories and giving foodstuffs. The latter he illustrates by the remark that to test the value of antiseptics by successive dilution with water fallaciously omitted albuminous substances which operate as quenching and buffering advects whenever antiseptics are employed in local treatment or are administered internally.

Few readers will agree with all Sir Almroth's conclusions ; still fewer will not profit by a careful study of the essay on Induction. The word "research" has propagandist value now ; it is good that young people should learn that it is not much easier to enter the kingdom of genuine research than the kingdom of heaven.

### WAR AND MENTAL HEALTH

For reasons of paper economy the annual reports of the Board of Control are not being printed or put on public sale during the war. Its example might well have been followed more widely. Summing up the effect of war on mental health, the Board finds no evidence that the war has brought about any increase in serious cases of mental breakdown. Though admissions to mental hospitals do not by themselves give a complete picture of the incidence of psychosis and neuropsychosis, they indicate the general trend. Even in the "blitz" areas there are relatively few cases in which the mental breakdown can be attributed with certainty to the effects of war and more particularly of air raids. Where breakdown appears to have been caused or accelerated by air raids it is generally found that the patients' past history suggests that they might have developed mental trouble in any event, though possibly at a later date. A recent neurosis survey carried out by the Ministry of Health did not show any alarming increase in neurosis, particularly when allowance was made for the fact that the war had forced into industry, often in unfamiliar and trying conditions, many who previously led sheltered lives and whose breakdown under unaccustomed strain might have been thought inevitable. "Looking at the situation as a whole, we feel that it may fairly be claimed that the war has demonstrated the mental stability of the nation." The Board, at the request of the War Office, has organized a scheme of after-care for Service patients discharged from special hospitals and E.M.S. centres on account of psychiatric disability or mental abnormality. The aim is to secure that patients will, on discharge, know where to look for skilled treatment and advice. In co-operation with the Ministry of Health the Board has also undertaken a follow-up of ex-Service cases of this kind. Such inquiries will be purely fact-finding and will not overlap the after-care scheme ; they will cover cases discharged from the Army through E.M.S. neurosis centres. The Board is also assisting the War Office in a follow-up of cases discharged from military mental units ; wartime difficulties of staff, however, will not permit detailed inquiries now, but when the investigation can be completed "it should throw valuable light on the success of modern methods of treatment." At the end of 1943—the year covered by the Board's 30th report—the number of persons suffering from mental disorder notified as under care in England and Wales was 147,557 (63,054 men and 84,503 women), and over 86% of them were being treated in mental hospitals provided by local authorities.

<sup>1</sup> *Studies on Induction*. Second Series, Vol. IV, Appendix IV. "On Induction in General," Heinemann, 1944.

## PREAMBLE TO POST-WAR FOOD EDUCATION

BY

I. LE GROS CLARK, M.A.

We have made during the war a far more systematic attempt than ever before to influence the public in the choice and preparation of their food. The scope and plan of the wartime campaign will be briefly examined below. The question that naturally arises at the present stage in our affairs is this: What are our prospects of continuing this wholesome work in more normal times and what are the conditions for its success?

But first how far will this leaven of teaching and persuasion be necessary after the war? We can argue for it in this wise. A sound dietary is part of the broad basis of social stamina and good health, and we may assume that a fair proportion of our annual expenditure on ill health is indirectly attributable to poor feeding. The exact proportion could scarcely be demonstrated, but the evidence is sufficiently good to make it worth our while to see whether we can effect a saving. This, however, is still a matter of persuading the public to eat the right food even where wage-levels and prices are so adjusted as to allow a reasonable standard of consumption, the food may be available, but it does not follow that it will be consumed. The truth is that when a civilized community has a very wide choice of foods there is nothing in Nature to prevent it from adopting the most lamentable pattern of food habits and within that pattern of food habits it will live and die for all time unless some effort is made to change the pattern. It is useless to hope that tastes and habits of this kind possess some internal power of effecting their own improvement. Man is an omnivorous animal, a fact to which no doubt, he in some measure owes his survival, but he is ill supplied with instincts in the choice of food, and he has to pay for his survival by gradually shifting the choice of his foods on to a rational level. He will otherwise, since he is obviously not protected by instinct, be subject merely to a mass of whims, traditions, customs, and cravings.

In that case the work might as well be undertaken. There is no chance that a brief campaign will have any effect whatever, this is a job for a lifetime. It is one, moreover, that needs strict scientific method and an appreciation of the anthropological material with which we are dealing. The technique is that of the leaven and not that of the textbook. Provided we understand this and admit the premises, there seems good reason for continuing our campaign of food education even if we have to adapt our style and our methods to the conditions of peace.

## Food Advice Centre

The structure assumed by the present campaign is somewhat after this manner. Most of the work is fostered by the Ministry of Food, in the sense that considerable funds are required and that the Ministry is naturally felt by a people at war to be the well head of sound advice in the matter of food. The other Departments and the voluntary organizations, that all have their part in the work, acquire a peculiar virtue in the mind of the public through their association with the Ministry. The Ministry of Food may properly deny that it is more than an equal partner in this campaign with the Ministries of Education and Health, but the fact is that "food" to the public means the Ministry of Food.

The immediate contact the Ministry has with the public lies of course, through the Press, the radio, the leaflet, and the poster. Its more pervasive influence is exerted through two special devices—that of the "food advice centres" and that of the "food leaders' schemes." These are perhaps the most interesting aspects of the whole campaign. All else that the Ministry has done by providing itself with experimental and practical kitchens and developing an effective news-letter and bulletin service is merely what any serious organization of the kind would do if it had the funds.

The method of the food advice centre is that of renting a shop in a good thoroughfare, equipping it for cookery demonstrations, and staffing it with two or three qualified

women. Centres of this nature were first opened by the Ministry in 1940, and there are now some 40 of them. It is, of course, obvious that the direct influence they can have reaches a very small percentage of the public. As often in cases of this kind a centre or a shop window may vaguely affect the public mind by its mere existence, it impresses upon the shopping women of an area that food and cooking are matters of national interest, even if no more than 10% of them enter the premises or pause to study the window display. But it would be almost impossible to assess the extent of this influence. As time went on, the centre became rather the office of the organizer, from which she might arrange for the delivering of lectures or demonstrations in factories, village halls, and so forth. The ability of two or three qualified women to permeate a large area was really the factor that counted, and the technique of the travelling van, of the news-letter, of the shop display, and of the poster have all been tried.

## Food Leaders' Scheme

But by 1942 it was evident that a very large proportion of housewives were still uninfluenced to any calculable extent. Some new device was needed for the dissemination of elementary teaching. The earliest of the food leaders' schemes was initiated in Birmingham, and they have since spread rather unevenly through the West Midlands and the Home Counties, with a gradual but perceptible growth elsewhere. It must be noted that here the Ministry of Food assumes no direct responsibility, though in practice a fair amount of the basic work has usually to be undertaken by the food advice organizers. The idea of street or village "food leaders," who would transmit advice and information to their neighbours, was soon realized to be insufficient unless it were associated with some kind of elementary classes for the prospective leaders. This not only brought the schemes within the sphere of what is known as "adult education" but it might imply that premises would at times be needed for the holding of classes. Now, it is the Ministry of Education that is responsible for adult education, and, so far as the Ministry of Food is concerned, almost the only available premises in any area are the schools. In practice, however, what has often happened is that the women's organizations prompted by the Ministry of Food, have gone ahead with the selection of their prospective food leaders and on making formal application to their local education authority, found it too short staffed to undertake more than a fraction of the lectures that were needed. But the Ministry of Education remains ultimately the responsible department, and in theory the education authority of each area transmits to the local food advice organizer most of its functions in the training of the food leaders.

There was probably a further doubt that for a time affected the judgment of the Ministry of Food. The schemes had not been originated by the Ministry of Food, but by an education authority. The women they were intended to organize were almost entirely unqualified lay women, whose advice and counsel would presumably be sought and absorbed by an indeterminate mass of housewives. If there were in the recesses of the Ministry a few tolerant minds prepared to take the risk of something going wrong, several of the practising dietitians were more dubious. It was accepted, of course, that the food leaders were not to teach or lecture, they were to be no more than a leaven of right thinking in the urban streets and in the countryside. But the distinction could not readily be drawn, no one could forbid them to lay down the laws of correct feeding. In effect, the trained dietitians have not always been enthusiastic in their dealings with the local food leaders, even if they have done their duty by them: the two modes of teaching and persuasion have never quite fused into a single instrument.

## Style of Wartime Food Education

But when we come to examine the literature of the movement, embodied in its pamphlets and news letters, it occurs to us at once that, however enduring may be the knowledge imparted, the form and style of the teaching have almost invariably a wartime flavour. The reason given for the proffered advice is the scarcity of many foods, and the appeal is for housewives to play their part in maintaining the fitness

of a people at war. The assumption behind it all is that there will come a time when these motives will no longer operate. It is, in brief, a wartime movement only, and there can be no unbroken transition from the forms of war to those of peace. The fact is that the campaign is devised to catch the largest and least-organized section of our adult population, the housewives, and to draw it functionally into the total war economy. In its "food leader" aspect it meets a need, in that it attempts to resolve the self-contained lives of an increasing number of housewives into the common effort; it gives them the *raison d'être* for their many discomforts and supplies them with the first requisite of every trade or calling—a specialized and easily accessible literature. There is no question that the news-letters and pamphlets distributed from the local centres of instruction have a very unifying and stabilizing effect upon the communities they reach.

After the war we shall have a different and a somewhat more complex problem to face. Much of the way in which we re-orientate our campaign will depend upon the extent of the final rupture between war and peace. If all the forms and phrases of war lapse with the transition, the process of re-orientation will be far more tedious and debatable. Because of the prestige it has earned, and the common admission that if anyone has a right to talk about food it is a Ministry of Food, the survival of the Ministry even in a very modified form is a matter of some importance to us. It is an elementary fact that the teaching of other Ministries on the subject of food is suspect to many members of the public, and they would be well advised, perhaps, to leave most of it either to a reconstituted Ministry of Food or to some body contrived for the purpose, that will have to earn its reputation by its work.

No small part of the relative success of the Ministry of Food has been due to the fact that it has never announced any intention of *educating* the public; it has merely "advised" and "informed." We must recognize that the average adult woman in this country has no wish to be further *educated*, least of all in matters of diet; but she is quite prepared to assimilate learning about subjects that seem to her interesting or useful. If we want the post-war woman to absorb into her daily life the knowledge of food values we must make our matter both digestible and palatable. One lesson from our wartime experience seems clear; and that is that probably 90% of housewives will not come to formal classes and demonstrations. They may be led to do so in the future; for the moment they do not. The only obvious method of reaching them is through the technique of the social leaven, the stall in the market-place, the village expert, the informal parlour gossip, the flower-show quiz. We shall have to take our chance that from time to time some curious doctrine or twisted interpretation will gain credence; the risk has always to be taken by those who set themselves the slow task of changing the daily habits and the ingrained patterns of taste of a population. But we must recognize from the start the distinction made in the public mind between *health* teaching on such matters as venereal disease, diphtheria immunization, or dental treatment, and *food* teaching that has reference to a positive and daily satisfaction. The clinics, the medical practitioners, and the societies established for health propaganda can all play their part; but if the movement is to be effective it must mean by food precisely what the public means by food—that is, far more than a physiological basis for sound metabolism.

#### Changed Conditions of Peace

To what extent, then, may we assume that our wartime methods will have to be modified to meet the requirements of peace? Our main public is the community of housewives; and much will depend on our ability to maintain in the mind of the average housewife the sense of her social function. There is a risk that this sense will be lost when the close of hostilities relaxes the cohesive bonds that unite us in some measure towards a common task. It seems likely that the joint consultative committees of the women's organizations that have emerged in the course of the war will survive it and will provide a starting-point for the period of new construction. They account between them, it is true, for only a relatively small proportion of the housewives of the country; but they

are a pervasive influence, and a joint committee of this nature can often take on a vitality of its own that transcends influence the sum of its component parts.

What we have to seek is some method of creating a ferment of change in the views and practices of women in the kitchen. The concept of "food leaders" is the most-satisfactory one that has so far emerged from our wartime experience. I think there are two or three comments that must be made on the scheme as it might in theory be applied in a post-war economy. (1) We shall have, in my opinion, to discard the phrase "food leaders" and contrive a more suitable one. The term accepted in war, when a nation takes on the semblance of an army; but it is only just accepted. There are even now serious doubts whether the title and the badge may not arouse more resistance than respect among a woman's neighbours. (2) The flow of news-letters seems an essential feature of such a movement: it is both its pulse-beat and its organic unity. (3) The movement will have to be associated, both in the mind of the average housewife and in that of the dispersed body of women who have to do the work, with a source of authority that enjoys high prestige. What that source will be it is not for me to suggest: the practice in this country is often to establish a council with a certain degree of independence which is known to possess the confidence of a State Department. (4) If there are a number of qualified women employed in the campaign, as at present, they will have to be selected not merely for their dietetic training but for their appreciation of the techniques that will be in use.

There are, no doubt, many among them who begin to comprehend their business as a branch of applied anthropology; but the merging of expert and inexpert functions should be more complete and durable than it has so far proved.

#### Basis of Post-war Food Education

There are two further aspects of a post-war campaign on which we may comment. It is a principle of educational theory that teaching in mature life is best associated with a practical job that concerns the learner; the confusion lies in our tendency to label this kind of teaching as merely *technical*, where it implies no more than that the job is the obvious point upon which we should concentrate. Now, a housewife's job is the buying, storage, and final preparation of the food; and the kitchen is her workshop. If the Ministry of Food survives the war in some form it might do worse than present itself to the public as essentially the housewives' Ministry; and the basic substance of our story should be the shopping basket and the kitchen stove. But we must by all means avoid concentrating our teaching either at the extreme of the "food values" kind of discourse or at the extreme of the "cooking and bottling demonstration." They both have their place; but they must be related to our central duty of realizing housewifery as a social function with its tools of work, its raw materials, and its body of consumers.

The other aspect that is worth mention is this. A movement of this nature should have its local habitation, the permanent sign of its existence, the source from which its influence is diffused. It might be suggested briefly that there are three types of establishment we could use for our purpose. One is the obvious shop premises adapted as now for the "food advice centre" service. On the assumption that some of these centres are maintained after the war, it will be necessary to review their work and decide how far they are really worth the cost. The second is the school kitchen, with which a large proportion of our primary schools are apparently to be provided; these kitchens are the concern of the mothers whose children will be fed from them, and they may well become the natural gathering-place, on selected evenings, of many of the housewives of a neighbourhood. The third establishment we might seek to use is the grocer's shop and the dairy. It is true that some educationists would prefer to have their food-teaching uncontaminated by the flavours of commercially retailed bacon and butter. But shops are still a part of our national life; and they are a significant part of the experience of every housewife. If we are to influence popular tastes we must some time begin with the distributive trades, for it is obvious that if we do not draw them into collaboration we may find ourselves competing with them.

Some such course as this will have to be adopted if the wartime experiment in dietetic teaching is not to lapse when the phase of reconstruction is upon us. We have suggested a few reasons for maintaining it in a suitably modified form; and these reasons could theoretically be expressed in financial terms, even though it might be impossible precisely to weigh the saving in hospitalization against the expenditure on public teaching. It is not the business of this essay to decide who shall meet the bill or what the annual dimensions of the bill might be. We are for the moment solely concerned with the conditions necessary for a successful peacetime campaign, for if we do not determine the right conditions before we start we shall spend whatever money we spend to no useful purpose.

## A NATIONAL DENTAL SERVICE

### TEVIOT COMMITTEE'S RECOMMENDATIONS

The White Paper on a National Health Service said that there must be some temporary exceptions to the comprehensiveness of the service, and dentistry was mentioned as the first of these, owing to the insufficient numbers of dentists to serve the whole population. The Interdepartmental Committee on Dentistry, which has been dealing with the question of adequacy among other matters, has now issued an interim report.<sup>1</sup> The committee was set up in the early part of 1943 under the chairmanship of Lord Teviot, and consists of twenty members, one-half of whom hold a dental qualification. Its outstanding recommendations are:

- (1) The setting up of a comprehensive dental service to form an integral part of, and to operate simultaneously with, the National Health Service
- (2) A general dental practitioner service analogous to the proposed general medical practitioner service in the Government scheme.
- (3) Experimental dental health centres in suitable areas.
- (4) A special effort to improve the teeth of expectant and nursing mothers, children, and adolescents.

### Dental Man-power

Some 15,000 dentists are at present on the *Register*, but owing to the large admission of bona-fide dentists at the time of the Act of 1921 the *Register* is at present heavily over-weighted in the higher age groups, and during the next few years there will be a rapid loss of names by retirement. The average annual admission to the profession in recent pre-war years was 340, but during the war years the annual student entry has fallen to below 300, and 10% of students, for one reason or another, do not become dentists. These figures are not nearly sufficient to maintain the *Register* even at its present strength. An actuarial table is appended to the report showing that if the number entering the profession annually were raised to 400 in the years immediately ahead, and later to 425, it would still be 30 years before the present effective total number of the profession would be increased. "This," says the committee, "is an alarming forecast."

At present the career of dentistry is relatively unattractive to young people in comparison with other professions, especially medicine. The work is apt to appear unpleasant and its scope restricted, at all events until the scientific interest of it begins to be appreciated, and there is not much opportunity for specialization. There are five dental schools in London, seven in the English Provinces, three in Scotland, one in Northern Ireland, and four in Eire. Some of the schools, like the English provincial ones, are closely associated with universities; others, like the London schools, with hospitals.

### Dental Needs and the Present Services

The report says bluntly that "the state of dental health of our population is bad, and its effect on their general health is bad." An average of 90% of the male recruits to the Army in the present war needed dental treatment on enlistment. Of a group of 10,000 Scottish five-year-old children, only 1,000 were found free from dental caries. One approved society in one year found that 12.2% of young persons between 16 and 19 who applied for treatment needed full upper and lower dentures. In the last pre-war year about 3½ million elementary-school children in England and Wales were dentally inspected; some

2½ million were recorded as requiring treatment, and about 1,600,000 had some treatment. The majority of local authorities, as part of their maternity and child welfare services, make some provision—in most cases meagre—for dental attention. Dentistry is an additional benefit under National Health Insurance, and roughly two-thirds of insured persons are entitled to it, but only 800,000 (less than 7%) claim it on the average each year. "It is a common experience in insurance dentistry that people do not resort to treatment until a stage when the teeth are unserviceable, and then there is gross oral sepsis."

The broad picture of the present position is of a number of public dental services not closely related, and each with shortcomings, and of a public ill educated and apathetic in regard to the care of the teeth. The committee believes that fear of pain and lack of understanding of the importance of dental health are more effective deterrents than the economic factor.

### Steps towards an Adequate Service

In making its recommendations the Teviot Committee distinguishes between the *need* for treatment and the *demand* for treatment. If the demand for treatment rose to somewhere near equality with the need there would obviously be a shortage of dentists. It must be the object of policy to increase demand in this way, but the whole question of the shortage of dentists turns upon the probable pace of increase in demand and supply.

"If, for example, a total annual demand rate of the order of 10% to 20% were the experience in the next few years, and if vigorous measures were taken to make the career of dentistry attractive, we foresee no substantial shortage. If, on the other hand, the annual demand rate rose rapidly to 40% or 50% and the numbers of the profession showed no rapid increase, the shortage would be very serious."

The committee urges the acceptance of the principle of a comprehensive service, one which, while not wholly adequate, will be equally available to all who demand it, and will be paid for by the community as a whole. It regards dentistry as an integral part of the comprehensive health service, a fact which in itself, with the prospect of plenty of work, adequate pay, good conditions of service, and the knowledge that dentistry was making an essential contribution to national health, would encourage the recruitment of young men and women to the profession.

The sharpest point in the mobilization of dental forces should be the dental care of expectant and nursing mothers, children, and adolescents. The committee looks for a large expansion of dental services available to school-children (under Section 48 of the new Education Act) as one of the essential foundations of a comprehensive service. It also hopes that employers will give their workers, particularly adolescents, time off without loss of pay for dental treatment.

Fundamental points in any new comprehensive public dental service will include the following:

- (1) No compulsion on any dentist to enter the public service.
- (2) Any dentist should be free to engage, either whole-time or part-time, in the service or any branch of it in which there is opportunity to serve.
- (3) A patient must have free choice of dentist and liberty to alter his choice if he so desires.
- (4) The proposals are not intended to interfere with the free right of everybody to seek dental advice and care through private arrangements and by private fee.

### Family Dentists: Health Centres

The idea of a general dental practitioner service, analogous to the general medical practitioner service, available to all who wish to use it, and set up on the basis of the family, is put forward in the report. The idea of the family dentist is as yet unfamiliar to a large part of the population; the committee thinks it should be developed and encouraged.

The setting up in suitable localities of dental health centres, providing facilities for team work, is recommended. These centres should be experimental, and the profession should be consulted as to their development, size, siting, internal arrangement, design, and equipment. There must be no compulsion on dentists to work in such centres or on patients to receive their dental treatment in them.

Finally, there are some recommendations on dental health education. The most important factor in such education will be the quality of the treatment given. The dental health centre



would offer, by means of lectures, films, and the like, opportunities for enlightening the public. "We do not wish to separate dental from general health education; the one is a sentence on the page of the other. But we are anxious that the sentence should not be crowded out; rather than that, we would have it given a page to itself."

Recommendations for securing an increased entry into the profession will be dealt with in the final report. Here the committee urges only the encouragement of ex-Service men and women to offer themselves for dentistry, and the early release of dental teachers from the Forces to resume their work in the schools.

## SEVENTH ADDENDUM TO THE BRITISH PHARMACOPOEIA

The General Medical Council will publish on Feb. 1, 1945, a Seventh Addendum to the *British Pharmacopoeia*, 1932, in which new monographs, and modifications of existing monographs, will be included. Arrangements have been made for a limited number of advance proofs to be available, on application, to manufacturers of the preparations described therein, in order that facilities may be provided for the supply of substances in accordance with the new specifications, as soon as they become official.

The following new monographs will be included:

Amethocainae Hydrochloridum	Sulphacetamidum
Amphetamina	Sulphacetamidum Solubile
Amphetaminae Sulphas	Sulphadiazina
Cyclopropanum	Sulphadiazina Solubilis
Dextrosium Hydratum	Sulphaguanidina
Injectio Insulini Protaminati cum Zinco	Sulphapyridina
Liquor Sodii Citratis Anticoagulans	Sulphapyridina Solubilis
Liquor Sodii Citratis cum Dextroso	Sulphathiazolum
Oestradioli Monobenzoas	Sulphathiazolum Solubile
Oestronum	
Potobarbitonum Solubile	
Potassii Sulphas	
Progesteronum	
Strophanthinum-G	

There will also be a general monograph on tablets (including general processes, standards for uniformity of weight, and a disintegration test) and 34 monographs on individual tablets.

The Addendum will contain, in addition, amendments to the *British Pharmacopoeia*, 1932, which have been made official by notice in the London, Edinburgh, Belfast, and Dublin *Gazettes*.

All the official ointments have been reviewed, and a number of revised monographs for ointments are contained in the Seventh Addendum.

The Addendum will contain also new or revised appendices relevant to the monographs in question, and a cumulative index. It must be understood that no additional monograph, or emendation of a monograph, is official until the Seventh Addendum has been published.

## SOCIAL BIOLOGY AND THE POPULATION PROBLEM

In a valdictory address from the presidential chair of the British Social Hygiene Council Sir WALTER LANGDON-BROWN discussed social biology in its relation to the population problem.

The family, he said, was the biological unit, and he regarded with grave suspicion the efforts of planners to dethrone the family and to hand children over to the State. The fact that some family life was far from what it ought to be was no reason for destroying something which, in the vast majority, was good. The birth rate had fallen fairly steadily since 1920, and during the same period the infant death rate had decreased and the expectation of life had lengthened. It had been rashly assumed that the level of fertility remained the same, but there were many evidences that the fertility rate decreased with improvement in the chances of survival. The conclusions of a special subcommittee appointed by the British Social Hygiene Council were that one-tenth of all marriages remained childless, though not deliberately so. The great majority of the population did not intend by contraceptive measures to procure permanent barrenness. The subcommittee did not report whether such measures contributed to sterility, and on that question he himself would be non-committal. Medical evidence was accumulating that the one-sided view that if there was barrenness it was the woman who was generally responsible was wrong. From a study of 2,000 marriages it appeared that the defect was on the man's side in 60%, and in general the average male fecundity was much lower than was usually assumed. Couples accepted their fate without generally

asking for medical help, though such help was now more effective than formerly, owing to new knowledge.

Turning to other factors operating against the family Sir Walter Langdon-Brown said that he was impressed by the rise in rents which had taken place since the turn of the century. The Victorian rule was that not more than one-sixth of income should be spent on rent, and that at a time when rates were low and income tax negligible. The proportion of total income which went in rent and rates in these days was alarming in its repercussion on family life and on infant mortality, for money was spent on housing which should go on food. The aggregation of urban populations led to the increase of flats, which were an unsuitable environment for children. Decentralization of industry offered some solution, but the real trouble was that building costs had increased so greatly that it was impossible for suitable houses to be made available at an economic rent. Thus there was resort to subsidies, the limit of which might be approaching. The Victorian principle was that everything should be self-supporting so far as possible, but there was danger also in the modern view that nothing need be self-supporting. Family allowances were proposed as an extension of social service, but he could not believe that a standard flat rate would prove satisfactory. It would be of small value except to those at the lowest income level, while those at a higher level would be more heavily taxed in consequence, and therefore might be inclined to limit their families still further. The social changes which compelled later marriages must be recognized. Celibacy was enforced for longer or shorter periods upon our young people. The position was difficult and the difficulties would increase as a result of the toll taken by war. There was scope here for study by the social biologist and for the spread of helpful information. Family life in a good home was the best foundation on which to build the new world.

Dr. Otto May proposed and Dr. Letitia Fairfield seconded a vote of thanks to Sir Walter Langdon-Brown, and the meeting proceeded to elect Prof. F. A. E. Crew of Edinburgh as the incoming president. Warm tributes were paid to Mrs. Neville-Rolfe for her many years of service as secretary-general, from which she is retiring, and she was made a vice-president. The annual report of the council was adopted on the motion of Sir George Elliston, seconded by Mr. McAdam Eccles.

## Reports of Societies

### TREATMENT OF DUODENAL ULCER

At a meeting of the Section of Surgery of the R.S.M. on Nov. 1 Sir JAMES WALTON, the president, opened a discussion on the treatment of duodenal ulcer by saying there was some danger to-day of going back to the mediaeval concept of authority and accepting the written word instead of the Hunterian notion of research and experiment. The young surgeon, while making himself familiar with Continental literature, should beware of thinking that what was stated there about duodenal ulcer, for example, necessarily applied to cases seen in this country. There was only one indication for surgical treatment—namely, failure of medical treatment; but this varied with the social condition of the patient. A well-to-do man, living a sheltered life and able to diet carefully, was obviously different from the labourer in respect to treatment. In this country the operative procedure for duodenal ulcer had varied between posterior gastro-entrostomy and partial gastrectomy. He still regarded the former as the ideal operation, and reserved the latter for cases which had developed gastro-jejunal ulcer, trying to judge beforehand in which this was likely to arise. For partial gastrectomy his present choice was Billroth I, which he thought less apt to cause immediate disturbance to the patient. To-day the use of the drainage tube was being decried; he had never known it to cause trouble.

Mr. C. JENNINGS MARSHALL said that duodenal ulcer was primarily a condition for medical treatment; surgery was indicated only in certain cases. But the number of medical regimes—all successful, in most cases, until the next time—should lead one to the common factor—rest in bed. Medicines and diets were directed to reducing the "acid in the stomach," but hydrochloric acid digested nothing, and any excess above 0.08% resulted in no increase of peptic activation. If it were conceded that the gastric secretion was, in part at any rate, responsible for the ulceration, at least it was to be urged that for prognosis and diagnosis a coefficient of



peptic activity should be noted, not of HCl. While there was some rough parallelism, yet some of the largest gastric ulcers might be associated with a low HCl secretion, even with achlorhydria, but apart from that there was reason for regarding high secretory activity as secondary to peptic ulceration, not causative.

With or without treatment 80 to 85% of cases of duodenal ulcer did not need surgery, and roughly one-sixth developed either imperative indications or progressed slowly to chronic invalidism or economic crippling. Perforation called for surgery, and so did recurrent massive haemorrhage; but apart from these cases there were others which from the first relapsed rapidly after the most stringent medical treatment, and there were the chronic slowly progressive ulcers which produced increasing economic invalidism. As for choice and results of operation, in 250 resections for duodenal ulcer there had been 7 deaths. In 35 resections for gastro-jejunal ulceration there had been 4 deaths. Of 350 gastro-enterostomies, done largely in the pre-gastrectomy era, about half the cases had been traced or reported, and two-thirds of these were free from serious symptoms. He had seen no serious case of anaemia follow resection.

#### Medical Treatment

Dr. HORACE EVANS said that in most cases the diagnosis of duodenal ulcer was fairly easy. The history was typical and x-ray confirmation made the diagnosis complete. But sometimes the history was difficult, particularly in women. One point was the frequency with which complications such as haemorrhage, perforation, and even stenosis might occur with minimal dyspeptic symptoms. In the more acute superficial ulcers, very shortly after the haemorrhage, no trace of the ulcer might be demonstrable radiologically. Much time and labour were wasted on test meals—of real value only in cases of obscure anaemias, some cases of carcinoma of the stomach, and cases of chronic gastritis.

The speaker had been impressed by certain aspects of medical treatment. Satisfactory healing was unusual if the patient was ambulant. There should be a minimum period of six weeks' rest in bed, followed by a further six weeks' quiet period. Mental relaxation was as important as physical, and sedatives were more important in the healing of the ulcer than alkalis. To suppose that alkalis formed a soothing lining in the stomach and duodenum and maintained a lower acid content was fantastic. In the feeding of the patient the nature of the feeds mattered little as compared with their frequency. Sometimes harm was done by too strict a dietetic regime. In hospital the results of treatment of these patients in special gastric wards with a proper regime and exclusion of unsuitable foods had justified itself. If the need for surgery did arise, certain often neglected points should be stressed. Pre-operatively the state of the lungs should be ascertained, not only by clinical but by x-ray examination, and the question whether the patient was anaemic or not was also important.

Sir HENRY TIDY felt that peptic ulcer on the Continent was not the same as in this country. Indeed, geography was a factor in all assessment. The incidence of gastric and duodenal ulcer—both total incidence and the incidence of the one as compared with the other—was entirely different in Scotland from what it was in London, both being far commoner in Scotland. Duodenal ulcer was extremely common in South India but almost unknown in North. He suggested that most gastric ulcers which began in early life were cured, disappeared, and did not recur. Duodenal ulcers followed a different pattern. Gastric ulcer increased enormously all over England between 1920 and 1930, but the incidence of duodenal ulcer during the same period actually fell. Both surgeons and physicians agreed on the necessity for rest in bed—and that was the first thing the surgeon ensured by his operation. Medical treatment was much easier to repeat than surgical treatment, and with it there were better results the second time the patient was treated than the first.

#### Types of Duodenal Ulcer

Major-Gen. W. H. OGILVIE confessed himself "distressed" to hear Mr. Jennings Marshall allude to "peptic ulcer." He thought that the distinction between gastric and duodenal ulcer was an established one. They were two distinct diseases. It

might almost be said that in duodenal ulcer they were dealing not with one disease but with one of three—duodenal ulcer A, B, and C. Duodenal ulcer A should be left to the physician so far as possible. It was associated with rapid emptying and high acidity. The patient was likely to be a "go-getter," of worrying temperament, and a cigarette smoker. Duodenal ulcer B was the ulcer which perforated and was practically never chronic (chronic ulcer did not perforate). The patient might be a healthy workman in full work and perfectly well until 48 hours beforehand. Many of these cases showed no further trouble. Duodenal ulcer C was an ulcer which bled—meaning by bleeding, catastrophic haemorrhage. The history was a silent one, not a duodenal ulcer history. This was a disease of "better-off" and of rather older people. Such an ulcer was an indication for surgery. The mortality after one attack was about 8 to 10%, and if the group were followed up the eventual mortality might be found to be very much higher.

Prof. C. A. PANNETT contested Major-Gen. Ogilvie's statement that duodenal ulcer A was a medical disease. There were numbers of patients treated medically whose life was a misery from constant pain. He did not think a treatment was worth anything if it had to be carried on for the rest of the patient's life. Undoubtedly medical treatment cured a number of ulcers permanently, but he did not think a man who had to take alkalis rapidly and continuously could be said to be cured of his ulcer. Yet in such cases surgery would bring about an absolute cure. His own standard of cure was that a man should go away and at least within three months be able to eat anything and within a year to eat normal-sized meals without having to think about them.

Mr. HERMON TAYLOR spoke of the man who got steadily worse after having conservative treatment for many years. What was the surgeon to do? The choice between partial gastrectomy and gastro-enterostomy was one on which there was a division of responsible opinion. He had set to work on some of the intractable cases of dyspepsia in which the operation of gastro-enterostomy had failed. All patients with duodenal ulcer had a marked excess of folding in the gastric mucosa. The late Sir Arthur Hurst had pointed out that the degree of rugosity in the stomach was a congenital characteristic. This seemed to him a rational explanation of the varying response of patients with duodenal ulcer to gastro-enterostomy. It appeared that gastro-enterostomy was sufficient to cure a duodenal ulcer provided there was not too great an excess of gastric secreting area, but if there was a gross excess then the patient was worse off than before and got a gastro-jejunal ulcer. In cases in which there was an excess of folding a partial gastrectomy should be done. No severe operation was justifiable if a less hazardous one would cure the patient. There was no comparison between the risk of gastro-enterostomy and of partial gastrectomy, and the latter should never be done unless it was "the only way."

Mr. G. W. BERESFORD said that apart from rest there was nothing one could do which could be called medical treatment. The most satisfactory operation for chronic duodenal ulcer was a subtotal gastrectomy. He repeatedly saw cases in which gastro-enterostomy had been done which not only developed gastro-jejunal ulcer but years afterwards got recurrent duodenal ulcer. Dr. J. J. SPIRA mentioned the treatment of chronic peptic ulcer on a low-fat diet. Mr. HAROLD DODD said that in the few cases in which he had carried Somerville's operation out the functional result was good, though the fractional test-meal showed no difference. He had not found from his follow-up that any more patients developed anaemia after partial gastrectomy than after gastro-enterostomy.

At a special general meeting of the Royal Academy of Medicine in Ireland, held in the Hall of the Royal College of Physicians of Ireland on Nov. 24, Mr. A. A. McConoill, F.R.C.S.I., was elected President of the Academy.

E. P. SCOTT and A. B. ORTNER (*Amer. J. Dis. Child.*, 1944, 68, 118) report a case of typhoid fever in a boy aged 11 years who survived successive multiple intestinal perforations. They appear to be a "record."

## Correspondence

### Time of Ovulation

SIR,—I appreciated the admirable annotation on ovulation and fertilization which appeared in your issue of Oct. 21 (p. 537). The facts as stated in this note have been substantiated by the majority of embryologists working on early human development. The letter by Prof. F. Davies of Sheffield, which appeared in your issue of Nov. 18 (p. 671), calls for some comment. The menstrual history of the patient, from whom the 9-10-day embryo was secured, is apparently the crucial point on which he bases his conclusions as to the time of ovulation. Even, however, on the assumption that ovulation occurred on the ninth or tenth day of this cycle, there is no evidence that the cycle, if uninterrupted by pregnancy, would have been a 28-day one. In fact, Prof. Davies, in his article with Harding (*J. Obstet. Gynaec. Brit. Emp.*, 1944, 51, 225), states:

"It is noteworthy that the histological structure of the endometrium on the 20th day of the cycle in the present case is closely similar to that of the endometrium on the 24th or 25th day of a 28-day cycle in a number of specimens examined by the present authors, and it is certainly much more advanced in the secretory phase than many 20-day specimens examined from women with 28-day cycles; in these cases ovulation probably occurred about the 14th day."

These changes in the endometrium, which are in agreement with the findings of Rock and Hertig (*Amer. J. Obstet. Gynec.*, 1942, 44, 973; 1944, 47, 343), point clearly, in my opinion, to the conclusion that the relevant cycle of the case described by Prof. Davies, had it been completed, would have been of about 24 days. This, of course, would mean that ovulation occurred at the time indicated by the writer of your annotation. Prof. Davies, in support of his thesis, then refers to five ova, described by Miller, Engel, and Reimann (*Growth*, 1938, 2, 381) and Reimann and Miller (*Arch. Pathol.*, 1939, 27, 412), and states: "All five of these ova indicated that ovulation occurred 15 to 17 days before the onset of the next menses in these 28-day-cycle cases. . ."

The facts concerning three ova of this series, on which data are presented, are as follows: The first specimen was recovered on the fifteenth day of a cycle the length of which is not stated. In one ovary there was a fresh corpus haemorrhagicum "which on section proved to be a very young corpus haemorrhagicum in which no lutein cells had as yet been differentiated." The second specimen was recovered on the sixteenth day of the cycle; the previous cycles of this patient were of the 28-day type. This ovum was thought to be one day older than the first specimen. The third specimen was recovered on the fifteenth day after the onset of the last period; the previous cycles were of an average 28-day type. Section of the corpus haemorrhagicum showed a considerable amount of blood and a few differentiated lutein cells. For their investigations Miller *et al.* used 24 operative specimens. These authors state:

"Judging from the experience with these 24 specimens, excluding the 21-day ovum, the periods of the cycle during which the best chances are present of finding an ovum in the tube are between the fourteenth and the sixteenth day after the onset of the previous menses. The ovum recovered on the twenty-first day was degenerated and apparently had been withheld in the tube, since the tube was tortuous and offered resistance to the passage of the wash fluid. We believe the ova entered the tube on the fourteenth day after the last menses, assuming that ovulation took place at the same time in all three individuals. This is the obvious conclusion for two reasons. Specimens removed on the thirteenth day failed to yield ova. . ."

It is true, however, that in the summary of their paper in *Growth* these authors state:

"Judging from the days during which these and other ova were recovered the ovulatory period is between the eleventh and thirteenth day after the onset of the previous menses in 28-day-cycle cases." In my opinion this statement is not borne out by their own findings. Finally they state:

"Probably the earliest day that the ovum can be found in the Fallopian tubes is the fourteenth day after the onset of the last menses." This of course would mean that the ovum takes several days to reach the tube after ovulation—which seems most unlikely.

It may be of interest to add that I have recently recovered two further ova: one, at the pro-nuclear stage, on the

seventeenth day of a cycle of the 28-day type; the other, an abnormally segmented egg, on the eighteenth day of a cycle of the 28-day type. It is probable that the first specimen is about 48 hours and the second specimen is about 72 hours old. —I am, etc.,

Anatomy Department, St. Bartholomew's  
Hospital Medical College.

W. J. HAMILTON.

### The Nursing of Tuberculosis

SIR,—Your annotation on the nursing of tuberculosis (Oct. 28, p. 569) calls for comment. Quoting the combined report of the Joint Tuberculosis Council and the Tuberculosis Association, you state that the risk to sanatorium nurses of acquiring tuberculosis is no higher than that to which general hospital nurses are subject. The important recently published work of Daniels, the Prophit scholar (*Lancet*, Aug. 5 and 12), on primary tuberculous infection in general hospital nurses shows that this risk is not inconsiderable, and he makes the specific recommendation that Mantoux-negative nurses are not to be allowed to work in tuberculosis wards. He shows that of 42 nurses initially Mantoux-negative, 33 developed tuberculosis, as compared with 2,120 Mantoux-positive, among whom 43 developed tuberculosis.

In view of this much higher observed incidence of tuberculosis in Mantoux-negative nurses in general hospitals it would seem probable that the same finding is likely to apply in sanatoria. A small series of figures from the tuberculosis hospital with which I am associated tends to support this view. During the past few years some 30 probationer nurses have been received for three months' training in tuberculosis. Of approximately 189 Mantoux-positive on arrival, 1 has subsequently developed tuberculosis, and of 32 negative, 4 have developed tuberculosis demanding institutional treatment. In addition, of the 32 approximately 25 became Mantoux-positive during their three-months stay. (I write from memory as I have not at the moment access to the figures, which are, however, substantially correct.) These figures, which are admittedly too small to be of statistical value, are, at any rate, suggestive, and I have as a result terminated the experiment and no longer allow Mantoux-negative nurses in tuberculosis wards.

Admittedly sanatoria have and usually exercise their facilities for Mantoux testing, radiographing, and "keeping nurses under observation," but none of these procedures will prevent the nurse from being infected during her work. To know that a nurse is Mantoux-negative is valueless unless that knowledge is applied by removing her from the tuberculous environment. The report as quoted by you states that a nurse of 18 runs no more risk of acquiring tuberculosis than one of 21; agreed, but only if she is Mantoux-positive, which is rather less probable.

In short, it is unfair to the individual Mantoux-negative nurse to expose her to the risk of acquiring tuberculosis; nor will the admittedly difficult problem of staffing tuberculosis institutions be solved by converting with certainty a proportion of Mantoux-negative nurses into tuberculous patients. —I am, etc.,

Abergele, N. Wales.

W. E. SNELL.

### Endotracheal Connexions

SIR,—At a thyroidectomy recently I was administering nitrous oxide and oxygen through an orotracheal tube when the Magill connexion became detached from the tube. The patient's face was covered with a sterile square, and it was a few moments before I discovered what had happened. In these few seconds the tube had worked itself down quite a few inches, in spite of a pharyngeal pack, and was astonishingly near the glottis before I rescued it. Since then I have had a small hole bored through each side of all my Magill and Rowbotham connexions, and after inserting the connexion in the tube I put a safety-pin through the tube and through the holes, transfixing both tube and connexion. This makes the union quite secure. The hole must not be too small, or it will be difficult to find when it is hidden inside the tube. From experience I have found that if the holes are about 2 mm. in diameter and are placed about 1 cm. from the distal end of the connexion no difficulty is likely to occur in transfixing them.

I have found this very useful in the case of the new vinyl-plastic tubes, which do not hold a metal connexion very securely when they are soft after boiling. Apropos the vinyl-plastic tubes, I find them delightful for oral intubation, and I think they are kinder to the tissues than the rubber ones. I have found, for instance, that after the operation is over and the tube is withdrawn the end which has been in the trachea is quite soft and flabby with the heat of the body, and I believe it will be less likely to cause tracheal irritation than the harder rubber tube. For nasal intubation it seems less useful. It is a little hard and rigid unless boiled immediately before use, and then it becomes too soft and loses its curve. It certainly passes through the nose very easily, then, but blind intubation is less likely to be successful. I hope the makers will be able to produce one with rigid walls for nasal use—I am, etc.,

Edinburgh

A. McCALLUM MILLAR

### Artificial Respiration

SIR.—Surely the first essential in the treatment of respiratory arrest is to ensure that the resultant anoxia is counteracted without delay. Normally the chief function of respiration is the oxygenation of the blood, if the patient stops breathing for himself the obvious and most imperative remedy is for someone else to do it for him.

The first thing to be done is to make sure that the airway is clear, this point is often forgotten, not only in the resuscitation of the apparently drowned but even in the ideal conditions of the operating theatre. Next a well-fitting mask, with the expiratory valve closed, should be applied to the patient's face and connected with a breathing bag full of oxygen. If now the airway is kept clear and the bag is squeezed oxygen must be forced into the patient's lungs, and the chest will in fact be seen to expand. Release the pressure on the bag and the recoil of the thorax will cause expiration to take place. Continue the rhythmic contraction and expansion of the rebreathing bag, and so long as the airway is unobstructed and the circulation is adequate, the blood will be completely oxygenated and the patient will suffer no harmful effects of anoxia.

This is the simplest and most effective method of artificial respiration. It is without danger, whereas ribs can easily be broken—and frequently are—by over-energetic measures applied directly to the chest wall, and it has the added attraction that it is considerably less tiring. Then, when all this is done, and then only, should any recourse be had to drugs.

Dr. Barley (Nov. 11, p. 643) apparently regards artificial respiration as tedious and useless exertion. In the absence of an unobstructed airway, of which he makes no mention, any such exertion is completely useless and therefore bound to be attended by the anxiety which colours his picture. The drugs he mentions will lose none of their power, and will, in fact, probably not be needed if no time is lost in relieving the anoxia first in the simple way I have described.

While discussing analeptic drugs may I correct a false impression from my views on this subject which I find has resulted from the wording of Dr. Thacker Neville's letter (Sept. 23, p. 415)? In this letter he says: "As regards Dr. Roberts's criticism on the use of picrotoxin, in future I shall accept his criticism and use leptazol, which is as active as picrotoxin if given in larger doses than picrotoxin, and is certainly more potent than coramine," thereby creating the impression, as I have discovered in conversation with many scattered readers of the *Journal*, that I recommended the use of leptazol in preference to picrotoxin. Actually in my letter (July 29, p. 161) I made no mention of leptazol; my main contention on that occasion was the same as in this letter—namely, that it is better to ensure that the apnoeic patient is not anoxaemic by the simple method of introducing oxygen to the lungs via an unobstructed airway than to put one's faith in any reputed cardiac or respiratory stimulant drug—I am, etc.,

F. W. ROBERTS.

London, W.1.

### Anaesthesia and Shock

SIR.—I have read with interest the article in the *Journal* of Nov. 25 on general anaesthesia in shock by Crooke, Morris, and Bowler. Their conclusion that variations in blood pressure

during anaesthesia do not indicate any significant change in the plasma volume or haemoglobin concentration is important, and is an interesting contribution to our knowledge of the conditions associated with operative shock.

I do, however, find myself in disagreement with some of the statements made about anaesthesia. I would deny that the anaesthetic is the most important single factor concerned in the high mortality associated with operations on seriously shocked patients. I think that the anaesthetic matters much less than the way it is given. To get the best results in these cases it is essential that the anaesthetist should be experienced in this type of work, and not only in the administration of anaesthetics but in the uses and abuses of resuscitation and in the judgment of optimum time for surgical intervention. He should have followed his cases through their resuscitation, operation and recovery, or otherwise in the wards, making full use of his blood-pressure apparatus and notebook. The question of the particular anaesthetic agent which he favours is a minor one. Experience has shown that the skill in the proper use of intravenous therapy is often the determining factor in serious cases. Many a patient has suffered from overdose of fluids, morphine, or heat.

I cannot understand the statement that blood-pressure changes were not found to be related to any particular operative manipulation by the surgeon. My experience is that blood-pressure changes are commonly caused even by a gentle surgeon, particularly in shocked cases. Traction on the parietal peritoneum of the upper abdomen, whether direct or through some other organ, causes an initial fall followed by a smaller rise. Exposure of a large length of bowel outside the abdomen will lower blood pressure. Raising of the kidney bridge or gall-bladder bridge will sometimes influence blood pressure. Heavy retraction of limb muscles will lower blood pressure in the seriously ill patient. I agree that these effects are not so obvious when regional or local analgesia has been used.

In my view resuscitation should not be regarded merely as leading up to surgical operation. The process of resuscitation may be a long one, extending over several days, and the operation and anaesthesia should be a part of the resuscitative process. If operative intervention is well timed it will usually be found that the condition of the patient is better after operation than it was before.

The authors conclude that the chief factors in anaesthetizing shocked patients seem to be: first, the use of a minimal amount of anaesthetic; secondly, the choice of an anaesthetic which stimulates rather than depresses the cardiovascular system; and, thirdly, an adequate amount of oxygen. My chief three factors in anaesthetizing shocked patients would be: first, anaesthetizing them at the right moment in the progress of resuscitation; secondly, maintaining an airway which is absolutely above suspicion; thirdly, in suiting the plane of anaesthesia from minute to minute exactly to the surgical procedure.

I agree that good oxygenation is important, but CO<sub>2</sub> retention, which may be present in spite of good oxygenation, is equally important as a cause of post-operative collapse. Finally, of all the five cases of shock quoted one suffered from injuries of the abdomen, thorax, or airway. It is in these cases where the choice of anaesthetic and technique provides the more interesting problems.—I am, etc.,

Colchester

DOUGLAS CLENDON.

### Spinal Analgesia in Penetrating Abdominal Wounds

SIR.—In Major T. Moore's article on underwater blast injuries of the abdomen (Nov. 11, p. 627) there is a statement that cannot be allowed to pass without comment. He writes: "The other death occurred, just as the operation was about to be started, in a short-necked emphysematous patient. A spinal anaesthetic had unfortunately been administered by the Etherington-Wilsoo technique. It was undoubtedly the cause of death." Since the beginning of the war I have anaesthetized over 350 persons suffering from penetrating wounds of the abdomen, a condition in many ways comparable with that described by Major Moore. My experience confirms the wisdom of the usual advice that spinal analgesia should not in general be used in these cases. It is more than probable that it was the choice of spinal analgesia and not the choice

of the Etherington-Wilson technique that was the cause of death in the case described by Major Moore.

It would be a pity if statements such as that quoted were to bring into disrepute a technique of spinal analgesia that was most carefully evolved by the originator, possesses many advantages, and, when the indications for spinal analgesia are observed, has proved both safe and reliable in many different hands in many thousands of cases.—I am, etc.,

R. BINNING,  
Major, R.A.M.C.

### Sign for Acute Retrocaecal Appendicitis

SIR.—In the *Medical Annual*, 1944, under the heading "A New Sign in Appendicitis," R. Capurro of Montevideo is quoted as maintaining that whether the inflamed appendix is normally placed, pelvic, or retrocaecal, tenderness can be elicited by deep pressure at a point just internal to and above the anterior superior iliac spine. This sign is not new. I read of it first some twelve years ago as a sign for acute retrocaecal appendicitis. It was attributed to a French surgeon, whose name I have unfortunately forgotten. I have used it since then in some hundreds of cases, and I can vouch for its value in cases of acute retrocaecal appendicitis. In these cases the maximum tenderness will be found just internal to the anterior superior iliac spine; this does not hold for other positions of the appendix. The sign is best elicited by sitting facing the patient, placing the four fingers of each hand over the iliac bones, with the thumbs resting just internal to the anterior superior spines. Gentle pressure with the left thumb will give marked pain in cases of acute retrocaecal appendicitis. In such cases I always use the Rutherford Morison incision, which gives ample exposure. I am sure the sign has a definite value, more especially as the acute retrocaecal appendix is so often missed in its early stages.—I am, etc.,

Warrington.

J. J. MANNING.

### Treatment by Movement

SIR.—I read with interest Dr. James Cyriax's article in the *Journal* of Sept. 2 (p. 303), and should like to be associated with him in stressing some of the points, at the same time criticizing others. His article deals with:

1. Treatment by movement as soon as possible and choice of type of therapeutic movement, which varies from tissue to tissue, with the nature, position, and extent of lesion, with the integrity or not of such structures as nerve or bone, and with the presence or absence of bacterial infection
2. Modern methods in the treatment of fractures.
3. The need for deep massage in certain strains of ligaments and muscle attachments working over bone, and in cases of tenosynovitis.
4. The use of passive movement in addition to active movements to maintain or restore full joint movement.
5. The use of faradism only in initial stages.

One of the most difficult problems in treatment of injuries of all types is to know what degree of graduated movement is the right amount for each injury at the stage of recovery in which it is examined. The different types of graduated active movement pass through a sequence of movement from complete rest through gentle movements without weight-lifting to every form of vigorous violent movement. There is no doubt that the A.I. soldier requires to be as fit as an international footballer for the duties of modern warfare, and it is not surprising to find that many injured soldiers break down in their training, as their joints are so damaged by the original injury that they are unable to withstand the strain to which they are subjected.

The presence of circulating toxin from some distant focus will naturally interfere with recovery, and in joint injuries, where this is the case, attention may be drawn to it, apart from general and local signs and symptoms, by the following points: (1) The amount of synovitis is out of all proportion to the injury force. (2) The synovium is thickened and spongy. (3) The controlling muscles stutter and twitch on attempting active movement, or when stimulated with faradism. (4) The blood sedimentation rate is raised in some cases, as well as the white cell count. (5) The joint shows failure to respond to exercises and physical treatment by the appearance of recurrent synovitis.

The degree and amount of active movement should vary with each case of injury and should depend on: (1) The amount of traumatic effusion present. (2) The relation of the area of cross-section of the injured structure to the total cross-section of the limb involved. Thus a ligamentous injury taking up a small area of cross-section can be supported, and active movement with weight-bearing or strain started at once, in contrast to a badly sprained joint in which a large portion of the cross-section is involved and in which (3) there is a secreting membrane made sensitive by the injury.

To understand the stages in recovery it is essential to realize that the amount of traumatic effusion can be out of all proportion to the injury, especially if a small vessel is ruptured with the formation sometimes of an enormous haematoma. The natural absorption of haematoma is taking place all the time, but its spread is governed by the following: (1) The forces of gravity either in an upward or downward direction, according to the position of the limb. (2) By the action of the muscles squeezing it towards either their origin or their insertion with the aid of gravity. (3) The direction of fascial planes helped by gravity and muscular action. (4) The direction of venous and lymphatic flow.

I am convinced that, apart from the accurate setting and stabilization of fractures by screws and plates, the excellent results obtained in the early full movement of the neighbouring joints is partly due to evacuation of the haematoma at the time of operation. It would appear to me as a criticism that in cases where screws or plates are employed insufficient understanding in the use of external fixation by plaster was still prevalent. Where a fracture of the tibia and fibula is fixed by a substantial plate and transfixing screws no plaster is necessary. But where screws alone are used in tibial or humeral fractures, or a femur is plated, it is essential for a time to use external fixation by plaster.

I had the opportunity of seeing the results of a few cases of fracture of the femur and tibia treated by the Germans with a long intramedullary hollow metal nail. At the end of 6 to 9 months there was some periosteal bone formation, but naturally little endosteal callus; on removing the nails, however, and applying a spica or long leg plaster, the fracture ends soon consolidated. The nail is introduced through the inner side of the greater trochanter and pushed down the medullary cavity. Another small incision over the fracture allows it to be threaded through the distal fragment, and at the same time fracture haematoma is allowed to escape. By this manoeuvre and early knee movement stiff knees were prevented. I consider there may be a definite place for this method in the future treatment of certain fractures of the femur—viz.: (1) introduction of nails; (2) treatment of overlying muscles and neighbouring joints; (3) weight-bearing after 6 weeks; (4) removal of pin at 3 months; (5) plaster-of-Paris walking spica for 2 months.

At the end of six months the femur is firmly united with no knee stiffness. I have been using a method of treating all fractures or injuries with extensive effusion in which open reduction is not indicated by making small longitudinal incisions and thrusting in pointed scissors down to the swelling and allowing drainage or expression of haematoma. Naturally absolute asepsis must be practised, but the results in severe external rotation fracture of the ankle-joint, severe Colles's fracture, and dislocated elbows justify this procedure. It is also combined whenever possible with the cutting of suitable windows for the daily application of faradism, which naturally is combined with active exercises. A more detailed communication on this method is to follow.

I am glad that Dr. Cyriax drew attention to the need for deep massage in certain cases, as the teaching is so much against massage in general that it is often denied to cases in which it should be the main treatment. I would like to add to his list of suitable cases enlargements of infrapatellar pads of fat and collections of organizing haematoma in places where there are no muscles, so-called "dead areas." I am certain that Dr. Cyriax would be first to agree that other forms of physical treatment, such as anodal galvanism, diathermy, heat, and faradism, are a great adjunct to massage.

I am surprised that he uses the phrase "passive movement," and I agree with Watson-Jones that the term should be used only in cases of paralysed muscles. Dr. Mennell has stressed the importance of the range of involuntary movements possessed by each individual joint and how important these movements are for free painless active movement.

Gray's *Anatomy* describes them as accessory movements and divides them into two types: (1) Certain movements which cannot be performed voluntarily, but only when resistance to active movement is encountered, as in imparting spin to a cricket ball with the fingers, thus causing a rotation at the metacarpo-phalangeal joint.

(2) Movements with complete relaxation of the muscles, as in the play between articular ends of the bones forming a joint.

It is evident then that every mobile joint has a range of (1) active voluntary movement; (2) involuntary movement. These involuntary movements allow for gliding of one bone on the other, rotary movements, and side bending. If after a simple sprain of a joint there are pain and limitation of movement at the end of two months, most orthopaedic surgeons would recommend a manipulation of the joint under anaesthesia but if gentle manipulative movements are carried out as part of the other treatment, such as exercises, massage, contrast baths, and tinctism, it is seldom that there is not a return to full range of joint movement in any sprained joint at the end of three weeks. Therefore I suggest that it would be better to delete the phrase "passive movement" and substitute "gentle manipulative movements." Apart from that, the methods of applying the manipulative movements are quite different, and, as Dr. Mennell points out, passive movements themselves are the cause of inflammatory reactions and increased stiffness, which gentle manipulative movements never produce.

Another important distinction in active movement, which I did not consider he brought out, is the difference between isometric and isotonic movements. With an injured limb in plaster movements will be isometric—i.e. the muscle contracts and broadens, but does not lengthen. As the joint has been placed in the optimum position of rest, movements of this type will prevent wasting of muscles and overstretching of the antigravity muscles, and at the same time hasten the absorption of traumatic effusion. In isotonic movements, although the tone in individual muscle fibres is equal, stretching and alteration in the length of the muscle take place. This may lead to overstretching of one group of muscles with contraction of their antagonistic group. A good wrist-joint and ankle-joint plaster should allow both types of movement, so that the muscles acting on the joint can only move isometrically, whereas, with the wrist and ankle fixed the fingers and toes can move isotonically. While in plaster the patient must be told that not only must he carry out walking exercises, but he must do each individual movement against the resistance of the plaster so as to bring into use each group of muscles.

Faradism given properly throughout aids and encourages active movement, and allows each muscle of a group to be actively stimulated individually, so that one muscle works on the other, preventing intermuscular adhesions. This is not allowed by active group movement alone, and one only has to see cases treated by exercises plus faradism compared with those treated by exercises alone, to appreciate the difference in recovery time.—I am, etc.,

W. E. TUCKER,  
Major, R.A.M.C.,  
Orthopaedic Specialist

### Incidence of Peptic Ulcer

SIR,—In your leading article (Nov. 18, p. 665) you refer to the need for statistics of the total incidence of peptic ulcer in our population. May I suggest that this war has provided a simple means of obtaining such figures? I refer, of course, to the fact that the Ministry of Food has decreed that every sufferer from peptic ulcer is entitled to priority milk and eggs. Every food office in the country must be aware of the number of priority forms it has received bearing the figures "1d" (milk) and "1" (eggs) all such forms must indicate patients with peptic ulcers. Surely it would be possible, through the Ministry of Food, to collect such figures and thus determine the total number of peptic-ulcer patients at any given time.

I can think of two possible fallacies: first, that some people who have ulcers have not bothered to obtain their extra milk and eggs (in my experience such a class must be extremely small); secondly, that some doctors may have given to patients without ulcers the necessary forms. Again, I think this must be very rare.

In any case, a very good idea could be obtained of the number of persons in this country who have peptic ulcers sufficiently troublesome to warrant their consulting a doctor.

—I am, etc.,

Outwood, near Wakefield

J. D. BOTTOMLEY, M.B.

### Sodium Bicarbonate and Peptic Ulcer

SIR,—In view of present-day opinion on the action of sod. bicarb. in stimulating the secretion of HCl, and thus conducing to the formation of peptic ulcer, would it not be wise to omit this ingredient from the tablets magnesium carbonate compound of the *National War Formulary*?—I am, etc.,

Maiden Newton, Dorset.

C. LL. LANDER.

### Latent Mastoiditis in Infancy

SIR,—May I, as the otologist to the North-Western Hospital, where the possibility of mastoiditis in infants with gastro-enteritis always receives full consideration, make some answer to Mr. Leathart (Nov. 11, p. 637) and some otological comment on Drs. Patterson and Stewart Smith (Nov. 18, p. 659).

In the first place there can be no possible clinical doubt that mastoiditis can play a very important part in the syndrome which we call acute gastro-enteritis of infants. I am not as yet quite sure whether I agree with Mr. Leathart that the disease is a primary mastoiditis, or, more accurately, a primary upper respiratory infection with a secondary gastro-enteritis; or whether there is primarily a virus-produced gastro-enteritis, which, as a result of lowered resistance, allows organisms already present in the upper respiratory tract to become extremely pathogenic. Personally, I incline to the latter theory, but at the moment we have not sufficient evidence to decide one way or another. One can, however, say quite definitely that in a large number of these infants there is a clinically demonstrable upper respiratory infection which most often shows itself as an otitis media, which may or may not proceed to a clinical mastoiditis.

Drs. Patterson and Stewart Smith consider that the diversity of organisms found in the mastoid is a proof that the infection is not a primary condition. That is certainly not a tenable hypothesis. No matter what one's age the organisms found in an acute mastoid can be most varied and can vary in the two ears in the same patient.

Mr. Leathart has done great service in pointing out the three types of bone infection that can be met. My own experience agrees with this, and I have often seen operation on the purely mucoid type followed by an immediate and dramatic improvement. One might add that many a mastoid is passed as uninfected at post-mortem because it only contained mucus and not frank pus. Presumably the mucoid type is only the early stage of an acute infection, brought to the otologist's notice because of our old friends—the virulence of the organism and the resistance of the patient.

I cannot agree that posterior-triangle glands are always an indication for operation. They certainly indicate an otitis media, but I have seen many cases with glands which have recovered without operation. I do not, either, pay much attention to head-rolling, etc.; I prefer to go by the condition and progress of the child taken in conjunction with the aural findings. And it cannot be too strongly emphasized that a gross infection of the mastoid can exist with no more demonstrable lesion of the ear than a loss of the light reflex and a dulling of the tympanic membrane. Hence the necessity for careful and repeated examination of the ears. The appearance of the ears can change completely in a few hours, and the first clinical sign may be sudden dehydration in a child that had previously to all appearances been doing well. It is our rule that, no gastro-enteritic baby should be allowed to die—there being no obvious cause for its death—without having its mastoids explored. As I always operate with local analgesia the process is as quick and devoid of risk as possible.

There are some points in the Manchester article which cannot be passed over without comment, as they are definitely misleading. The authors state that under the age of 2 years the mastoids are undeveloped. This is quite untrue. I have seen many completely cellular mastoids at the age of 4 or 5 months, and I am very much inclined to think that an acellular structure at that age is more often an indication of a past infection than of a normal structure.

Subperiosteal abscess is not a common complication in gastro-enteritis; I have never seen it, nor should I have said it occurs commonly in any infantile mastoiditis. Similarly, meningitis is rare. Drs. Patterson and Stewart Smith have rather confused the issue by discussing all infantile post-mortems which showed mastoiditis, whereas Drs. Eiser and Alexander, and Mr. Leathart, have been discussing gastro-enteritis. In this disease the common complications, apart from mastoiditis, are septicaemia (which is usually overlooked), bronchopneumonia, secondary anaemia, and toxic hepatitis. More than one of these conditions can coexist—a fact that has always to be borne in mind. It would seem that all Drs. Patterson and Stewart Smith have shown is the frequency



with which a lethal condition can exist in infants and escape notice. Admittedly, the condition can be most difficult to diagnose. All the more reason, therefore, for it never to be forgotten. The operation table should be the place for infantile mastoiditis and not the post-mortem table.—I am, etc.,

London, W.1.

WINIFRED HALL.

### Episiotomy

SIR,—Mr. J. D. S. Flew, in his excellent paper on episiotomy (*Journal*, Nov. 11), which deserves widest circulation and attention, suggests calling slight descent of the anterior or posterior vaginal wall "vaginal hernia" or "prolapse of the vaginal wall." In my modest opinion this would add another misnomer. Why not call it rightly "descent," and that "anterior vaginal wall descent" and "posterior vaginal wall descent" respectively (*descensus vaginae*). More advanced cases should be nominated "*descensus vaginae et vesicae*," whereas still more advanced cases should be called "cystocele" if it is according to the anatomical findings. Applied to the posterior wall the respective names would be "*descensus vaginae et recti*" and "rectocele." Those cases in which the portio uteri appears in the vulva should then be labelled "*descensus uteri*," and the name "prolapse" left for those cases in which the uterus (or a part of it) is really prolapsed—i.e., fallen out (of the body)—and forms the contents of a bag of the inverted vagina (with or without a part of the bladder).—I am, etc.,

A. W. B.

### Artificial Insemination

SIR,—Obviously this new procedure belongs to the same category as birth control and masturbation, both now condoned, even advocated, "in their place." The sexual appetite exists in all or most people; why then, the argument runs, should it not be assuaged "when it becomes too strong to resist"—so long, that is, as any resulting inconveniences to "the community" are fully insured against? Similarly, a woman wants to gratify her "maternal instincts" and have a baby (and the population needs to be increased in view of the ravages of war, of road motor traffic, and so on). Why, then, should she not have a baby if the thing can be done with a minimum of trouble to herself and her husband, he being perhaps incapable or, in any case, uninterested? There are in abundance maternity homes, anaesthetics, crèches, and so forth, and when once her infant, begotten by inoculation, begins to show signs of having a will and personality of its own, and so giving her trouble, the State will take it over and "direct" it into the right paths, while she, the mother, will be relieved of all further responsibility.

As against this facile reasoning, however, comes the awkward fact of the home and the family. This happens to be, in the nature of things, the basis of social stability and coherence—opposite pole from anarchy and chaos. (And alas that our educational authorities themselves nowadays fail to grasp the elementary fact that the home and its surroundings form the young child's natural primary school!)

To say that artificial insemination is justified because it has restored family harmony in such and such a case is exactly like advocating the extended use of opium or alcohol for all the troubles that beset the mind.

Our profession is already suffering badly from competition by the faith healers, patent-medicine makers, and so on. Let it beware lest it lose caste still further by subscribing to this latest doctrine and practice of social disintegration. Man, as distinct from the animals, is provided with brains and an imagination, through which he can transmute his impulses to fine gold.—I am, etc.,

North Queensferry, Fife.

A. J. BROCK.

SIR,—Dr. Joan Malleon chides us who condemn artificial in-  
mination for our lack of objectivity and for our appeal to emotion. With respect I suggest that the boot is on the other leg. Dr. Malleon's appeal is on behalf of the woman married to the sterile or impotent husband. In other words, it is a citation of the hard case which notoriously makes bad law, and is essentially emotional. The traditional view of Christendom in regard to marriage and the family is based on

a comprehensive objective view of man's whole nature and his weaknesses, and a rational appreciation how the best individuals can best be procreated. Precisely because it regards matrimony as so good it hedges it around with reasonable restrictions: that is what the rational mind does with all good things, and the better a thing is probably the more restrictions in order to prevent the swamping of the best by the less good.

Dr. Malleon's letter is full of appeal to emotion. The spoilt child, in spite of all appeals to reasonableness, nevertheless can only answer, "Yes, but I want to." So Dr. Malleon says of her childless married woman, "Oh, but she wants to." I suggest that rationality does not consist in devising means by which desires condemned by the normal conscience may yet be gratified. Rationality does not suppress emotion and desire, but controls them.

Many experienced practitioners have known cases where a woman who has had herself sterilized on similar emotional grounds has subsequently on cool rational reflection bitterly regretted it. For several millennia women have ministered to men's pleasures and borne children. These two functions have not markedly raised women's status in the eyes of men. The women who have made men sit up and take notice have been those devoted women who have renounced these functions, not because they were bad but because, although so good, still better functions, like the supplying of a mother's place to children lacking a mother, could be pursued. Such supermothers I have known who excited profound rational respect and admiration. It is not rational but emotional to enthuse over the woman who has a child by artificial insemination.—I am, etc.,

London, N.16.

E. H. STRANGE.

SIR,—Recent letters in the *Journal* have argued against artificial insemination on the grounds that it is immoral and contrary to marriage vows.

I feel sure that all rational medical men will agree that it is time the profession as a whole became more far-sighted in its outlook on these matters. This is a changing world, and the things which appear to us most stable, such as human nature and morals, must change inevitably. Authorities tell us that life has existed on this planet for 1,000,000,000 years, and there is no reason to believe that it will not continue to exist for millions of years. Our ancestors 60,000,000 years ago were probably some kind of ape. Millions of years hence our descendants may be as unlike us, physically and mentally, as we are unlike apes. A new moral code will have developed by then to meet the demands of changed conditions. Our conception of marriage will possibly have been completely lost. Of course, in a lifetime one can only hope to see a tendency to change, and this will be recognized only by the more enlightened among us. It should be realized that it is quite futile to fight against this tendency. We can see to-day a tendency for man to take his destiny into his own hands. Artificial insemination is one small expression of this tendency.—I am, etc.,

Hartlebury, Worcs.

R. F. STRONGE.

### "Dissident Doctors"

SIR,—Dr. Pincey's energetic and somewhat emotional response (Nov. 11, p. 640) to Dr. Frederick Dillon's plea (which to me seemed eminently reasonable) for a scientific approach to medico-political problems admirably demonstrates the urgent need for that plea. "It is very odd," says Dr. Pincey, "that we doctors . . . should be so easily gulped by the propaganda of authoritarianism." To me it is very odd that he should pay authoritarianism the gratuitous compliment of suggesting that it is the outcome of a scientific approach to politics. It is really rather tragic that at this present juncture the profession, which should be the body *par excellence* to advise the nation and its legislature on how to implement their resolve to have a better medical service, should speak with so many voices. The old jibe has it that doctors seldom agree, and one would not need to go beyond the pages of the *Journal* to justify it. Yet the jibe is becoming less and less true in the doctor's professional sphere, where a progressively scientific approach is leading to a rather remarkable agreement of opinion. Surely the inference is clear.



I am sure that Dr. Dillon's view (and Karl Pearson's) is right; but I doubt if his appeal will be heeded by many. The issues will, as heretofore, be determined by a clash of prejudice, and a limited advance, probably in the right direction, will be made. This may be for the best. It will leave the real solution to be worked out through the scientific approach by younger and less prejudiced thinkers when these are released from their urgent task of ensuring that human progress is possible at all.—I am, etc,

Aberdeen

E R C WALKER

### Colonial Medicine

SIR.—The spate of articles, letters, etc., purporting to give pictures of medicine in these long-suffering Colonies of ours continues. May I trespass on the otherwise unsullied pages of the *Journal* to register a further plea, even at the risk of being thought caustic? Might it not be impressed upon intending authors, and then recompressed upon them, that there are very, very, very few doctors whose opinions are of any interest locally, or of even approximate accuracy, until they have completed about five years of work actually in the West African Colonies? We do not write a history of England after a fortnight at Brighton. No more can doctors write on West African diseases until they have a certain knowledge of the people, some knowledge of the language, and especially some knowledge of the background of family life. Nor is this knowledge acquired from a few months in the coastal belt. Might we not apply the old adage of "Coasters" after seven years, "old Coasters" after fourteen years, to West African medicine, if we substitute "less ignorant" and "more experienced, but more humble" respectively?—I am, etc

Colonies of the Gambia

J S MINETT

### Debridement et Épluchage

SIR.—The use and misuse of these and allied words have already given rise to far too much confusion and misunderstanding.

*Debridement* is derived from *debrider* which is the antonym of *brider* (to bridle, to tie up, to fasten, to constrict). *Debrider* is given the following definitions: To incise or slit up<sup>1</sup>, to cut adhesions or tissues which strangle organs (e.g., *debrider une hernie*), or to incise the edges of a wound to provide drainage for pus.<sup>2</sup> *Debridement* has nothing to do with debris.

*Épluchage* is used by very few French writers, the majority using *excision de la plaie* (excision of the wound). It is certainly an error to use *épluchage* for *excision*. *Épluchage* means<sup>1</sup> to peel or pare a fruit, and, used figuratively, to examine or criticize in detail. Moreover *épluchage* is not given in Garnier and Delamaré's dictionary, which is the standard work in France.

*Le debridement d'une plaie* means the enlargement of a wound, and *excision d'une plaie* excision of a wound.—I am, etc,

Leicester

T M J DUFFY

<sup>1</sup> Harrap's Standard French and English Dictionary, London 1934

<sup>2</sup> Nouveau Petit Larousse Illustré, 310th ed. Paris 1930

<sup>3</sup> Dictionnaire des Termes Techniques de Médecine—M. Garnier et V. Delamaré, 12th ed., Paris, 1938

The report of the London School of Hygiene and Tropical Medicine for 1942-3 records a heavy programme of teaching and research successfully carried out. Fourteen courses were attended by 921 medical officers of the British and Allied Forces during the year under review. Shortened courses were also provided for new officers of the Colonial Medical Service, and there was a short course in epidemiology for Polish graduates and senior students. The Ross Institute has continued its work in India, Ceylon, and Kenya, where investigations on onchocerciasis in the East African goldfields are in progress; and arrangements have been made for a helminthological survey in Northern Nigeria. Sir Malcolm Watson has retired from the directorship. Research work undertaken includes experiments on the effect of insecticides on an East African tick, *Ornithodoros moubata*, comparative studies on the digestion and breakdown of haemoglobin in different blood-sucking insects and ticks; and an investigation of the chemistry and biochemistry of patulin. A large number of original papers were published during the year by members of the staff.

## Obituary

SIR JOSEPH ARKWRIGHT, M.D., F.R.C.P., F.R.S.

Joseph Arthur Arkwright, who died after a short illness at King's College Hospital on Nov. 22, became an eminent bacteriologist though he did not devote himself to the serious study of bacteriology until he was 40 years of age. During the earlier years of his professional life he was a general practitioner, and the experience gained in the practice of medicine beneficially influenced his subsequent researches.

Born in 1864, he was educated at Wellington, Trinity College, Cambridge, and at St Bartholomew's Hospital. He graduated M.B., B.Ch. in 1889 and became M.D. in 1895. After serving as house-physician at St. Bartholomew's and the Victoria Hospital for Children at Chelsea and as house-surgeon at the West London Hospital he embarked on private practice in Worcestershire in 1893. Arkwright was a good physician and successful in his practice, but after 10 years he developed an allergy to disinfectants causing an intractable eczema of his hands. This malady was so great a hindrance in general practice that he was obliged to abandon it. As he had a keen interest in natural history he decided to equip himself in bacteriology. To this end he applied to become a private research worker at the Lister Institute. His application was entertained, and in 1905 he joined a small band of research workers, which included A. E. Boycott and John Ledingham, in the bacteriological department under Prof. George Dean. Arkwright soon became a competent bacteriologist, showed a marked aptitude for investigation, and in 1908 was appointed one of the Institute's bacteriologists. He continued to enhance the reputation of the department by his discoveries for nearly thirty years.



In 1911 Arkwright joined the R.A.M.C. and was posted to Malta to take charge of the pathological laboratory of St. George's Military Hospital on the island. Returning to England in 1917 he devoted himself to the study of the aetiology of trench fever. He served on the Commission set up by the War Office to investigate this disease, under the chairmanship of Sir David Bruce, and was responsible for a section of its experimental work. In 1920 he was seconded for one year for special work to the Ministry of Agriculture's Committee on Foot-and-Mouth Disease. In January, 1922, at the request of the Egyptian Government, he went to Egypt with the late Arthur Bacot to make a study of typhus fever and its method of transmission. Both workers contracted the disease, and although his younger companion died, Arkwright recovered from a very severe attack, largely due to the nursing and care he received from his wife, who went to Egypt to nurse him. Returning to England in June, 1922, he was back on duty at the Institute in September of that year. He relinquished his position in 1927. Retirement, however, made little difference to his scientific activity. He retained his laboratory and was made an honorary member of the staff. He enjoyed the feeling that he need not come to the Institute unless he wanted to, but he came just the same. In latter years administration claimed much of his time and energy. He was a member of the Medical Research Council from 1930 to 1933 and of the Agricultural Research Council from 1931 to 1940. In 1926 he was elected to the Fellowship of the Royal Society, serving on the Council from 1931 to 1933, and in 1932 he succeeded Sir David Bruce as the Society's representative on the Governing Body of the Lister Institute. He was proud of this and gave valuable service in helping to guide its destinies. In 1937 he received the honour of knighthood in recognition of his public services.

Arkwright's researches in bacteriology covered a wide range. The best known are those on the variations of bacteria, on the aetiology and transmission of trench fever and of typhus fever, on the physical phenomena concerned in bacterial agglutination, and on immunity to, and the spread of, foot-and-mouth disease. In all these fields of investigation he left his mark, and in the case of the first four he was responsible for the articles on the subject in the *System of Bacteriology* edited by Fildes and Ledingham and published by the Medical Research Council in 1929-31.

In the early days of bacteriology, owing to lack of methods of procuring pure cultures, bacteria were supposed to be capable of extensive variations in morphology and properties. Under the influence of Koch the pendulum swung in the opposite direction, and they were regarded as immutable. The latter view, too, had soon to be modified. Variations in form, colony formation, fermentative powers, agglutinability, and virulence were discovered to occur, even when the culture was made from a single bacterium. Variations could be imposed but sometimes appeared to be spontaneous; some were reversible, others irreversible. Arkwright encountered the phenomenon of variability whilst investigating the properties of meningococci isolated from epidemic and sporadic cases. This was the first piece of bacteriological research upon which he embarked. The phenomenon of bacterial variation fascinated him. He continued to study it for more than 20 years, during which he made some conspicuous contributions to the subject. His chapter on bacterial variation in the *System of Bacteriology* is a scholarly exposition of the knowledge existing at that time by one fully conversant with biological principles.

The researches on trench fever were made when he was a member of the War Office Commission charged with the investigation of this disease. In them he had the advantage of the co-operation of his entomological colleague, Arthur Bacot. Trench fever had been proved to be transmissible by inoculation of a small amount of blood from patients suffering from the disease by McNee and others, and this had been confirmed by the American and British Commissions. Circumstances favoured the view that the infection was flea-borne. A small microbe named *Rickettsia quintana*, less than 1/2000 of a millimetre in diameter, had been discovered in the intestines of lice a few days after feeding upon patients. Microbes of a similar character had been shown to be associated with Rocky Mountain spotted fever and typhus, so that it was conjectured that *Rickettsia quintana* was the cause of trench fever. Arkwright and Bacot confirmed the statements that these small microbes appeared in lice after they had been fed on patients and that lice containing rickettsias could produce trench fever in volunteers upon whom they fed. They found, however, that the surest way to produce infection was to rub the intestinal content of the lice into the lightly scarified skin. The association of the infectivity of lice with the presence of rickettsia was proved by them with the use of lice, fed for many generations on Bacot, of which the intestines were free from rickettsia. As no other pathogenic microbes and no filterable virus could be discovered in infective lice it seemed probable that *Rickettsia quintana* was the causal agent of trench fever. Efforts to cultivate the parasite outside the intestine of the louse were terminated because, after demobilization of the Army, trench fever disappeared. Arkwright therefore transferred his attention to another louse-borne disease, typhus fever, the causation of which seemed also to be due to a rickettsia (*Rickettsia prowazeki*). The study of typhus could not, however, be undertaken in London with the same facility as that of trench fever. There were no cases available and human volunteers could not be used. He had to fall back on animal experiments, and, having obtained lice which had fed on typhus patients in Ireland, infected a monkey in London and passed the disease to other monkeys and to guinea-pigs. He subsequently used these animals for his experiments, but inoculation with material containing the infection of typhus produced only an uncharacteristic febrile illness in monkeys, rats, and guinea-pigs. The association of infection with the presence of rickettsias in the lice was found. Experiments on animals with human lice were often frustrated, however, because they didn't live long on a diet of animals' blood and, to keep them alive during the few days required for the rickettsias to multiply in the intestine, Arkwright and Bacot had recourse to rectal feeding of the lice with human blood! To avoid this difficulty, experiments on monkeys were made in which the small monkey louse was used. These told the same story of association between infectivity and the presence of *Rickettsia prowazeki* in the gut of the insect.

The handling of lice carrying the infection of typhus is a dangerous pastime, and a high proportion of research workers doing so have become infected and several have thus lost their lives. This danger did not deter either Arkwright or his intrepid colleague Bacot, and when, in 1922, they received an invitation from the Egyptian Government to investigate typhus fever in Cairo they accepted it with alacrity, as likely to afford them exceptional facilities for carrying on their work. For typhus was endemic there and recovered cases on which to feed their lice were available. They had not proceeded far with the investigation, however, when they both contracted the disease, of which Arthur Bacot died.

Arkwright's contribution to the study of foot-and-mouth disease began in 1920 when the Government decided to permit an investigation to take place in this country. A committee was formed by the Ministry of Agriculture to plan and direct the inquiry, and Arkwright accepted an invitation to join it. He undertook later the direction of part of the researches which it was proposed should be made with the employment of small animals at the Lister Institute. He had a small team to work under him and a suitable experimental animal was available, as guinea-pigs had been recently shown by Waldmann to be susceptible and their infection to be followed by sufficiently characteristic symptoms. Among the subjects on which valuable results were obtained were the plurality of the virus of foot-and-mouth disease in this country, immunity to different varieties, and the possibilities and limitations of enhancing resistance to infection by immunization with vaccines prepared in different ways. The survival of the virus in frozen carcasses and other materials, the viricidal action of heat, light, and chemical agents, and the susceptibility of a number of animals which might play a part in distributing the disease were also explored. These researches were published in a series of reports of the committee, and although Arkwright's name appears as joint author of but few of them, they owe much of their success to his inspiration and guidance. In 1931 he succeeded Sir Charles Martin in the chairmanship of the committee. From time to time Arkwright also contributed significant observations on the spread of diphtheria and cerebrospinal fever, and in 1912 he published *The Carrier Problem in Infectious Diseases* with Ledingham as co-author. It presented in readable form the existing knowledge of the part played by the human carrier in the spreading of the six infectious diseases on which the facts are accurately known.

Arkwright was a courteous and kindly person, remarkably modest of his own attainments. He possessed a keen sense of humour and, by his ability to see the humorous side of what were to others irritating occurrences, he avoided quarrels. He was unselfishly good to junior workers with him, and saw to it that they obtained more than their due share of credit for the results of researches inspired, planned, and guided by him. Indeed he possessed the Christian virtues in good measure and was an example to us all.

C. J. M.

H. C.

## HENRY BRIGGS, LL.D., F.R.C.S.

We have to record the death on Nov. 22 at Hoylake, at the age of 88, of Dr. Henry Briggs, for twenty-three years professor of midwifery and gynaecology in the University of Liverpool. To mark his long and valuable service in that chair the university made him emeritus professor in 1921 and conferred on him the honorary degree of LL.D. in 1934.

Henry Briggs, son of James Briggs, was born at Pilkington, Lancashire, and from Manchester Grammar School went to study medicine, first at Owens College and then at the University of Edinburgh, where he graduated M.B., C.M. in 1877. He learned his anatomy under Sir William Turner, winning a senior medal in that subject, and clinical surgery under Lord Lister, winning a medal and first prize. He returned to his native county as demonstrator of anatomy in the Liverpool Medical School, and remained in that city until his retirement from active work. He obtained the F.R.C.S.Eng. diploma in 1884 and lived to become one of the oldest Fellows on the list. His early appointments at the Liverpool Royal Infirmary were those of senior resident medical officer, surgical tutor, and anaesthetist, and he lectured for a time in surgery at University College, Liverpool. From that point onwards he devoted himself to obstetrics and gynaecology, becoming surgeon to the Liverpool Maternity Hospital and to the Liverpool Hospital for Women. In 1898 he was elected professor, and held that post until 1921. He founded a new teaching department in his specialty, and took deep personal interest in the building up of its pathological museum, to which he gave a great many specimens of educational value.

Prof. Briggs joined the British Medical Association in 1878, was an associate member of the North Wales Branch, and presided over the Section of Obstetrics and Gynaecology at the Annual Meeting held in Liverpool in 1912. He was also a past president of the North of England Obstetrical and Gynaecological Society and of the Obstetrical Section of the Royal Society of Medicine. He served for some years on the Central Midwives Board for England and Wales under the chairmanship of Sir Francis Champneys. With Edinburgh he kept in touch by acting as examiner in obstetrics for the university, and the Obstetrical Society of Edinburgh made him an Honorary Fellow. His published writings covered a wide range of subjects in his department.

## R. L. RAWLINSON, B.Ch.

We regret to record the death of Dr. R. L. Rawlinson, director of the radiological department of the Brompton Hospital. Rupert Lewis Rawlinson was educated at Cambridge and St. George's Hospital, qualifying in 1912. In addition to his appointment at the Brompton, he was honorary radiologist to the Victoria Hospital for Children, medical officer in charge of the electruthrapy department of the Royal National Orthopaedic Hospital, and consultant radiologist to the Ministry

of Health. A colleague writes: The death of Dr. R. L. Rawlinson has deprived us of a great radiologist. His experience was vast and his opinion on a "chest x-ray," though always delivered with characteristic modesty, was unrivalled. Many will recall the wise and humorous commentaries which were a feature of his daily sessions in the reporting room. For the past five years, since the outbreak of war, Dr. Rawlinson lived at the Brompton, where he was a much-beloved member of the residents' mess. Those who met him there will always remember his friendliness and his whimsical humour, which,

although often shrewd, was never unkind. He was reticent by nature, and only those who knew him well were allowed to glimpse the varied store of knowledge which his unassuming manner so often concealed. As a schoolboy he was interested in natural history, and this remained his chief recreation, he became an expert on alpine rock plants, British moths, and other kindred subjects. In his youth he was a mountaineer of no mean order and he was always a keen fisherman. A kindly, generous man with a great sense of humour, he had an abundant capacity for making friends. The news of his death will bring a sense of personal loss to many generations of old Brompton men, as well as to a host of others who were his comrades.

## Medical Notes in Parliament

### The Coming Session

On Nov. 28, in the Speech proroguing Parliament that day reference was made to the passage into law during Session 1943-4 of Bills providing for the rehabilitation of disabled persons, the building of houses, and the improvement of water supplies and sewerage in rural areas. The publication of proposals for a national health service and a comprehensive system of national insurance was also recorded.

On Nov. 29 the King opened a new Session. The Speech from the Throne said: "My Government intended that, as opportunity serves, progress should be made with legislation arising out of the proposals already made for a comprehensive health service, an enlarged and unified scheme of national insurance, a new scheme of industrial injury insurance, and a system of family allowances."

Measures embodying proposals for a national water policy were also promised.

During the debate on the Address in reply to the King's Speech Mr. ARTHUR GREENWOOD said many members were disturbed by the relegation of certain proposals to a category of those which should be dealt with "as opportunity serves." It was the House's duty to see that promises which had been made were implemented.

Mr. CHURCHILL said there was no question of postponing a Dissolution to carry legislation which, with the best will in the world, could not be carried this Session.

Sir CHARLES EDWARDS regretted that the King's Speech did not mention the health of the people. The Welsh death rate from tuberculosis was 751 per 1,000,000, which was still too high. The medical officer of health told him that for a hospital in Monmouthshire the waiting period was six months and for Monmouthshire people it was over three months. Children under 5 or of school age were in contact with persons

suffering from tuberculosis and awaiting institutional treatment. Of 250 awaiting admission, 42 shared their bedroom with another person.

### Manufacture of Penicillin

Mr. GEORGE GRIFFITHS on Nov. 29 raised the question of the manufacture of penicillin in the United Kingdom and the agreement of the British Government with the United States Government concerning it. He said penicillin was closely guarded. Priorities were given to five or six companies. Instead of the British Government taking over the control of the manufacture of insulin they had handed it to the United States and only 5% was made in this country. There was an agreement with the United States that the Forces should have penicillin first. He agreed, but said civilians should have it before German prisoners. In the West Riding County Council laboratory a Czechoslovak doctor had been able to manufacture pure penicillin and lost only 5%, though British manufacturers lost up to 45%. The West Riding County Council could not extend the laboratory and had asked the Ministry of Supply for facilities to do this. The Ministry said the council could continue the manufacture in its own way but must not supply the civil population with penicillin unless they were in West Riding County Council institutions. The council said the Ministry should allow penicillin to be given to anybody where medical officers said it was necessary. This penicillin laboratory was at Wakefield. Penicillin was also made in Bradford and Halifax, but was the "raw stuff" and could only be rubbed into the skin. Was it not time that the monopoly of five firms was ended and that everyone in the country who needed penicillin should be able to get it?

No reply was made by the Government.

### Ministry of National Insurance

When the committee stage of the Ministry of Social Insurance Bill was taken on Nov. 14, Mr. PETHERICK moved an amendment to alter the title to that of "Ministry of National Insurance." He said that the name "social insurance" did not mean anything, except that all insurance was to some extent bound up with society. Dr. RUSSELL THOMAS supported the alteration of the title. He said that the word "national" did stimulate some sort of patriotic spirit. He disliked the word "social" immensely because, he believed, it originated in Germany. Mr. Lloyd George borrowed his scheme from the social aspirations of the Germans, but he had the decency to call it "national insurance" when British doctors were going to refuse to work the scheme because of its obvious injustices.

Mr. PEAKE said that the Government included the word "social" because it had been current for many years in international usage. It was a matter, however, for the Committee, and the Government would accept the amendment.

Sir WILLIAM BEVERIDGE said that clearly "social security" was the title in the Atlantic Charter and was understood by people in this country and everywhere as the right title. He opposed the amendment.

The amendment was carried by 170 votes to 80.

Col. ELLIOT moved an amendment to ensure that the close connexion between treatment and payment which existed in Scotland should be continued there. The new steps about to be taken, he said, could be utilized by the existing Minister—the Secretary of State for Scotland. The control of all the great amount of insurance money would pass from Scotland if the Bill went through in its present form. Sir WILLIAM JOWITT, opposing the amendment, said that the object of setting up the Ministry was to make one Minister solely responsible for the various forms of social insurance. If the amendment was accepted a complete division of authority would result. The new Ministry must work on the main principle of devolution. It must decentralize, and leave, so far as possible, Scottish officers sitting in Scotland to deal with Scottish problems with the very minimum of interference from and reference to England. If, for example, an epidemic was breaking out in one of the great cities of England or Scotland, there was at present no means by which the approved societies could communicate with the Ministry of Health. If there were a co-ordinated system of paying sickness benefits on the faith of doctors' certificates, he hoped they would have a Department which would see that these statistics were analysed and checked, so that useful information could be obtained. The Department would be run in collaboration between the Minister of National Insurance and the Secretary of State for Scotland, so that the Ministry of National Insurance could give the Secretary of State what the latter had never been able to have before—the mass of information which came from the payment of sickness benefit, as it must be, on doctors' certificates. It might be that a large number of people in a particular area were getting benefits at a particular time. That

would at once be a pointer, and the medical officer would look into it to see what was the matter. That was something they could not do to-day. The amendment was negatived by 221 votes to 26.

Sir HERBERT WILLIAMS moved an amendment, which, he said, raised the question whether they were going to separate entirely the responsibility for medical benefit from that for cash benefit. The Committee should think before it decided that the right place for medical benefit was outside the scope of the Minister of National Insurance. The Minister should take with him the administration of medical benefit. Dr. MORGAN opposed the amendment. He said that the question of medical benefit was purely a health matter. They could not separate curative and preventive medicine. He wanted to be sure that under the regulations and procedure with regard to medical certification there should be consultation between the two Departments, so that the Minister of National Insurance would not have the power alone to make regulations and decide exactly what medical certification had to be done. The doctors should be free to certify, according to their conscience and their own ideas, within the accepted limits of the ordinary medical procedure with regard to prescribing.

Sir WILLIAM JOWITT said the Government could not accept the amendment. It was desirable that the distinction between medical benefit, which meant medical treatment and assistance, and sickness benefit, which meant periodical payments of sums of money after certification by a doctor, should be drawn in the most emphatic way at the earliest time.

The amendment was withdrawn.

The committee stage was concluded, and the Bill read the third time. Sir William Jowitt said it would be an enormous task to get the Security Bill ready. It was by no means true, as he had heard it said, that it was nearly ready. He would do his utmost to see that no undue time was lost in getting on with the job.

#### Medical Services in Jamaica

A report is expected shortly from a committee, under the chairmanship of Sir Alexander Russell, which has been set up to review the medical and health position of Jamaica, to consider the reorganization of the administration of the medical and health services, and to make recommendations. No application has reached Col. Stanley from Jamaica for assistance to promote improved medical services.

On Nov. 14 Sir E. GRAHAM-LITTLE asked the Secretary of State for the Colonies whether he was aware that licences to import penicillin into Jamaica had been withheld on the advice of the British Mission in Washington, and what steps he proposed to take to ensure that people in Jamaica might obtain urgently needed supplies. Col. STANLEY replied that licences to import penicillin commercially were doubtless withheld by the Government of Jamaica in accordance with the conditions which had to be imposed in order to ensure that the limited supplies which could be released for civilian purposes were used to the best advantage. Use had to be restricted to centres where adequate facilities existed for controlled clinical trial. To ensure that all supplies reaching the Colony were so used, it was arranged that imports should be through Government channels. As, however, the Jamaica Government encountered some difficulty in obtaining supplies, interim arrangements had been made for an emergency supply to be sent to Jamaica commercially.

#### Vitamins for Prisoners of War

On Nov. 28 Major McCALLUM asked the Secretary of State for War whether adequate steps were being taken through the Red Cross authorities to supply to our prisoners of war in Germany, other than those in hospital, the essential requirements in vitamins which were lacking in the low diet afforded by the German Government, particularly now that the supply of Red Cross food parcels had had to be reduced to half a parcel a man a week. Sir JAMES GRIGG said that the composition of the standard food parcels sent out by the British Red Cross Society and Order of St. John was designed and was reviewed by experts in nutrition in relation to the rations issued by the detaining Power. All practicable steps were being taken to restore the normal flow of Red Cross parcels, and it was hoped that the full issue of parcels might be restored shortly. His medical advisers informed him that the reduction in the issue of parcels was unlikely, unless unduly prolonged, to prejudice materially the health of the prisoners. Major McCALLUM asked if it was a fact that the parcels containing vitamin supplies went only to the men in hospital and not to the men who were not in hospital and who for long years had suffered from lack of vitamins C and D. Sir JAMES GRIGG said that extra vitamins were included in the parcels for sick prisoners, but food sent to the ordinary prisoners contained a supply of vitamins in the normal way.

#### Release of Medical Student from Navy

On Nov. 28 Sir E. GRAHAM-LITTLE asked the First Lord of the Admiralty if he would consider for release from the Royal Navy a medical student who volunteered for the Royal Navy in 1940 when he had nearly completed his studies for the second examination of the medical degree, but was now anxious to finish his course and assist his father, an overworked medical practitioner, or if he would secure priority of demobilization for this student. Mr. A. V. ALEXANDER replied: No, Sir. I am afraid it is not possible to give any special preference to medical students for release from the Royal Navy. While I appreciate the motives which prompted this young man to join up at a time when he was reserved, there are so many students serving in the armed Forces whose studies have been interrupted by the war that it is not possible to give any of them exceptional treatment. The position has not been overlooked, however, in connexion with the various Government schemes for resettlement and further education.

## Universities and Colleges

### UNIVERSITY OF CAMBRIDGE

Charles Robert Harington, M.A., Ph.D., F.R.S., Director of the National Institute for Medical Research, has been elected an Honorary Fellow of Magdalene College.

At a Congregation held on Nov. 21 the degree of M.D. was conferred upon A. B. MacGregor, G. W. Harris, and I. R. S. Gordon.

### UNIVERSITY OF WALES

#### THE WELSH NATIONAL SCHOOL OF MEDICINE

The following candidates have satisfied the examiners at the examination indicated:

M.B., B.Ch.—*Medicine*: Julia P. Gibbs, Sarah M. Lewis, B. H. McCracken, J. E. T. Sobey, M. J. Tanner, J. W. Thomas, P. H. Thomas, W. H. Williams.

### SOCIETY OF APOTHECARIES OF LONDON

The Society of Apothecaries of London announces that Brig. Lionel E. H. Whitby will deliver a lecture on "Blood Transfusion in Peace and War" at Apothecaries' Hall, Black Friars Lane, Queen Victoria Street, E.C., on Tuesday, Dec. 19, at 2.30 p.m. Members of the medical profession and senior students are cordially invited.

Applications are invited for the Gillson Scholarship in Pathology, which is awarded for the encouragement of original research in any branch of pathology and is open to candidates under 35 years of age. The scholarship is of the value of £105 per annum. Regulations may be obtained from the Registrar, Apothecaries' Hall, Black Friars Lane, Queen Victoria Street, E.C.4.

## Medical News

The Pathological Society of Great Britain and Ireland and the Biochemical Society will hold a joint discussion meeting at the Royal Society of Medicine, 1, Wimpole Street, London, W., on Saturday, Dec. 16, at 11 a.m. The subject for discussion is cancer.

Sir Ambrose Woodall, F.R.C.S., has been given his portrait in oils and a cheque for £500 in recognition of 25 years' service as senior resident surgeon at the Manor House Hospital, Golders Green, London. Mr. A. V. Alexander, First Lord of the Admiralty, who is president of the hospital, made the presentation.

On Nov. 28, after a six-days trial at the Old Bailey, Alva Delbert-Evans, M.B. Toronto, aged 63, with addresses in the West End of London, was found guilty of conspiring with intent to procure abortion, and of having performed illegal operations on two women. William Spence Lewis, aged 73, described as a surgeon of Staines, Middlesex, and Redcliffe Gardens, Earl's Court, who, with two women defendants, pleaded guilty to conspiring to procure abortion and who also pleaded guilty to using an instrument or other means to procure the miscarriage of six women, asked for thirteen other offences, twelve of which were of a similar kind, to be taken into consideration. In March, 1942, Lewis was sentenced at Surrey Assizes to three years' penal servitude for performing illegal operations on women with intent to procure miscarriage; but after serving fifteen months of that sentence he had been released on a Home Office order on medical grounds, his heart being affected. Mr. Justice Hilbery now sentenced him to three years' penal servitude, saying that but for the defendant's advanced age and infirmity he would have imposed a heavier sentence. He sentenced Dr. Delbert-Evans, who was alleged to have sent women to Lewis for treatment, to five years' penal servitude. One of the two women defendants was sentenced to imprisonment for six months and the other bound over.

A meeting of the Diagnosis Section of the Faculty of Radiologists has been arranged for Friday, Dec. 15, at 2.30 p.m. at 32, Welbeck Street, W., when a paper by Dr. Peter Kerley on the non-tuberculous lesions detected by mass radiography will be followed by discussion. Other radiological meetings to be held about this date are: British Institute of Radiology, 32, Welbeck Street, Dec. 14, 8 p.m., papers on intervertebral disk lesions, and Dec. 15, 5 p.m., medical members' meeting.

Brig. George Macdonald, M.D., DPH, DTM, has been appointed director of the Ross Institute of Tropical Hygiene, London School of Hygiene and Tropical Medicine, and will take up this post on his release from military service. He studied medicine at the University of Liverpool and has carried out research work on tropical diseases in West Africa and other places. He was appointed assistant director of the Ross Institute in 1939, and joined the R.A.M.C. on the outbreak of war.

## The Services

Temp Acting Surg. Lieut.-Cmdr C. P. Bailey, R.N.V.R., has been mentioned in dispatches. This name appears in a list of awards for gallantry, skill, determination, and undaunted devotion to duty during the landing of Allied Forces on the coast of Normandy.

Col. J. P. Huban, O.B.E., I.M.S., V.H.S., has been appointed Honorary Surgeon to the King in succession to Major-Gen. H. Stott, C.I.E., O.B.E., I.M.S. (ret.).

### CASUALTIES IN THE MEDICAL SERVICES

Killed in action—Capt Paul Sabel Adler, Capt Charles Stewart Ross London, R.A.M.C.

Previously missing at Arrhen, now officially reported died of wounds—Capt Brian Browncombe, G.M., R.A.M.C.

Previously missing at Arrhen, now officially reported prisoner of war—Capt W. I. S. Hudleston, R.A.M.C.

### EPIDEMIOLOGICAL NOTES

#### Discussion of Table

In England and Wales notifications of infectious diseases exceeded those of last week by the following figures: measles 49, scarlet fever 203, whooping-cough 113, acute pneumonia 3. There were 103 fewer cases of dysentery, and 23 fewer of diphtheria.

The incidence of scarlet fever in Lancashire went up by 07. Whooping-cough notifications in Yorks West Riding were 14 higher than last week. In contrast to the general trend, Durham reported a rise of 21 in diphtheria notifications. The rise in the incidence of measles, 249, was the smallest recorded or eight weeks. The counties with the greatest increase in his disease during the week were Yorks West Riding 97, Cheshire 96, Staffordshire 88, Devonshire 71, Yorks North Riding 62; a considerable fall was recorded in Lancashire 02, and Southampton 51.

Although dysentery remains at a relatively high level, 217 cases, the total is the smallest for the past fourteen weeks. The chief returns were London 33, Lancashire 27, Essex 23, Yorks West Riding 20, Middlesex 16, Glamorganshire 12, Gloucestershire 11.

Eighteen cases of paratyphoid fever were notified during the week, the largest weekly total since January, 1943. Twelve of these cases occurred in Middlesex, Heston and Isleworth M.B.

In Scotland measles notifications fell by 34, diphtheria by 9, and dysentery by 12; those for whooping-cough rose by 7. The largest returns for dysentery were Glasgow 36, Edinburgh 17, Renfrew County 10.

In Eire the chief feature of the returns was a rise in whooping-cough from 16 to 60. This disease was mainly notified in three areas: Dublin C.B. 23, Wicklow County, Wicklow U.D. 12, and 14 in the Rural District.

In Northern Ireland the high level of measles fell during the week by 16 cases; but the total for scarlet fever went up by 100. Of the 191 cases of measles 187, and 45 of the 90 cases of scarlet fever, were notified in Belfast C.B.

#### Week Ending November 25

The returns of infectious diseases in England and Wales during the week included: scarlet fever 2,350, whooping-cough 388, diphtheria 616, measles 7,137, acute pneumonia 755, cerebrospinal fever 41, dysentery 380, paratyphoid 1, typhoid 4, poliomyelitis 10.

## INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended Nov. 18.

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year, for (a) England and Wales (London included) (b) London (administrative county) (c) Scotland (d) Eire. (e) Northern Ireland.

Figures of Births and Deaths, and of (a) The 126 great towns (b) London (administrative county) (c) The 13 principal towns in Eire (d) Eire (e) Northern Ireland.

A dash — denotes no cases, a blank space denotes disease not notifiable or no return available.

Disease	1944					1943 (Corresponding Week)				
	(a)	(b)	(c)	(d)	(e)	(a)	(b)	(c)	(d)	(e)
Cerebro-spinal fever Deaths	45	3	19	2	2	51	2	26	3	2
Diphtheria Deaths	619	20	171	110	29	705	40	175	135	27
Dysentery Deaths	217	33	88	—	—	176	49	59	—	7
Encephalitis lethargica, acute Deaths	2	—	2	—	—	2	—	—	—	—
Erysipelas Deaths	—	—	62	15	2	—	—	50	13	5
Infective enteritis or diarrhoea under 2 years Deaths	55	3	7	29	3	39	1	11	24	2
Measles* Deaths	6,001	65	311	34	191	556	49	48	43	3
Ophthalmia neonatorum Deaths	62	6	19	—	—	74	3	20	1	—
Paratyphoid fever Deaths	18	1	(B)	—	—	4	1	2	—	—
Pneumonia, influenza (from influenza) Deaths	626	15	7	4	4	978	73	20	6	1
Pneumonia, primary Deaths	33	1	4	1	—	106	10	32	—	3
Poliomyelitis, acute Deaths	—	—	233	26	10	—	—	298	21	11
Poliomyelitis, acute Deaths	2	—	—	—	—	—	—	—	—	—
Poliomyelitis, acute Deaths	12	1	2	1	—	8	1	1	1	—
Puerperal fever Deaths	—	2	12	1	—	—	1	18	—	—
Puerperal pyrexia† Deaths	127	8	11	2	1	134	7	13	7	3
Relapsing fever Deaths	—	—	—	—	—	—	—	—	—	—
Scarlet fever Deaths	2,335	56	357	37	90	3,098	258	356	35	90
Smallpox Deaths	—	—	—	—	—	—	—	—	—	—
Typhoid fever Deaths	7	—	2	13	1	8	—	2	12	2
Typhus fever Deaths	—	—	—	—	—	—	—	—	—	—
Whooping-cough* Deaths	1,410	46	116	60	13	1,566	151	233	64	20
Deaths (0-1 year) (Infant mortality rate (per 1,000 live births))	366	23	66	30	25	323	37	64	51	31
Deaths (excluding still births) Annual death rate (per 1,000 persons living)	5,099	747	663	154	146	4,934	742	727	225	137
Live births Annual rate per 1,000 persons living	6,507	584	927	337	295	5,562	685	809	28	274
Stillbirths Rate per 1,000 total births (including stillborn)	223	18	29	—	—	216	27	20	—	—

\* Measles and whooping-cough are not notifiable in Scotland, and the returns are therefore an approximation only.

† Includes primary form for England and Wales, London (administrative county), and Northern Ireland.

‡ Includes puerperal fever for England and Wales and Eire.

§ Owing to evacuation schemes and other movements of population, birth and death rates for Northern Ireland are no longer available.



## Letters, Notes, and Answers

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### ANY QUESTIONS?

#### Some Congenital Malformations

**Q.**—What, if anything, is known of the causes of congenital malformations—e.g., cleft palate, talipes, supernumerary digits? What advice on having further children should one give to parents whose history is as follows: Husband aged 38, healthy; wife aged 37, healthy. First child, boy aged 7 years, has right inguinal hernia, flat feet, and a hairy patch of skin on his back. Two miscarriages followed at about 3 months gestation. Fourth pregnancy—a boy now aged 3 years who is healthy but has a slight squint. Fifth pregnancy a girl born 4 weeks premature, died after 12 hours with the above-mentioned congenital malformations. Naturally the parents are anxious to know what are the chances of having a normal child if the wife becomes pregnant again.

**A.**—Cleft palate is often inherited, but opinions differ as to the mode of inheritance. It is probably determined by two recessive genes. Talipes equinovarus is inherited as a recessive in some families, but may be due to pressure *in utero*. There are various types of supernumerary digits; the commonest, an extra digit on the ulnar side, is inherited as a recessive, but it also occurs in association with other abnormalities, such as acrocephalosyndactyly. An extra digit on the radial side is usually inherited as a dominant. I do not know an inherited condition in which all these defects occur together. It is unlikely that there is a genetic relationship between any of them and inguinal hernia, flat feet, and a hairy patch on the back which presumably is over the site of a spina bifida occulta, or squint, although all these may be inherited. It is quite impossible to say what the chances are that another child will be normal, but with such a family history I should advise the parents to have no more children.

#### Threadworms in an Adult

**Q.**—A married woman aged 24 with pulmonary tuberculosis has had very severe threadworm infestation which resists usual medical treatment and is unaffected by appendicectomy. The discomfort is so severe that she is losing sleep and weight. Any advice you can give about treatment will be much appreciated.

**A.**—Medicinal treatment for threadworm infestation is alone inadequate. The gravid female worms emerge from the anus to lay their innumerable eggs on the external skin, and it is the constant reinfection by swallowing these eggs which is responsible for the continuance of the infestation. The adult worms live only 2 to 3 months and do not multiply in the gut. The chain of reinfection must be broken by frequent attention to personal hygiene, and also by rigid precaution against contamination of clothing, towels, bed linen, etc. The use of tight-fitting drawers to prevent scratching and infection of the nails, and of linen which can be boiled daily, will do much to lessen this risk and ultimately to eradicate the infection.

#### Right Radial Nerve Palsy

**Q.**—Shortly after landing in Normandy in June I was confronted, within 10 days, with two cases of right radial nerve palsy. Both men reported that on awakening in their slit trench they were unable to extend the right wrist. On examination, the extensors of the wrist and the brachia-radialis muscle were paralysed, there was tenderness over the musculo-spiral groove of the humerus, and an indefinite area of anaesthesia over the dorsum of the hand. Neither case showed any improvement after several days, so were evacuated. Is this a common condition? What are the pathology, prognosis, and treatment?

**A.**—It is almost certain that these men were suffering from a pressure paralysis of the radial nerve, akin to the variety that was said to occur especially on Saturday nights. Usually the nerve does not degenerate and the electrical reactions of the affected muscles remain unchanged (if degeneration has occurred faradic excitability

disappears between the 14th and 20th days after injury). Where this is the case the prognosis is excellent and no treatment is required, apart from maintenance of the mobility of the hand. The odd thing is that recovery may be delayed for as long as 5 to 6 weeks: then it progresses rapidly and is ultimately perfect. Recently, Denny Brown of Harvard has shown that the characteristic lesion in this non-degenerative type of paralysis (which the Oxford workers have christened *neurapraxia*) is a sharply localized demyelination. Perhaps this explains why the motor paralysis is usually more profound than the sensory; the motor fibres are larger and more richly myelinated than those concerned with cutaneous sensibility. And the delay before recovery may perhaps be due to tardy reconstitution of the myelin sheaths. The axons also undergo a histologically demonstrable change, but they do not lose their continuity and there is no true Wallerian degeneration.

It is also just possible that these men were suffering from one form of the obscure neuritis that has appeared from time to time in every theatre of war. The pathology of this condition is unknown and the prognosis is uncertain. But this explanation seems a little unlikely in view of the well-recognized liability to compression of the musculo-spiral nerve and of the fact that these men passed a night in a slit trench.

#### Regional Ileitis

**Q.**—What are the present views on the aetiology and pathology of regional ileitis, or Crohn's disease? What are the symptoms and treatment?

**A.**—Though the cause of regional ileitis is unknown, the disease is classified with disorders of the reticulo-endothelial system, since the earliest and most constant change is hyperplasia of the lymphadenoid tissue of the bowel wall and regional lymph nodes. The theories that it is due to tuberculosis or some other infective agent, or that it may be a manifestation of Boeck's sarcoid, are not proven. The cardinal clinical features are abdominal pain, loss of weight, and general debility; the signs of chronic intestinal obstruction; and a palpable mass either in the right iliac fossa or, more usually, in the pelvis. Barium x-ray studies show a long filling defect in the terminal ileum—the so-called "string sign." An x-ray examination of the chest is essential in making a differential diagnosis. The ideal treatment is primary resection with wide excision of the mesentery. This often means removal of the right side of the colon as well, but it depends on the extent of the oedema and thickening of the bowel-wall. In cases complicated by fistula formation the operation may have to be done in stages. The results of excision, both immediate and remote, are excellent. (See Hadfield and Garrod, *Recent Advances in Pathology*; and *St. Bart's Hosp. Rep.*, 1939, 72, 181).

#### Local Anaesthesia for Thoracoplasty

**Q.**—What is Magill's modification of Symb's (Stockholm) local anaesthetic technique for thoracoplasty?

**A.**—We are not aware that Dr. Magill has published any article under this heading, but the usual technique at the Brompton Chest Hospital (to which he is attached) is briefly as follows. For the first stage (upper) thoracoplasty, after adequate premedication, the patient is placed on his back and supraclavicular brachial plexus block performed, a mixture of 0.5% procaine, 1 in 1,000 amethocaine, with the addition of 1 in 250,000 adrenaline, being used. The patient is then turned on to his sound side and the line of incision is deeply infiltrated with half-strength solution (1 in 2,000 amethocaine and 0.25% procaine). Some of this solution is also injected under the posterior border of the scapula. Posterior thoracic nerve block corresponding with the ribs to be removed can be done at this stage, but is usually left for the surgeon to perform under vision when the flaps are raised. Subcuticular wheals for the reception of the towel clips are then raised. Anterior intercostal block was practised at one time but is now usually omitted as unnecessary. For second-stage thoracoplasty, the brachial plexus block is not required.

#### Failure to Ovulate

**Q.**—Is it a fact that in some women sterility is due to failure to ovulate? Assuming that there is no organic disease of the ovary, what would be the cause of this condition? Is there any means of deciding whether a woman ovulates or not? How can this condition be treated?

**A.**—It is an undoubted fact that sterility may be caused by failure to ovulate. As it is not known for certain what causes ovulation to take place it is difficult to say what causes this condition, though it is generally assumed that it is due to some defect or disorder of the anterior lobe of the pituitary. Evidence of ovulation and of the corpus luteum formation can be obtained by biopsy of the endometrium during the week preceding menstruation or on the first day of the menstrual period. A sample of the endometrium is easily obtained with a suction curette, and no anaesthetic is needed for this simple operation. After fixing and staining, the endometrium is examined microscopically for evidence of the secretory changes which indicate the presence of an active corpus



luteum. The most important of these is "ferning" of the endometrial glands. It must be remembered that periodic uterine bleeding, simulating menstruation, can occur in the absence of ovulation.

In cases of sterility due to failure of ovulation, an attempt can be made to stimulate the ovaries. Small doses of x rays to the pituitary and ovaries have been tried, and some successes have been claimed. Alternatively, some pituitary preparation may be used, and this is the most logical method of treatment in these cases. A new product, which is a combination of follicle-stimulating hormone from the anterior pituitary and luteinizing gonadotrophic hormone from pregnancy urine, has been found to have a profound stimulating effect on the ovaries. Mazer and Ravezt (*Amer. J. Obstet. Gynec.*, 1941, 41, 474) found that two women out of eight treated with this product for sterility, caused by failure of ovulation, conceived soon after treatment. Great care is necessary in its use owing to its very powerful effect.

#### Autohaemotherapy for Asthma

**Q.**—Why does injecting a patient's own blood intramuscularly have a good effect upon an asthmatic patient? I tried this recently with a tuberculous patient who suffers from asthma, and it did him good.

**A.**—Autohaemotherapy and auto-serotherapy are on occasion employed in the treatment of allergic skin conditions, especially eczema and urticaria; and usually only in asthmatics who (a) resist other forms of treatment, or (b) have a cause that is unknown or cannot be determined, and the attacks are thought to arise from substances occurring or manufactured in the body—for example, the treatment of menstrual asthma with serum derived from autogenous blood withdrawn during the premenstrual stage. Any improvement is usually of short duration.

It is thought that the blood in destruction liberates certain substances which on their own or on conjugation with other body proteins act as foreign substances and in some way alter the reactivity of the patient. Others consider that the blood contains the specific allergen and that the systemic administration of the minute quantities of this allergen present in the blood stimulates the production of specific antibodies. Hence it is thought that better results are likely to occur when minute quantities (0.1 ccm. intracutaneously or 1.0 ccm. subcutaneously) each 2 days for 12 injections are given than, say, injections 10 to 30 ccm. intramuscularly once a week. Unfortunately for this suggestion it has been shown that blood or serum derived from a non-allergic person can lead to equal immediate temporary improvement.

With our recent improvements in the determination of and testing for specific causes the number of cases with indeterminable origins lessens and the doubtful temporary beneficial effects of autohaemotherapy are less often sought.

#### Rammstedt Operation

**Q.**—What is the condition found at the junction of the stomach and duodenum some months or years after the Rammstedt operation has been performed?

**A.**—The writer's experience of the conditions found at the pylorus some time after a Rammstedt operation is limited to two cases—one three weeks after operation and the other after an interval of six months. In the first the infant died of an attack of D and V, while still in hospital, and in the second the cause of death was an intercurrent condition; the result of the operation had been excellent. In both, the pyloric region was quite free from adhesions, and the oval scar over the front of the pylorus was very thin and tissue-paper in type. There was, however, no herniation of mucosa. The ridges left by the cut muscular edges could still both be seen and felt. The surprising feature was that the result at the end of three weeks looked almost the same as that after six months, except for a little more smoothing of the edges in the latter. Although I have several cases operated upon over twenty years ago which have been seen and appear to be in good health, no opportunity has occurred of exposing the exact state of affairs. In one of these cases a barium meal showed some irregularity of the pyloric canal, but not sufficient to enable the condition to be recognized had the previous history not been known.

#### Senile Softening of Vertebrae

**Q.**—A patient, female, aged 69, is suffering pain in the back. X-ray examination shows a senile softening of the vertebrae causing pressure on the nerve roots. Is there any treatment for this condition?

**A.**—Senile softening of the vertebrae can be a serious disability in advancing years and treatment is difficult. To promote better calcium assimilation is a primary object, for which purpose irradiation with ultra-violet rays is desirable, combined with the administration of calcium and vitamin D, preferably parenterally, as the oral route is often ineffective in these cases. Support for the spine is essential to prevent the increasing kyphotic tendency, and rest in

bed on a firm mattress is desirable as a general principle but is often badly borne by the aged and can then be adopted only for part of the day. A well-fitting spinal brace or corset should be worn when up. For the immediate relief of the pain caused by pressure on the nerve roots injection of procaine, 1% in saline, may be effective, 10 ccm. or more being injected round the affected nerve roots at their emergence from the spine, and with this may be combined infra-red irradiation and light massage.

#### X Rays for Herpes

**Q.**—What is the value of x rays in the abortion or treatment of herpes?

**A.**—Small doses of x rays are valuable in the treatment of recurrent herpes simplex, where the same area is constantly involved. They have little or no abortive effect on the actual lesion.

#### Subcutaneous Swellings

**Q.**—A woman aged 61 has for two years suffered from painful swellings of 2 to 5 days' duration in the subcutaneous tissues of hands, wrists, ankles, feet, and sometimes of the thighs, knees, and legs. They are at first small and tense, and then spread to a diameter of 4 to 5 inches. There is no heat or redness. Often one succeeds another rapidly so that the hands are nearly always swollen. Oedema is present at the height of an attack; later there is a soft, tender, ill-defined swelling without oedema. The pain and stiffness cause considerable disability. Sometimes there is slight bluish discoloration at the centre. Occasionally the hands return to normal. Blood pressure 100 mm. systolic B.S.R. 9 mm. in 1 hour. Urine, x-ray of hands, blood count, electrocardiogram, all normal. Haemoglobin 70.85%, unless taking iron. The patient, agnally alert and active, is easily fatigued, and is very sensitive to extremes of temperature. The condition followed acute cystitis, which was cured by sulphapyridine. Constipation is extreme, and a colonic irrigation was followed in a few hours by an unusually severe outbreak.

**A.**—The attacks are suggestive of sensitization to a foreign protein or a micro-organism. Skin tests should therefore be performed and search made for septic foci. The patient may also be tested for sensitivity to the bacteria present in her mouth, nose and throat, stools, etc. If no specific cause is found, non-specific desensitization may be attempted, preferably with injections of whole blood. The blood is withdrawn from a vein in the arm and injected intramuscularly. It is usual to give a series of six injections at intervals of 5 to 7 days; the amounts injected are 5, 6, 7, 8, 9, and 10 ccm. A radical change of diet is often successful, particularly a lacto-vegetarian regimen with added lactose or rice-starch to promote an acidophil flora in the stools. Unfortunately this is difficult to manage in wartime. General sedation may also be of value, such as a nightly dose of barbiturate if the patient is not sleeping well.

#### Water-tolerance Test and Pituitary Function

**Q.**—Is a water-tolerance test of much value in estimating pituitary function? Can you give details of the method of applying and interpreting the test?

**A.**—The water-tolerance test of Volhard is that most commonly used. The patient drinks one litre of water within one hour in the early morning. During the following four hours he micturates at intervals of half an hour. In health practically the whole litre is excreted within two hours. If a patient does not excrete the whole amount, water retention can be diagnosed but no information is given about the cause of the retention. In most cases it is cardiac or renal. A poor excretion is also shown by many obese patients whose cardiac and renal functions are normal. Signs of endocrine and autonomic imbalance often accompany the obesity in such cases, and it is tempting to postulate a lesion in the diencephalon, where centres regulating water and fat metabolism and pituitary function exist. The whole question of fluid metabolism is, however, still obscure, and in the presence of so many variables it would be unsound to regard Volhard's test as a test of pituitary function.

#### Penicillin and Disseminated Sclerosis

**Q.**—Have therapeutic trials been made on the value of penicillin in disseminated sclerosis? One theory about this disease is that it is due to a spirochaete, against which, presumably, penicillin would be effective.

**A.**—We know of no reports on the treatment of disseminated sclerosis with penicillin, either in this country or even in the U.S.A., where clinical research on penicillin has been on a wider scale and included a greater variety of conditions, some rather unpromising. Whether the treatment of disseminated sclerosis has any prospect of success certainly depends on the truth or otherwise of the spirochaetal hypothesis in connection with this disease, and most will agree that this is rather too slender a thread to support much weight. But everything is worth trying once, and it seems justifiable, if supplies allow, to treat a disease of completely unknown aetiology, always provided that it has characters compatible with an infective origin.

## Spread of the Common Cold

**Q.**—Is the common cold spread by fomites? What is the risk of infection from making the bed of a person who has a cold, and would it be diminished by wearing a mask?

**A.**—It is not possible to give an unequivocal answer to the first part of this question. There is good evidence that the common cold is due to a filterable virus, since men and monkeys have been infected by filtered nasopharyngeal washings from "colder" persons. But artificial cultivation of the virus is extremely difficult, and successful propagation by this means has been claimed by only one team of workers. We are therefore ignorant of the biological properties of the cold virus, including its resistance to natural drying. However, circumstantial evidence suggests that it may survive for a time outside the body. Bliss and Long found that monkeys in strict isolation became infected through food prepared by an individual with a cold. Influenza virus remains viable in the air of a room for some hours and on fabric for some days, so it seems possible that the cold virus will do the same.

Blanket dust has proved to be a source of infection with respiratory bacterial pathogens, and therefore it seems not unlikely—although there is no proof—that an individual inhaling dust from the bed-linen of a "colder" person may become infected in this way. Protection against infection by wearing a mask is possible if the mask is efficient—i.e., it must fit pretty closely to the face and must not allow the passage of fine dust. A mask of the snout design, made of six layers of butter-muslin or of gauze with a 42 by 42-strand mesh largely fulfils these requirements. Repeated laundering improves the efficiency of the mask by narrowing the interstices of the mesh. The transmission of the common cold is very well discussed by Browning in *Control of Common Fevers*.

## Scalenus Anticus Syndrome

**Q.**—How is the scalenus anticus syndrome diagnosed and treated? How exactly is elevation of the arm for purposes of testing of cervical rib (or other pressure on the subclavian vessels) attempted?

**A.**—The term "scalenus anticus syndrome" is misleading. It originated in the United States and was first used for a group of cases presenting the clinical picture of cervical rib but in which no cervical rib could be demonstrated. The application of the words "scalenus anticus" to this group of symptoms was due to the fact that Adson and Coffey (1927) had clearly demonstrated the influence of the scalenus anticus, particularly in the matter of treatment of a typical cervical rib. Tenotomy of this muscle, by giving more room for the brachial plexus, would relieve the symptoms associated with a cervical rib and render excision of the cervical rib unnecessary.

It is rather a pity that Ochsner and his co-workers (1935) used the term "scalenus anticus syndrome," for, as Freiberg (*J. Bone Jt. Surg.*, 1938, 20, 860) later showed, it has distracted attention from the causal factors of postural relaxation and brachial plexus drag, from traumatic and arthritic lesions of the cervical spine and shoulder girdle, etc. Furthermore, enough notice has not been paid in the United States to the work of Telford and Stopford (*Brit. J. Surg.*, 1919, 7, 168; 1931, 18, 557), who have analysed the variations in the lowest trunk of the brachial plexus, the occasional separation beneath it of sympathetic fibres in a separate bundle, and the influence of this upon vascular symptoms distally. Other recent work has shown the important part which cervical intervertebral disk lesions may play in the production of this group of symptoms, which in many ways bears a striking similarity to sciatica. The work of other British neurologists is in this connexion well worth mentioning—e.g., Walshe, in the *Lancet* (1944, 2, 173).

I therefore prefer not to refer to any such thing as a "scalenus anticus syndrome." There are a variety of symptom complexes related to the brachial plexus and subclavian vessels of which a careful analysis must be made and for which causes must be sought at least as high as the spinal-cord segments concerned. In a downward direction the search should not end at the scalenus anticus or first rib, but should include lesions anywhere in the upper extremity which may fix or lower the shoulder girdle. Certain it is that undue attention to the scalenus anterior muscle may lead to premature surgical attack upon it when more conservative measures may suffice to relieve the patient. It is the same thing, of course, with sciatica in which knowledge of the influence of intervertebral disk protrusion has caused many surgeons to lose a sense of proportion.

To say, therefore, what the treatment should be would require a lengthy article and would cover a big field of psychology, orthopaedics, rheumatology, and neurosurgery; and for which a few lines at the end might be devoted to tenotomy of the scalenus anticus—a procedure which may allow a little more room for the constituents of the lowest trunk of the brachial plexus. Elevation of the patient's arm by the examiner should be done with the patient sitting and in recumbency. It is useful to do it in straight abduction and also combined with external rotation of the shoulder of varying degrees, changes in the arterial pressure being estimated

by palpation at the wrist or by a sphygmomanometer in the different positions of the limb. Explanation of the changes noted is not always by any means easy, and the possible influence of the clavicular fascia and the lower edge of the subclavius muscle in forming an edge, around which nerve and vascular structures may be kinked or by which other disturbances may be aggravated, should not be overlooked.

## LETTERS, NOTES, ETC.

## New Houses

Dr. J. GREENWOOD WILSON (Cardiff) writes: The note in your issue of Nov. 11 (p. 636) says: "The Ministry of Health appointed a Central Housing Advisory Committee to make recommendations on the design, lay-out, construction, and equipment of dwellings." As this is not an accurate statement and does perhaps some injustice to the previous labours of the Central Housing Advisory Committee, will you permit me to explain the position more precisely. The Central Housing Advisory Committee was appointed by statute (Housing Act, 1935) to advise the Minister of Health on housing matters. Since its appointment the committee has in turn set up a number of subcommittees, all of which have done valuable work. Most of the recommendations of the subcommittees have been accepted, with or without modification, by the main committee, which in turn has passed them on to the Minister, and who, in turn, has usually accepted and acted upon the advice thus offered to him. The Central Housing Advisory Committee itself appointed a subcommittee, under the chairmanship of one of its distinguished members, the Earl of Dudley, to make recommendations on the design, lay-out, etc., of dwellings. Its report, known as the "Design of Dwellings" or the Dudley report, was published after it had been accepted by the Central Housing Advisory Committee, its parent committee, and in turn by the Minister of Health himself.

## Sensitiveness to Strychnine

Dr. FRANK CROSBIE (Ealing, W.13) writes: One case in my practice endorses Dr. D. R. C. Shepherd's warning (Nov. 25, p. 694). Seven years ago I prescribed a mixture for a middle-aged married woman. She took one dose and promptly collapsed. I saw her within a few minutes; the symptoms, if severe, were fairly transitory. Four years later there was an exact repetition of this train of events. The one item common to both prescriptions was tinct. nucis vom.  $\frac{m}{iv}$ .

## Tourniquets

Dr. J. L. BARFORD (Guildford) writes: On two or three separate occasions recently, when lecturing to mixed Army personnel, I have been astounded to be informed by members of the R.A.M.C. that they had been told that the latest instruction was that a tourniquet once applied should never be released. They were quite definite about this, and one—a very knowledgeable sergeant, R.A.M.C.—even murmured "histamine." I have tried in vain to ascertain at what school and by whom this iconoclastic instruction has been given. (See question and answer published Nov. 11, p. 648.)

## Dyspareunia

Dr. S. H. WADDY (Huddersfield) writes: In reply to a query on dyspareunia (Nov. 11, p. 649) I note the crude, cruel, and embarrassing method of gradual vaginal dilatation is recommended for a young woman who is stated to be "rather highly strung and very apprehensive on examination." Surely this is the worst possible treatment and one calculated to make her loathe the thought of coitus, whether it be painful or not. I have a patient whose whole married life appears to have been spoiled by such treatment being carried out during her honeymoon in the South of England. She has had a child, but all sexual thought and action is abhorrent and the memory of the honeymoon a nightmare. As this method is not always successful, as suggested in the reply quoted above, why not carry out the far easier, quicker, more aesthetic, and more certain digital dilatation under nitrous oxide or intravenous anaesthesia, either on one's surgery couch or in the patient's own home? I have never yet found further dilatation necessary. The patient can be assured that her difficulty is over and she need have no further fear.

## An Appeal Renewed

Owing to the need for severely restricting circulation of the *Journal* while the paper shortage lasts, a number of institutions and individuals connected with medicine and its ancillary services can no longer obtain the weekly copy for which they formerly subscribed. Any member who might be willing to pass on his *Journal* after reading it (making himself responsible for dispatch and postage) would be given the name and address of a suitable recipient if he wrote to the Publishing Manager at B.M.A. House, Tavistock Square, W.C.1. A substantial number of offers came in response to the appeal published on Aug. 26, but there is still a long waiting-list.

# BRITISH MEDICAL JOURNAL

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## SMALLPOX VACCINATION BY THE MULTIPLE-PRESSURE METHOD

BY

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During the smallpox epidemic in Scotland in 1942 (MacGregor and Peters, 1942, Sutherland 1943) some members of the staff of the Wellcome Laboratories asked to be vaccinated as a precautionary measure in case the epidemic should spread south. It was decided to offer to the whole staff vaccination by the multiple-pressure or multiple-puncture method. This is the technique of choice in the U.S.A., but has never been adopted in Great Britain, a perusal of the literature has revealed no completely satisfactory explanation for the differences in procedure in these two countries.

### Technique

**Multiple-pressure Method** (see Leake, 1930a, 1930b, Kolmer and Tuft 1941)—The site chosen was usually the left upper arm over the deltoid muscle, but a few women elected to be vaccinated on the lower thigh. The skin was swabbed gently with acetone, following American practice, care being taken not to rub so vigorously as to damage the epidermis and thus encourage the development of secondary vaccinal vesicles. A very small drop of lymph was placed on the cleansed area with a glass rod, and "pressures" were applied to the skin through the drop with the side of the point of a Hagedorn needle. The needle was moved rapidly up and down with enough force to demonstrate the elasticity of the skin but not so vigorously as to draw blood. (A few hours after the operation there was no visible lesion.) In accordance with American writers' recommendation for the vaccination of adults, 6 to 10 pressures were used for primary vaccinations and 30 pressures for secondary vaccinations. 30 pressures are recommended for primary vaccinations of young babies because they are less prone to reaction than adults. The area covered by the pressures was only 1.8 in. in diameter. After vaccination any excess of lymph was removed gently with a pledget of cotton-wool. No dressing was applied.

**Scratch Method**—This technique is only referred to briefly by way of contrast with the multiple pressure method. The usual recommendation in this country is a superficial scratch 1/8 in. in length. Parallel scratches are regarded as unnecessary by American workers (Kolmer and Tuft, 1941), nevertheless, the public health authorities of Glasgow, in their anxiety for efficient vaccination during the large epidemic of smallpox in 1942, advised three parallel scratches, 3/8 in. long and 1/8 in. apart (MacGregor and Peters 1942). The usual method in Great Britain was formerly "cross hatching" (scratches crossing one another) but reactions tended to be unduly severe and it was given up. It is legally prohibited in Germany.

**Intradermal Method**—Since it is obviously undesirable to inject intradermally any contaminated fluid, this method is unsuitable for ordinary glycerine-cured lymph, which does unfortunately contain living bacteria. (The Therapeutic Substances Orders, dated Oct. 21, 1942, and Feb. 11, 1944, permit the issue of vaccine lymph containing not more than 20,000 living bacteria and other visible micro organisms in each c.c.m., provided tests for *Cl. tetani* and beta haemolytic streptococci are negative. Glycerin is added to vaccine lymph in normal times in this country to keep down the bacterial content; in the U.S.A.

brilliant green is added in addition.) The intradermal route should be very satisfactory, however, for culture virus, since an exact volume of virus suspension, without extraneous bacteria, would be injected into each patient. The multiple-pressure method appears to be preferred in America, since it is claimed that the percentage of "takes" is just as high, additional advantages being simplicity and painlessness during performance.

### Advantages of the Multiple-pressure Method

The multiple pressure method is regarded as better than the scratch method for the following reasons: (1) Reactions are less severe and less painful. Scars are smaller. (American authorities are at variance with the Report of the Ministry of Health (1928), for they place little reliance on the area of scar formation as an indication of the degree of immunity. They claim that there is no evidence that the duration of immunity is less with the multiple pressure method than with other methods.) (2) The technique is more rapid, the whole operation taking about 10 seconds, this assertion of greater speed is doubled, however, by experts in the scratch method. (3) The epidermis is left nearly intact and there is no bleeding—in contrast with the general "messiness" of the scratch method especially when the latter is ineptly performed. The risk of septic infection is thus eliminated. (4) The multiple-pressure method obviates the use of any control site for estimating the degree of trauma in the so-called "immune" reaction (immediate reaction). This is a doubtful advantage, since many experts including Marsden (personal communication), never use any form of control as part of the scratch technique, if no specific reaction is obtained the subject is not regarded as immune until the inoculation has been repeated with lymph of proved potency and the same result obtained. (5) Since excess vaccine lymph is wiped off gently and there is minimal trauma, the immediate application of a dressing is unnecessary (Leake, 1930a, 1930b). I am inclined to doubt this assertion, however, because some patients in my series infected their fingers by touching the primary lesion and developed secondary lesions at other sites, a protective dressing would have prevented this accident. The case for and against a dressing is well discussed by Stimson (1936). Marsden (1942), who uses the scratch method, recommends a simple dry dressing fixed by strips of elastoplast.

### Potency of Vaccine Lymph

Only if the potency of the lymph is suspect or if there has been exposure to smallpox do the Americans deviate from the above simple technique. Multiple vaccinations—30 pressures at more than one site—are then advised in order to obtain more "takes". (It will be remembered that the practice during the recent Glasgow outbreak was also modified to obtain more "takes"—viz., vaccination by multiple scratches instead of the usual single-scratch technique.)

The Regulations for the potency of vaccine lymph laid down under the Therapeutic Substances Act may require revision in the light of further advances in our knowledge and

experience. The use of a standard lymph, preferably a dried preparation, would be advantageous, and it might also be feasible to stipulate an upper limit of potency in addition to the lower limit now enforced. The issue of a more stable product is desirable. So long as wet lymph is issued, undesirable and rapid deterioration is inevitable unless the tubes are kept continuously at a temperature below 0°C. The practitioner often keeps vaccine lymph in a drawer at room temperature, and as time elapses his proportion of "failures" may be unduly high. This may explain the official preference in this country for the scratch method, which may be more "drastic," as generally performed, than the American multiple-pressure method. Evidence should be collected to settle this point. (It may also explain the experience of Goodall (1942) of a somewhat higher successful reaction rate among those cases in which blood was drawn than among those in which bleeding did not occur. Immediately after this statement in the abstract of Goodall's paper in the *Bulletin of Hygiene* was the reviewer's comment: "It should be realized, however, that the latter group would include any cases in which the incision was too superficial for success—a not uncommon cause of failure." Both the above statements seem strangely at variance with American experience with the multiple-pressure method, where damage to the skin is trivial.) The findings of Rivers, Ward, and Baird (1939) clearly show that the potency of a vaccine lymph used for revaccination makes a decided difference to the numbers of persons who show incomplete protection against smallpox. A highly potent lymph at the time of use is of primary importance whatever technique is adopted.

Reactions of some severity are to be expected in association with successful first vaccinations, more particularly in adults.

#### Reactions correlated with Degree of Immunity

Reactions may conveniently be classified in three categories which represent for practical purposes three grades of immunity. (1) If the patient has no immunity, or very little, he will develop a "typical" reaction, the so-called primary "take" or vaccinia. This is represented by a papule developing in 3 to 4 days; followed by a vesicle which is at its maximum in 9 to 10 days; followed in turn by a pustule and a scab which separates about the 31st day. Occasionally, in persons with no immunity, the reaction is more severe and of longer duration. In all cases there is some degree of associated adenitis. Constitutional upset with rise of temperature is invariable, and sometimes necessitates absence from work and rest in bed. (2) When there is partial immunity an accelerated or vaccinoid reaction may be expected, sometimes referred to as secondary vaccinia. Here the reaction is less severe, all the changes being speeded up and the maximum vesicle formation occurring in 4 to 7 days. Finally, (3) the typical response in a person who is highly immune is an immune or immediate reaction, characterized by papule formation reaching its maximum in 8 to 72 hours and scab going on to vesiculation. The American writers state that if no reaction occurs the lymph should be regarded as suspect and the test repeated; in the present series it was found that some of the "no reactions" reported were really "immune reactions" which the patient had failed to observe or had ignored on account of their triviality and short duration. An additional control of the potency of the vaccine lymph used for such patients, if this were needed, was furnished by the numerous relatively severe reactions observed after vaccinations which were performed at the same time with the same batch of lymph. American authors also mention that a rough criterion of a fully potent lymph is that it should give more than 50% of vaccinoid reactions in a group of persons vaccinated more than 10 years previously; this percentage figure was exceeded by a considerable margin in our group.

Marsden (personal communication) does not accept the immediate or immune reaction, which he regards as a misnomer; it does not indicate immunity, he believes, but merely sensitization to lymph. To quote his paper (Marsden, 1942): "Nothing less than a red deep-seated indurated swelling beneath the seat of inoculation, developing about the third day and subsiding gradually, should be accepted as a specific reaction; and when the revaccination has been performed in the face of smallpox infection, or if the interval since the primary

vaccination has been considerable, the process should be repeated at least once. Under similar circumstances, if no specific reaction be obtained the subject should not be regarded as immune until the inoculation has been twice repeated with lymph whose potency is proved by its effect on other patients."

Henderson and McClean (1939) produced evidence that, in a susceptible person, vesiculation must occur before vaccination can be regarded as successful. They inoculated volunteers intradermally and subcutaneously with a specially purified vaccine lymph, and found that immunity to subsequent vaccination by scarification was obtained with certainty only if there was vesiculation at the site of the primary vaccination.

#### Results of Vaccination on 214 Persons

The results obtained with the laboratory staff were analysed with reference to the type of reaction which developed and the history of previous vaccinations (Table I).

TABLE I.—Vaccination of 214 Adults

Previous Vaccinations*	Reactions					Total
	Nil	Immune or Immediate	Accelerated or Vaccinoid	Typical or "Primary" Moderate	Severe	
None .. ..	0	1	13	33	15	62
One .. ..	11	6	70	4	4	114
More than one ..	2	15	16	23	2	38
Total .. ..	13	22	99	59	21	214

\* Based on patients' histories, which were supplemented in most instances by direct evidence from scars.

The information about previous vaccination depended mainly on the patients' statements, which could not always be confirmed by inspection of scar sites; the original notes had sometimes to be revised, therefore, after further discussion. Again, the severity of reactions observed in the present investigation did not always fit precisely under any of the headings in the table. The 13 reactions which are listed as accelerated or vaccinoid, in the group of patients who stated they had never been vaccinated previously, could almost all have been classified, in retrospect, as moderate "typical" or "primary" and transferred to the next column in the table; the majority of these reactions were intermediate between "accelerated" and "typical." Intermediate grades are to be expected in any study of biological reactions, but a more elaborate and cumbersome classification appeared inadvisable. At all events, the figures in the table give a reasonably accurate analysis of the available data.

The main feature of the table is the decreasing severity of reactions, depending on the frequency of previous vaccination. There were many more severe reactions in persons vaccinated for the first time than in the other two groups. The majority of persons who had never been vaccinated before gave moderate or severe "typical" or "primary" reactions, and persons who had been vaccinated more than once before gave "immune" and "accelerated" reactions in approximately equal proportions. One person who had never been vaccinated before gave an "immune" reaction on repeating the inoculation; there is no obvious explanation of this unexpected result.

In a further analysis it was seen that sex (79 males and 135 females) had apparently no influence *per se* on the grading of the reactions observed. Stout persons tended to have more severe reactions than thin.

The degree of reaction in relation to one or more previous vaccinations was further analysed with regard to the time which had elapsed since the last "successful" vaccination (Table II). Fewer persons gave "immune" reactions when the interval which had elapsed was long. In the "over 30 years" group there were many "typical" or "primary" reactions, mostly of moderate severity. It is noteworthy, too, that two persons who had been vaccinated 10 to 20 years previously gave reactions classified as severe; these were women who elected to be vaccinated on the thigh and reacted so severely that they had to be off work for some weeks. More severe reactions appear to be associated with thigh than with arm vaccinations (Buchanan and Laidlaw, 1942), and we agree with certain other workers that the thigh is an unsuitable site and should rarely

be employed. At the foot of Table II are given for comparison the data of reactions occurring among persons with no previous vaccination

TABLE II—Degree of Reaction in Relation to One or More Previous Vaccinations (Males and Females)

Years Since Last Successful Vaccination	Reactions					Total
	Nil	Immune or Immediate	Accelerated or Vaccinal	Typical or Moderate	"Primary" Severe	
Less than 5	2	1	1	1	0	5
5-10	6	13	41	4	2*	66
10-20	7	4	24	6	1	38
20-30	2	1	20	15	0	41
More than 30	13	21	86	26	9	152
	(8.6%)	(13.8%)	(56.6%)	(17.1%)	(3.9%)	
Of No Previous Vaccination						
Total	0	1	13	33	15	62
		(1.6%)	(21.0%)	(53.2%)	(24.2%)	

\* Women with thick vaccinations

### Abnormal Reactions, Complications, etc.

(a) In two cases the reaction did not appear till the 10th and 12th days respectively after vaccination. The patients believed they were immune, but they did in fact develop a moderate and a severe reaction respectively. It is not known why there should have been an unusually long delay in the incubation period of these persons who had little or no immunity. (The statement has been made that "if a reaction is not found on the second or sixth day the vaccination must be repeated, as either the virus was impotent or the technique was at fault" (Gloyne 1943). Apparently the reasons given for repetition do not invariably hold, as is shown by our experience, and also since, on occasion, primary and "repeat" vaccinations have both shown typical "takes" developing possibly after different time intervals (Anderson, personal communication).)

(b) In seven subjects "supernumerary" vesicles developed around the vaccination site

(c) Three persons developed so-called "vaccinal rashes," which were papular and pustular and of scanty distribution, and not to be confused with generalized vaccinia—a much more serious condition (Jubb, 1943). In our series there were no cases of generalized vaccinia and no encephalomyelitis

(d) There were four cases of auto-inoculation or auto-vaccination. The first patient had complained of a "stiff neck," which was explained by a typical lesion of the scalp with an associated adenitis at the back of the neck. The second patient had single lesions of neck, finger, buttock, and thigh, the third, two lesions of the cheeks and one of the left arm, and the fourth, single lesions of elbow and leg and three lesions on the body. The somewhat high incidence of subsidiary lesions in this series may possibly be explained by the natural interest of laboratory workers in a new method and their desire to follow carefully all stages in the development of their vaccinia. The lesions, as a rule, were not protected by any form of dressing, and were certainly palpated by some persons

(e) A patient who had been vaccinated on the thigh and developed a severe reaction infected her daughter, aged 19. The daughter developed a typical primary lesion of the thigh, with associated adenitis. Mother and daughter had had baths on successive nights and used the same bath towel. It was a family joke that the daughter always used a scrubbing-brush in her bath and rubbed herself down so vigorously afterwards that her skin was reddened; this may serve to explain her vaccination via the bath towel! (A local medical practitioner who heard of this accident told me that his father had infected his own nose after vaccinating a child and had to be away from his practice for several weeks.)

(f) Two patients developed boils and had successive crops for many weeks, and one patient had a neuritis of forearm and hand which lasted about 48 hours and cleared spontaneously. Both conditions were probably coincidental, although the patients tended to blame the vaccination.

### Discussion

The multiple-pressure method of vaccination is an innovation in this country, and aroused considerable interest among the staff, who were impressed by its apparent simplicity and painlessness at the time of performance. There was therefore no difficulty in obtaining volunteers, although some persons may have regretted their enthusiasm when severe reactions developed. It is fortunate, perhaps, that the multiple-pressure method was used, as even more severe vaccinal reactions might have followed scratch methods, with the added possibility of septic infection. A factor in the severity may have been "green lymph"—i.e. lymph issued and used soon after preparation, and kept, as in our experiment, in cold storage until required for use. The worst sufferers were certain persons who were being vaccinated for the first time in adult life or revaccinated after the lapse of many years. The remedy is therefore primary vaccination in infancy followed by periodic revaccination throughout life. A sore arm and disturbance of health necessitating absence from work are thus obviated. (American practice is to carry out primary vaccination in the first year of life, and revaccination at 5 or 6 years and again when puberty is reached. In the American Services further vaccinations are performed yearly, there is little trouble from reactions.)

Some of the instances of spread from the original site to other parts of the body, and in one instance to another individual, would seem to indicate that warning should be given to the patient and his relatives of the highly infectious nature of vaccine lymph. The usual American procedure is to dispense with any form of protective dressing but the wisdom of this recommendation is questionable. The risk of auto-vaccination is by no means negligible, and subsidiary lesions may lead to permanent disfigurement. These risks apply to vaccination by any method and not by the multiple-pressure method alone.

I have also been informed of doctors developing lesions from applying their lips to vaccine capillary tubes to blow out the lymph. Here again a word of warning is necessary, and some other method of expelling the lymph—e.g. the use of a special rubber teat—is essential.

It is disturbing that a significant number of soldiers in this war who have been vaccinated at home and found to be negative have developed typical "takes" when revaccinated overseas. The explanation may be poor-quality lymph at the first vaccination or bad technique, or both. Although the scratch method was implicated in these observations, at least an equal number of "discrepancies" might be expected with the multiple-pressure method. Whatever method of vaccination is adopted the only safe working rule is to disregard all histories of previous vaccination that are not supported by direct evidence. As already quoted Marsden (1942) stresses the necessity for a sceptical attitude towards a negative or an "immune" reaction in the face of a smallpox epidemic or if a considerable interval has elapsed since the primary vaccination. Two repeat vaccinations may be indicated with lymph which is of assured potency on the basis of tests on other patients.

The difficulty of obtaining an accurate record of previous vaccinations has already been mentioned. In cross-examination it was ascertained that some persons had obviously confused vaccination against smallpox with inoculations of diphtheria prophylactic. It would be extremely useful if some form of health record could be devised which would accompany each patient and give accurate information of all inoculations (date, preparations, and batch number, dose, degree of reaction, etc.) and of infectious diseases and other illnesses. "One more card to be lost!" was the abrupt comment of one well-known fever hospital superintendent when this idea was discussed, but if this serious defect in the scheme could be circumvented more reliable vaccination histories would be obtainable for consideration alongside the direct visual evidence provided by scars.

### Summary

The multiple-pressure method was used for vaccinating 214 members of the laboratory staff.

The advantages of this method, which is in common use in the U.S.A., are discussed.

The potency of calf lymph before issue is controlled by official regulations, but storage under suitable conditions is requisite if



results are to be satisfactory. Whatever method of vaccination is adopted, lymph must be highly potent at the time of use.

The necessity for obtaining direct evidence of a successful "take" is stressed. Unless only a short interval has elapsed since a satisfactory primary vaccination, a negative or "immune" reaction on revaccination should be distrusted until confirmed. Two reinoculations with lymph of proved potency may be necessary before this finding is accepted.

There is insufficient appreciation of the highly infectious nature of vaccine lymph. A dressing should always be applied immediately to the site of vaccination to reduce risks of auto-inoculation.

Severe reactions necessitating absence from work would be obviated if vaccination in infancy and periodic revaccination were the general rule.

Some system of permanent health records which would accompany each patient is desirable. Full details of vaccinations and other inoculations, including reactions, would be entered and would supplement the direct evidence presented by vaccinal scars.

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## A TWO-STAGE METHOD OF TREATMENT IN DIABETES

BY

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This communication describes a simple method of carrying out adjustments of insulin dosage or diet (or both) in those diabetics for whom a change of some sort is obviously necessary. It is particularly applicable to the patient who is ambulant or under treatment in his own home.

It is described as a two-stage method of treatment because its first object is the restoration of the patient to vigorous health by insulin without any restriction in diet other than the close spacing of meals which prevents hypoglycaemic attacks. During this stage no attempt is made to maintain normal levels of blood sugar or a sugar-free urine, and the dose of insulin is controlled by daily observation of the patient's body weight and the record of the volume of urine passed. When normal weight has been reached and maintained for some time on a constant dose of insulin, then the secondary object of diabetic treatment—namely, the lowering of the blood-sugar levels to near normal—can be tackled (if it is thought well to do so), and the effect of carbohydrate restriction observed.

The method may be summarized in a few words: the patient is restored rapidly to health and vigour by insulin on a diet which is more than adequate, the question of blood-sugar levels being left over to a later date; diet charts and blood-sugar estimations are not needed for the first stage, though they are necessary for the second.

#### Advantages of the Two-stage Method

A two-stage method of treatment (though applicable to hospital work, and in fact used in my own hospital practice) is not needed by the experienced diabetic specialist who has his patient in hospital, who can have frequent blood-sugar estimations carried out, and who can make certain that the patient takes a prescribed diet. For it is possible for a physician so placed to roll both stages into one, and combine his most important duty (the discovery of how much insulin is needed, and how often) with the much less important one of controlling hyperglycaemia by a rationed diet. But it offers very definite advantages to physicians who have to carry out adjustments for the already instructed diabetic outside hospital. For them it is a "safety play" which enables them to restore

a slightly maladjusted diabetic to effective health as rapidly as possible, leaving to a later date the question of exact dietetic control. It enables them to use insulin freely without fear of hypoglycaemic attacks. If at a later stage they decide to tackle the question of dietetic restriction, they will then be in the happy position of knowing that if these restrictions bring about hypoglycaemia the fault lies with the diet being too low, and not with the insulin dosage being too high.

Not the least of the advantages of the two-stage method is that the patient himself becomes correctly oriented towards his disease. He learns that his restored health is due to injecting insulin, and not to abstaining from carbohydrate. He learns that loss of weight, thirst, and polyuria (the cardinal symptoms of diabetes) are signs of underdosage with insulin and must be noted and reported whenever they occur. Too many diabetics imagine that the only yardstick whereby they can measure their health is a sugar test on the urine, and fail to learn the far more important lesson that the adequately treated diabetic should so live that he is free from all the symptoms of his disease.

#### The First Stage

During this stage the physician's only concern is to restore the patient to full health. He allows the patient to satisfy his appetite so that wasted tissues may be built up and hypoglycaemia avoided; he gives enough insulin often enough to keep the urinary output as near normal as possible and to produce a steady daily gain in weight. If he fears hypoglycaemia—for example, at night—he does not let that stop him from increasing the dose of insulin, but he takes the precaution of ordering glucose at the appropriate periods. The rationale is the same as that of most specific replacement therapies: make sure that enough is given. Prophylactic glucose enables this to be done without risk.

**Insulin.**—Unmodified (soluble) insulin should always be used in even minor diabetic relapses. Except in cases of coma and threatened coma (which should be rushed into hospital), doses of about 30 units twice daily, with a small evening dose, will be adequate in many instances and entail little risk of hypoglycaemia during the first few days, but there is of course no general rule. If a marked improvement does not set in on a dosage not very much higher than the patient's usual maintenance dose, the physician should suspect that coma may be nearer than he at first thought.

**Diet.**—The two essentials are that it shall be adequate and contain small meals interpolated between the chief meals of the day, with additional glucose whenever a hypoglycaemic attack is to be feared. Occasionally an overconscientious diabetic who has relapsed through cutting down his total intake to near the point of undernutrition will be afraid to increase his diet, but such patients will usually take glucose without any dark suspicions about their doctor's intelligence. It must never be forgotten that the diabetic who cannot eat or who vomits is a candidate for coma, and therefore a case for hospital.

**Weighting.**—Daily weighing of the patient is essential, and home treatment must not be undertaken without scales in the house. If diet is more than adequate and the weight does not rise, then insulin dosage is too low, and a polyuria will indicate the period or periods of the day at which it is inadequate. If the weight refuses to rise, and the diet is adequate and there is no polyuria, then the cause of the loss of weight is not simply diabetes; there must be some concomitant disease—for example, tuberculosis or gall-bladder disease.

**Urine Measurement.**—The patient should record the time and approximate volume whenever he passes urine. Measurement need not be done with great accuracy (a half-pint milk-bottle marked with stamp-paper may be used), and the ambulant patient can make a rough guess if he passes water away from home. There is no constant figure for all diabetics, but, apart from a few puzzling exceptions, the 24-hour output can usually quickly be reduced to within or about 50 oz. Adequate insulin dosage in a previously inadequately treated patient will always markedly lower the urinary output. If the urinary output during the night is relatively high, that points to the need for a bedtime dose of insulin.

**Testing for Sugar.**—Testing the urine for sugar should be done during the first stage only with the object of avoiding hypoglycaemia.



**Ketosis**—If a decrease in the degree of ketonuria (if present) does not take place a few hours after the first injection of insulin it is probable that the case is more serious than at first appeared. If the physician has not got the reagents for Rothera's test he should assume that a copious pale urine implies ketosis, and that if a single reasonable dose of insulin does not produce a scantier yellow urine, then the ketosis is severe and the patient not very far from coma.

**Previously Untreated Diabetics**—These cases should always be in hospital until a thorough survey of their general health has been made and they have learned about hypoglycaemia. But they can be discharged at an early date, and the study of their insulin requirements can be continued at home.

**Minor Relapses**—The two stage treatment is the quickest way of overcoming a minor relapse without disturbing the patient in his employment. It is usually essential for quick recovery that the patient if on a modified insulin should return for the time to the unmodified.

### The Second Stage

Restriction of the carbohydrate or other constituents of the diet can be most easily carried out after the patient's return to normal weight and vigorous health. It should not be attempted till he has been for some weeks on an unvarying dose of insulin, for it is commonly found that soon after a severe relapse or an attack of coma the dose of insulin required to maintain a steady rise in weight begins to decrease till it settles down usually at about what it was before the relapse. Till then the patient probably needs more food than normal attempts to restrict his intake may delay his return to normal health, and by producing hypoglycaemic attacks, tempt his doctor to premature reduction of the insulin dosage.

In most patients who are on an unmeasured diet the blood sugar levels are higher than normal. The majority of writers on diabetes teach perhaps correctly, that any avoidable degree of hyperglycaemia is harmful; others including myself (Micks 1943) can see no proof of this, and suspend judgment. All writers agree that in some cases normal blood sugar levels can be maintained only at the cost of frequent hypoglycaemic attacks.

So if it is decided that the attempt should be made to control the patient's blood sugar by a rationed diet, it must be understood in advance that in some cases it will be defeated by hypoglycaemic attacks, and in other cases the patient may refuse to co-operate or the nature of his employment may make the attempt a failure—for example when it entails irregular spells of violent exercise.

There are three important points about the management of the second stage. The first is that it can be carried out only with the help of frequent blood sugar estimations as well as charts. The second is that hypoglycaemic attacks in an insubstantial diabetic are a serious matter. The diabetic should be taught to look upon them as a crime and not as an inevitable occasional mishap. The third is that if cutting down the carbohydrate intake produces hypoglycaemia, this must be corrected by restoration of the cut, not by reduction of the dose of insulin. Or at least, a cut in insulin is made with the object of preventing hypoglycaemia occasioned by a reduction in diet, then the patient must watch his weight and urinary output if the weight falls and the urinary output rises he should be put back on to his old dose of insulin and a larger diet.

In some patients especially those leading a sedentary life it will be found that the food intake (without any deliberate attempt to control it) is in fact constant from day to day and the carbohydrate intake not so high as to produce a significant hyperglycaemia. In such cases the question of rationing the diet does not arise.

The following general advice may be given to physicians who consider attempting this second stage of fine adjustment.

Do not generalize. Consider each case individually. Do not attempt it without blood sugar estimations. Do not set the patient using his own urine and cutting down his own diet without blood sugar controls. Think carefully before persuading the patient to adopt any way of life which makes him less healthy. Look on hypoglycaemic attacks as a reproach both to the patient and to himself.

### Coma and Threatened Coma

The treatment of coma is an entirely different matter from correcting relapses unaccompanied by coma or maintaining the diabetic in health. Insulin must be given, sometimes in very large amounts not by any rule but just as an anaesthetist gives an anaesthetic—that is until it has begun to work. Intravenous saline too in large quantities is often needed to correct dehydration and sodium depletion. So coma cases should always be brought at once to hospital, for many cases which are saved by the work of the full team of a modern hospital could not be saved by a physician, however skilful, working single handed in the patient's home. Quite apart from stocks, instruments and laboratory facilities, at least four pairs of hands are usually needed. But, nevertheless treatment should always be started the moment the case is seen, and 40 units given if necessary every 15 minutes until either a marked improvement begins or the patient reaches hospital. There is no risk of hypoglycaemia during the first few hours of the treatment of coma and it would probably be correct to say that the risk of hypoglycaemia does not begin until after clinical improvement has set in.

### Acute Non-diabetic Complications

Acute illnesses in the diabetic (for example, acute infections and conditions calling for operation) should be treated in hospital on account of the risk of coma supervening the disturbance of the patient's nutrition, and the need for an increased dosage of insulin as well as for parenteral administration of fluid. But such cases have sometimes to be admitted to a hospital to which no medical specialist familiar with diabetes is attached. When confronted with such an emergency even a surgeon may succeed in keeping a diabetic out of coma if he acts on the rule, 'Plenty of insulin, plenty of glucose, and plenty of saline.'

In acute complications it is obvious that the adequacy of treatment cannot be controlled by weighing and Rothera's test becomes of prime importance for the output of urine cannot be used as a control for insulin dosage. There are two reasons why no attempt should be made to reduce the urinary output in acute infections and in operation cases. The first is the ever present danger of dehydration, the second is the risk of crystalluria if sulphonamides are being administered.

To the non specialist concerned with maintaining a diabetic in health throughout an acute infection or a surgical operation and after treatment (conditions in all of which the patient is threatened with dehydration from the non-diabetic illness as well as with dehydration and coma from the diabetes) the following rough rule is offered: *Maintain a more than adequate water and sodium intake give enough insulin often enough to keep Rothera's test negative and give enough glucose to prevent the urine from becoming sugar free.*

### Shifts

Shifts from unmodified insulin to modified types such as globin (which I have found very satisfactory in a number of my milder cases) or protamine zinc insulin or mixtures can be very simply managed without putting the patient in hospital. The daily weight chart shows whether the dose of the new insulin is inadequate and the urinary volume record shows during what period of the 24 hours the insulin effect is lacking. It is of course essential to make sure, by preliminary observation, that the patient before the shift was receiving an adequate dose of unmodified insulin. Sometimes it will prove impossible to shift the patient on to a one shot treatment without hypoglycaemia, and the attempt has to be abandoned. It is to be hoped that some of the standardized mixtures or unmodified and modified insulins now undergoing trial will make it possible to free all patients from the trouble of two or more daily injections.

### Theoretical Considerations and Fallacies

Experimental work has yielded little knowledge that is of help in the treatment of diabetes, for it has pronounced new riddles instead of solving the old ones. But, as discussions with colleagues have shown that reluctance to try individual treatments in diabetes is often based on mistaken notions, it is well to consider how much is known about diabetes in man.

*The Nature of Diabetes.*—The treatment of diabetes is not based upon exact knowledge of its pathology or of the mode of action of the specific remedy. Diabetes takes numerous forms, and it would perhaps be well to refer (as has been suggested) not to "diabetes" but to "the diabetes," using the plural, just as it is now customary to write of "the epilepsies" rather than of "epilepsy." In the young it is nearly always "severe" in the sense that a high dose of insulin must be given and its action maintained during the greater part of the 24 hours, while in the old it is often mild. But, on the other hand, some young diabetics can lead an active life on so little as 20 units a day, while occasionally, even in the old, several hundred units a day may be required.

Diabetes often exists by itself, but in some cases it may be associated with disease of the liver, of endocrine organs other than the pancreas, of the vascular system, or of the central nervous system, and it may be impossible to decide whether the relationship is a causal one. The disease may change in "severity" from time to time for no apparent reason.

*The Action of Insulin.*—The action of insulin, especially in relation to the secretion of endocrine organs other than the pancreas, is imperfectly understood, but one thing seems certain: insulin does not "burn carbohydrate," for its most clearly demonstrable action is not concerned in the process by which carbohydrate is broken down to yield energy, but in that by which it is built up from glucose to glycogen. This point should be emphasized, for some textbooks still teach that insulin is "the spark which fires the glucose." No better illustration of how little is known of the mechanism of insulin action can be given than the experiment in which anterior pituitary lobe ablation is performed on the pancreatetomized dog: the animal, which before pituitary ablation was severely diabetic and could be kept alive only by insulin, can after the operation be kept alive without insulin. That is to say, insulin is apparently not essential for maintaining life in a hypophysectomized dog; for, if such an animal is sacrificed, no trace of insulin can be found in its tissues anywhere.

In practice in man the dose of insulin required to maintain the patient in health varies from case to case and sometimes from time to time, but in any individual patient the dose necessary to maintain him in health is independent of the carbohydrate intake.

The practising physician need know one thing only about insulin—that it is a specific remedy for diabetes, and will always cure diabetic coma and will always maintain the diabetic in health except when the disease is complicated by other factors.

*The Relationship of Diet to Diabetes.*—Two things are certain. The first is that the diabetic cannot maintain vigorous health unless his intake (when deduction has been made for calories lost in the urine) is at least adequate for his metabolic requirements. The second is that if the diabetic has lost weight the diet must be more than adequate for his immediate needs, in that it must contain sufficient nutriment to rebuild wasted tissues.

It is not by any means certain that a more than adequate diet (resulting in a high blood sugar) is harmful to a diabetic who is taking enough insulin. There are theoretical grounds for believing that it may be so, but these are largely based on observations on patients and animals treated without insulin, and it is possibly fallacious to apply them to patients receiving doses of insulin which are approximately the same as the estimated normal output of the pancreas.

It is, however, certain that, provided insulin dosage is adequate, no immediate ill effects are seen as the result of a surplus intake of carbohydrate. Such uncontrolled patients do not suffer from periodic ill-health, do not have hypoglycaemic attacks (provided their meals are closely spaced), and do not tend to become fat; the uncontrolled patients in the younger age groups do not develop arteriosclerotic and degenerative complications, and it is doubtful whether the uncontrolled patients in the older age groups show an incidence of these complications higher than the controlled diabetics. It is of course possible that ill effects may follow a persistent hypoglycaemia, but if so they are remote.

*Diabetic Complications.*—There is no explanation of the occurrence of retinitis, cataract, arteritis, and peripheral neuritis in diabetics. It is possible that in the future it may be shown that the incidence of these changes may be lowered by some modification in the diet or by insisting that even mild diabetics should take insulin, but at present the reason for these complications is unknown. It seems certain that, once they have occurred, their course is not greatly affected by insulin or adjustment of diet.

*Infection and Diabetes.*—There is no evidence that a high blood-sugar level disposes the tissues towards infection; nor does clinical experience suggest that operations on diabetics are more commonly followed by infection than in non-diabetics. Diabetics suffering from infections respond just as well as non-diabetics to the appropriate antibacterial treatment, provided that adequate antidiabetic treatment is also given. The presence of severe infection in a diabetic often demands large doses of insulin to prevent or treat coma. When such large doses are given it is of course necessary to maintain a liberal carbohydrate intake if hypoglycaemic attacks are to be avoided. There need never be any hesitation in giving such cases plenty of glucose, for experience has shown that rapid recovery from serious infections can take place in spite of a persistently high blood-sugar level.

It is now generally accepted that diabetic gangrene is not a metabolic disorder due to high blood sugar, but simply the effect of arterial narrowing.

*The Diagnosis of Coma.*—A common misunderstanding is that the danger of threatened coma is measured by blood-sugar estimations or tests for ketonuria. It is of course true that in coma the blood sugar is always very high, and it is also true that a positive ketone test is a sure sign of a maladjusted patient and should receive serious attention. But the diagnosis of coma is a clinical diagnosis. The very thirsty diabetic is not far from coma, and as soon as any cerebral symptoms appear (the first is usually slight drowsiness) the patient should be treated as if in coma (according to the American usage of the term, he *is* in coma); when tachypnoea or signs of circulatory failure appear death may occur at any time, if treatment is not started at once.

It cannot be too widely known that uncomplicated diabetic coma is curable so long as the patient remains alive; it never reaches an "irreversible stage" where even the most heroic treatment fails.

### Summary and Conclusions

A two-stage method of making adjustments in insulin dosage on diet (or both) is described. It is specially useful when the patient is ambulant or under treatment in his own home.

It makes use of the observation that restoration to vigorous health may be attained by adequate dosage of insulin, an adequate diet, and no dietetic control apart from the close spacing of meals which prevents hypoglycaemia.

During the first stage the physician's only object is to restore the patient to vigorous health by adequate dosage of insulin. He does not attempt to restrict the carbohydrate intake.

He assesses the adequacy of his dosage by the patient's daily gain in weight with the further aid of a record kept by the patient of the time urine is passed and the volume of urine. Blood-sugar estimations and diet charts are not needed at this stage.

The second stage can be begun when the patient has been restored to vigorous health and his insulin requirements have become stabilized. If this stage is undertaken diet charts and blood-sugar estimations are needed, for its object is the restriction of the carbohydrate intake in order to maintain low blood-sugar levels. Dietetic control is not always practicable, and it is possible that it is not necessary. By the two-stage method it becomes easier for the physician to separate those patients in whom dietetic control can be maintained (if decided upon) from those in whom it cannot.

Its chief advantages are that it enables major or minor changes in insulin dosage to be made with little fear of hypoglycaemia; it focuses the attention of both patient and doctor upon the primary object of diabetic treatment; it enables the doctor to consider dietetic control after restoration to health instead of imposing it as a preliminary.

The application of the method to the chief difficulties met with in general practice is discussed.

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**NOTE**

It will be noticed that we do not employ the symbols GC, EC, PC, OO, and +, widely used throughout the Services, to signify the presence and quantity of gonococci, epithelial cells, pus cells, and other organisms respectively. Let us suppose we receive a history sheet bearing the notation GC—, EC—+, PC—, OO—+. We take this to denote that organisms with the morphology of the gonococcus were seen. But, because many other organisms (it is not stated whether they were Gram-positive or Gram negative) were also present, we would like to know whether these Gram negative diplococci were intra- or extra cellular, for if they were extra-cellular and numerous Gram-positive organisms were present it would require the aid of a venerologist to ascertain whether or not they were gonococci.

The statement "P.C.++ and E.C.++" leaves much useful information unsaid, as it alludes only to the number of cells present and gives no indication of their size, type, or state of degeneration.

One of our sick-berth ratings has been specially trained in the carrying out of three procedures—the two-glass test, the Gram stain, and the irrigation technique. It is impossible to overstress the importance of the two-glass test. The simplicity of this procedure is obvious and its merit as a guide in a day-to-day study of the course of the disease indisputable. We are indebted to Pelouze for an invaluable routine method of graphing the results of the test, which we always place at the bottom of the first page of our records.

Below is a table showing the number of cases of urethral discharge which we have treated, listed under three simple headings; 76 of them were due to the gonococcus:

Total Cases	Non-specific Urethritis	Gonococcal Urethritis	
		Anterior	Posterior
93	17	49	27

Here we are not concerned with the non-venereal infection; nor would it be consistent with the theme of this paper to publish a detailed analysis of the venereal cases. The latter, however, do serve to illustrate the problems we have met.

The first of these is that, of the 76 cases of gonorrhoea, only 36 came to us with the history of a primary discharge of not more than three days' duration, whereas 40 gave one of the following histories: (1) discharge of more than 72 hours' duration; (2) relapse; (3) reinfection; (4) persistent discharge in spite of treatment. Secondly, of the cases in this latter group of 40, some came to us with no case notes, while the majority had inadequate histories. It was reasonable to expect that a large number of these cases would have infection of the posterior urethra, which indeed proved to be so. Individuals with such a complication are potential hospital patients, and it follows that they present the greatest difficulty in treatment.

How often we have wished that the Navy would state emphatically that cases in which the posterior urethra is considered to be infected are to be discharged to hospital! There is no doubt that this measure would considerably reduce the number of cases of the type discussed in this group. We appreciate the fact that it is not always possible to discharge such cases to hospital, and that there are few medical officers afloat who have sufficient experience and facilities to treat such cases on board, but for our purpose this small group need not be considered.

In the matter of treatment we make no plea for uniformity, but certain negations must be appreciated. Here the caution "I leave well alone" is often a timely warning where simplicity of therapy encourages meddling. We are of the opinion that on the one hand not enough use is made of existing facilities, admittedly often limited, while on the other there is a tendency to plunge into the realm of the venereologist. Do not let us be swept along with a flood of new therapies.

Here it might be of interest to mention some of the major faults in the treatment of gonorrhoea that we have observed following through our case histories.

1. The failure to appreciate the exact nature and extent of the pathological changes which have taken place, due often, it appears, to an inadequate knowledge of the detailed anatomy of the urethra and its adjacent structures.

2. The Dangers of Prostatic Massage.—There is a general appreciation that the prostatic tissue is involved in infections of the posterior urethra. Further, Lees and Lloyd have both shown that the administration of chemotherapy for gonorrhoea encourages an inflammatory response in the prostate. This is due to the inhibitory effect of the drug on the metabolism of the organisms, thereby allowing the tissue to defend the maximum opportunity of destroying them. With this in mind it is obvious that digital irritation of the gland at this stage is contraindicated. We never carry out this procedure until seven days after the cessation of sulphonamide administration.

3. The Passage of Sounds.—An ill-timed prostatic massage can do enough damage; sounds can do a hundredfold more. Certainly, in experienced hands they are of established value, but in their indiscriminate use lies the danger of causing stricture, epididymo-

orchitis, etc. Be it sufficient here to make one generalization: Never pass a sound if the gonococcus can be demonstrated; when performing a test of cure it is wise to wait until three weeks after the discharge has ceased before employing sounds.

4. Perseverance with Sulphonamide Drugs.—Medical officers frequently do not realize that a case that has failed to respond to two courses of a sulphonamide is unlikely to benefit from a third course of double the optimum dosage. All too often cases of gonorrhoea are flogged with course after course of sulphonamides.

5. Failure to Perform a Thorough Test of Cure.—It is sometimes impossible to discharge cases to hospital for urethroscopic examination or even for a Wassermann test. Nevertheless a reasonably satisfactory test of cure can and must be performed, particularly after an apparent "sulphonamide cure." If the medical officer is likely to lose sight of the case it should be impressed on the patient and his executive officer that complete tests of cure must be performed as soon as the opportunity arises.

### Conclusion.

It was our original intention to submit this communication to the Medical Director-General for publication in a Royal Naval medical journal. Had we done so we would have left unsatisfied a conviction that our plea might have had a wider appeal. Prominent in all our minds at the present time is the desire to do everything in our power to achieve unity and team-work in the profession. For others the war may well have passed the critical stage, but for us the outcome lies at this very moment in the balance. This paper is a plea in a limited sphere for a more co-operative attitude and a closer inspection of one's personal routine. By so doing, each individual one of us may feel that he is helping to turn the scales.

### Summary

There is a need for greater co-operation and team-work in the management of cases of gonorrhoea.

Stress is laid on the importance of a comprehensive history sheet, and methods of tabulation are discussed.

Conclusions are drawn from 76 cases of gonorrhoea treated on board ship, and some common faults in therapy which have come to light are recorded.

We wish to acknowledge our indebtedness to the Medical Director-General of the Navy, Sir Sheldon Dudley, for permission to publish this communication.

## TREATMENT OF WOUNDS BY DELAYED SUTURE

BY

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The initial operative treatment of soft-tissue wounds in conjunction with sulphonamide or penicillin therapy, and a secondary suture along with the technique of penicillin administration, are intended to prevent or minimize infection as well as to encourage early healing. In spite of these efforts in the forward areas, it is my experience that very many granulating wounds, some of considerable size, still reach the base hospitals with infection well established. Some time has usually elapsed since the injury, and these wounds are regarded as "old," but healing by granulation tissue should not be accepted as the inevitable outcome.

Part of our obligation is to obtain a soundly healed wound in the shortest time. This infected granulating type of wound takes weeks and sometimes months to heal if left to granulate, nor is it wise to attempt a secondary suture. In my opinion these wounds can be very easily treated by the "cure" of excision and suture, as opposed to the "prevention" of the early treatment, and it is on that account that this method has been investigated.

### Operative Technique

This should consist of four phases: (1) control of infection and the preparation of the wound; (2) estimation of the optimum time for operation; (3) the practical details of the operation; and (4) the post-operative care of the wound.

1. Control of Infection.—If there is no infection in the wound no special pre-operative treatment is necessary. As a general

the degree of infection varies. In some cases no alteration of the ordinary routine treatment need be made: if the infection is resistant or fairly heavy a course of penicillin locally will be required to bring the wound into a state suitable for operation. It is very necessary in this late type of wound to use as low a degree of infectivity as possible before excision; only certain estimation of non-infectivity is by bacteriological control. Contamination of the wound should be avoided full precautions during dressings; rest in bed should be regarded as a necessary part of this phase.

2. *The Optimum Time.*—It should be said quite definitely that there is no fixed optimum time for this type of operation. It is found, however, with the technique adopted, that better results were obtained in older wounds, but, with satisfactory results from the suggested pre-operative treatment, the waiting period may be cut down considerably. Each wound can be assessed only by its clinical condition, the degree of infection determines the best time to operate.

3. *Operative Details.*—Practically all wounds can be done under a simple pentothal anaesthesia, followed by gas and oxygen if necessary, local infiltration is not recommended. The first essential is to adopt a complete surgical preparation for any major operation and to avoid any tendency to skimp preparation. The technical steps are as follows:

(a) A clean and complete excision of the epithelial edges and all the granulation tissue down to and, if necessary, through the deep fascia. The correct axial direction for the excision will have been determined already by the initial operative treatment; this will be mainly longitudinal. A margin of  $1/8$  in. or at the most  $1/4$  in., will be sufficient to cut beyond the epithelial edge into normal skin, the ends of the incision must be very exact and allow the opposing skin edges to lie neatly in apposition. The length of the incision is of no consequence; the incision should be at a right-angle to the skin surface. This leaves a clean operation field exactly comparable to a planned operation incision, except for the possible gap in the deep fascia.

(b) The skin edges are next undercut and freely mobilized, this enables even a moderately wide gap to be sutured without tension—a point of great importance.

(c) Haemostasis should be as absolute as possible.

(d) The skin edges and the depth of the wound are now dusted with a fine "hoar-frost" covering of penicillin or a sulphonamide, alone or in combination.

(e) Any hole or gap in the deep fascia covering the underlying muscle should be carefully repaired, this, in my opinion, prevents the scar from becoming adherent.

(f) The wound is now carefully sutured. In most cases closure is complete if one feels certain that all dead space has been obliterated, occasionally it may be safer to use a small fine drain in one end of the wound for 48 hours, or a small central "bleb" may be left in the suture line.

(g) The completed suture line is given a final "hoar-frost" dressing, and a firm pressure-bandage is applied.

*Post-operative Care.*—To standardize this phase the drain, if any, was removed after 48 hours. The first dressing was done on the 10th day, when the sutures were removed, the suture line again powdered, and a firm pressure-bandage applied. The second and third dressings were done on the 6th and 22nd days respectively, by which time healing was complete and the wound in a condition to stand up to rehabilitation. All dressings were carried out with aseptic precautions in the theatre. Wounds on the flexor surfaces of oints, of buttocks, and the back require careful post-operative supervision. The patient was confined to bed until healing of the wound was complete. A limb was always immobilized if necessary, to obtain rest. All cases of this nature were segregated in a "clean" ward.

#### Practical Features of the Investigation

A number of granulating wounds, practically all infected, were submitted to the strictly uniform operative detail described above. In order not to obscure the effectiveness of the operative part of the technique, no particular attention was paid in any way to pre-operative control of infection. No case was specially selected. A wound was decided, crudely perhaps, to be suitable for suture simply when it looked clean—there was no bacteriological control. The bacteriostatic agents employed were sulphanilamide, sulphathiazole, and penicillin which was probably some months old: its strength was 5,000

units per gramme); three separate series of cases were treated, and each was given a different powder.

The success of the technique was judged entirely on the healing of the wound and any degree of infection which may have developed. It has been estimated on a percentage basis for tabulation as follows:

- |   |           |
|---|-----------|
| (i) Completely healed on 10th day without infection and remained healed subsequently  | 100%      |
| (ii) Very minor stitch-hole infection: wound a little "grumbly" but dry and healed at 2nd dressing on 16th day                      | 90%       |
| (iii) Definite stitch-hole infection with some pus or discharge, perhaps slight wound-gap in places; but dry and healed on 22nd day | 80%       |
| (iv) Infection prolonged after 22nd day; some definite breakdown of suture line, likely to be some granulation                      | 70%       |
| (v) Failures, and generally poor or worse results than in previous group  | below 70% |

#### Clinical Results of Method

*Series 1.*—This consisted of 10 cases. The bacteriostatic powder used was a mixture of penicillin and sulphanilamide in a proportion of 1 in 10. The wounds in this series were on the whole rather above the average size, and the time-interval between wounding and suturing was relatively long. (See Table I.) The results were quite satisfactory, 8 wounds

TABLE I—*Series 1 Penicillin (5,000 units/g) and Sulphanilamide: 1 in 10*

No.	Type of Missile	Details of Wound				Interval between Wounding and Suture (days)	Result %
		Location	Situation	Direction	Size (in)		
1	Mortar	Buttock	Infero-lat	Oblique	7 × 2 1/2	18	100
2	HE	Calf	Postero lat	Longitud	6 × 1 1/2	33	80
3	Mine	Thigh	Ant-lat	Angled	3 × 1 1/2	38	100
4	HE	"	Posterior	Angled	3 × 1 1/2	29	100
5	GSW (M-G)	"	Lateral	Longitud	5 × 1 1/2	34	100
6	HE	Buttock	Posterior	Angled	5 × 1 1/2	34	70
7	HE	Arm	Lateral	Longitud	3 × 1 1/2	22	100
8	"	Thigh	"	"	12 × 1 1/2	42	Below 70
9	"	Calf	Postero-lat	Oblique	4 × 2 1/2	75	80
10	"	Thigh	Anterior	Transv	2 × 1 1/2	17	90

TABLE II—*Series 2 Penicillin (5,000 units/g) and Sulphathiazole: 1 in 20*

No.	Type of Missile	Details of Wound				Interval between Wounding and Suture (days)	Result %
		Location	Situation	Direction	Size (in)		
1	HE	Thigh	Posterior	Longitud	4 × 1 1/2	26	90
2	Mortar	Buttock	Infero	Oblique	2 × 1 1/2	35	100
3	"	Thigh	Ant-lat	Oblique	3 × 1 1/2	70	80
4	"	"	Anterior	Angled	2 × 1 1/2	34	80
5	"	Buttock	Central	Transv	13 × 1 1/2	34	100
6	Bomb	Hip	Lateral	Longitud	2 × 4 1/2	31	100
7	HE	Calf	Medial	"	3 1/2 × 1 1/2	29	100
8	"	Thigh	Lateral	"	4 1/2 × 1 1/2	29	100
9	Mine	Thigh	"	"	4 1/2 × 1 1/2	29	90
10	HE	"	Ant-lat	"	6 × 2 1/2	22	90
11	Mortar	"	Lateral	"	2 1/2 × 1 1/2	22	70
12	"	"	"	"	3 × 1 1/2	22	Below 70
13	"	"	Post med	"	3 × 2 1/2	22	100
14	"	"	Post lat	"	3 × 2 1/2	22	100
15	HE	"	Anterior	"	3 × 1 1/2	39	100
16	"	Buttock	Central	Oblique	3 × 1 1/2	47	100
17	GSW (M-G)	Thigh	Medial	"	2 1/2 × 1 1/2	85	100
18	HE	"	"	Transv	2 1/2 × 1 1/2	49	100
19	Mortar	"	"	Oblique	1 × 4 1/2	49	100
20	"	"	"	Transv	4 × 1 1/2	94	100
21	"	"	"	"	4 × 1 1/2	94	100
22	"	Leg	Lateral	Oblique	11 × 1 1/2	88	100
23	HE	"	Longitud	"	13 × 1 1/2	16	100
24	"	Shoulder	Anterior	"	2 × 1 1/2	62	100
25	Mortar	Thigh	Lateral	Transv	4 × 1 1/2	15	100
26	"	"	"	Circular	1 × 1 1/2	15	70
27	"	"	"	Longitud	3 × 1 1/2	13	80
28	"	"	Ant-med	"	1 × 1 1/2	13	90

out of 10 (80%) being completely healed within 3 weeks. One buttock wound was poor (it actually healed completely later on after a re-suture); one thigh wound (No. 8) collapsed completely without being infected (the edges and granulation tissue had not been excised, owing to the extent and depth of the wound, and therefore there was no framework on which reparative tissue could build). The penicillin-sulphanilamide

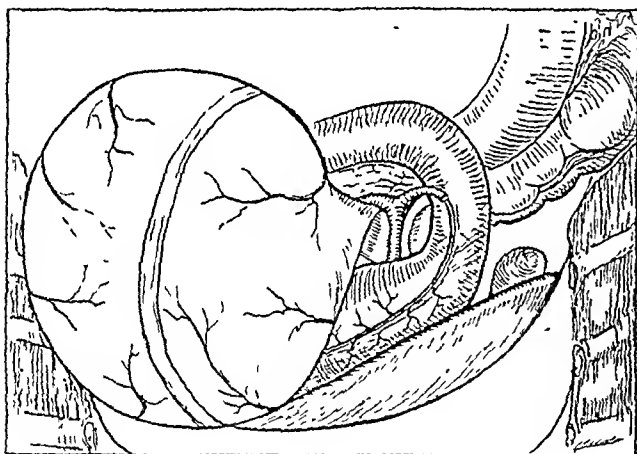
## Medical Memoranda

### Hernia of Caecum into Lesser Sac of Peritoneum Complicated by Volvulus

#### CASE REPORT

The patient, an obese female, arrived at hospital with a history of abdominal pain and vomiting of four days' duration. There were no previous attacks, but she had a strangulated umbilical hernia several years ago, at which time she had similar symptoms. Her present pain, however, starting as a colic, had become continuous. Examination revealed a dyspnoeic and severely shocked patient, with a rapid pulse of poor volume, a cold and clammy skin, and cyanosis of the extremities. The abdomen was greatly distended, and diffusely tender and rigid. No external hernia was present. A diagnosis of strangulated intestinal obstruction with peritonitis was made. The administration of plasma intravenously, oxygen by a B.L.B. mask, and evacuation of the stomach failed to improve her general condition, and she died in a few hours.

Post-mortem examination revealed a large swelling in the lesser sac of peritoneum, which displaced the stomach and liver upwards and towards the right side. The liver was compressed under the right cupola of the diaphragm, which was itself displaced upwards to a marked degree. No tapering left lobe was present on the liver. On removal of the gastro-colic omentum the swelling was found to be an intestinal sac measuring  $20 \times 15 \times 12$  cm. and filling the whole of the lesser sac of peritoneum. Further investigation showed that the condition was a hernia, through the foramen of Winslow, of the caecum and terminal ileum, and that the hernia had undergone volvulus through  $180^\circ$ , which caused complete obstruction. The



walls of the distended caecum were very thin and congested, but not gangrenous or perforated. The small intestine was greatly distended and diffuse peritonitis was present. The foramen of Winslow was considerably larger than normal, and the hernia was ultimately reduced without puncturing the intestine. The ascending colon had a long mesentery continuous with that of the ileum.

#### COMMENT

Since the first case, recorded by Blandin in 1834, about 50 cases of intestinal herniation through the opening into the lesser sac of peritoneum have been described. It is possibly the rarest type of internal hernia (Silverstone, 1939). Excellent reviews of previous cases have been given by Ullman (1924), Dewis and Miller (1927), Silverstone (1939), and Edwards and Stewart (1943). It appears that in only 10 cases was the caecum present in the lesser sac. In no case was a volvulus reported present, so the case described here is apparently unique in this respect.

The distortion of the liver and the large size of the foramen of Winslow suggest that the hernia had been present for a considerable time without giving rise to symptoms until the volvulus was superimposed. Dewis and Miller (1927) stressed the fact that this form of hernia can be present without giving rise to obstruction, and can apparently reduce itself. The only congenital abnormality was the long mesentery of the ascending colon, without which, of course, the herniation would have been impossible.

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## Reviews

### REACTION TO INJURY

*Reaction to Injury. Pathology for Students of Disease. Based on the Functional and Morphological Responses of Tissues to Injurious Agents.* By WILEY D. FORBES, M.D., Professor of Pathology, Duke University. (Pp. 797; illustrated. 50s.) London: Baillière, Tindall and Cox.

This volume contains the first two sections of a treatise on pathology which will be complete with the publication of the third and fourth parts, now in course of preparation. It is an ambitious piece of work; its central plan is based on the belief that the essential element in disease is the reaction of the whole individual to the agents and influence comprising his environment. Pathogenesis supersedes specific aetiology, and the old conventional division of pathology into "general" and "special" sections goes by the board. The reader's attention is centred from the start upon "broad relationships and general principles rather than upon isolated factual, and often deceptively dramatic details." The author's outlook has been quite obviously deeply influenced by W. G. MacCallum, to whom he owes "so much that it almost remains unsaid." Even a short examination of the text quickly recalls MacCallum's great classic.

The author's attitude to his public—the student—is refreshing and stimulating. He regards the student of disease, for whose guidance the book was written, as being "quite as intelligent as his instructors" and entitled to be dealt with as a responsible junior colleague. For these reasons basic principles are treated fully and accurately, controversial subjects are closely and clearly argued, and recent research work is fully described. This is therefore no book for the student who wishes to assimilate temporarily just enough pathology to pass his final examination. Even the illustrations, which as the author states are not chosen for decorative purposes, need attentive study. They are excellent, and are closely correlated with the text and accompanied by full descriptive legends. Each chapter ends with a carefully compiled bibliography.

The next edition of this book will be awaited with interest and it is safe to predict that the completed treatise will occupy an important place in pathological literature.

### PSYCHIATRY

*A Textbook of Psychiatry for Students and Practitioners.* By D. K. HENDERSON, M.D., F.R.F.P.S., F.R.C.P.Ed., and R. D. GILLESPIE, M.D., F.R.C.P., D.P.M. Sixth edition. Oxford Medical Publications. (Pp. 719, 25s.) London: Oxford University Press, 1944.

Henderson and Gillespie has deservedly established its place as the standard textbook of psychiatry in this country. The appearance of a sixth edition in this era of paper shortage is evidence enough of its importance and popularity. As the authors point out, psychiatry is extending its borders so rapidly that the young psychiatrist is faced with an alarming list of sciences, from statistics to physics, with which he may be expected to be familiar. Still his subject is growing in value and is of supreme interest. Perhaps the most important change in this edition is the greater importance accorded to the psychoneurotic reaction types in view of their frequent occurrence in the practices both of the specialist outside the mental hospital and of the family doctor. This group is held to be the result of unconscious mental conflicts in contrast to the constitutionally determined mental illnesses such as depression, paranoid reactions, and the rest.

A new chapter is devoted to special methods of physical treatment, consisting of insulin therapy, cardiazol therapy, electric-convulsion therapy, leucotomy, continuous narcosis, and narco-analysis. As the authors say, the continued success of these methods, in spite of the absence of logical reason for their success, may result in new light appearing on psychophysical mechanisms. The authors agree that electrotherapy is the best form of shock treatment, and that the most favourable results are obtained in depressives, including involutional cases. Leucotomy they say should be reserved for patients in whom all other suitable methods of treatment have been tried and failed; where the illness offers no reasonable hope of spontaneous recovery; and where the patient is disabled more or less completely from useful occupation or from moderate enjoyment of his life.



The paranoid "schizophrenic" type has been removed from the schizophrenic group and is discussed in relation to paranoia, with which it has more affinities. The chapters on epilepsy and war psychiatry have been enlarged and strengthened, and the other sections of the book have been revised and brought up to date. Old readers will welcome an old friend still youthful and vigorous but more mature, and new readers must have this textbook on their shelves.

### GUIDE TO PHARMACOLOGY

*Pharmacology* By J. H. Gaddum. Second edition. (Pp. 460. Illustrated. 25s.) London: Oxford University Press, 1944.

When this useful text book was first published in 1940 the author observed in his preface that it was intended for medical students "at a stage in their education before general principles become obscured by a mass of practical details." He then went on to suggest that it might also be of use to medical men, because it tried to give them some knowledge of the kind of evidence that justifies the trial of new drugs. Certainly to-day medical men need this information more than ever for the introduction of new and potent remedies into clinical practice proceeds at almost a breathless pace. Prof. Gaddum begins with a chapter on diet, and proceeds with chapters on vitamins, hormones, stimulants to the central nervous system, and narcotics, ending with chapters on chemotherapy and general pharmacology. At the beginning of the book he gives metric equivalents for apothecaries and avoirdupois weights and for imperial measures. Another pleasant foretaste to the book proper is a three page summary of pharmacological literature for those who wish to explore further.

Prof. Gaddum is a sure and delightful guide, and writes a simple straightforward English free from ambiguity. He has a happy knack of nying a fact in the mind by the judicious use of a sly humour, as when he refers to the annoyance felt by miners when they found that the remedy for "stokers' cramp" was only salt and water. The discovery that a certain amount of calcium was needed to maintain activity of isolated tissues hung upon the fact that Dr. Sidney Ringer, when his assistant took a holiday, used distilled water in making up isotonic solutions for the study of isolated hearts. The hearts did not beat. When Ringer's laboratory assistant made up the solutions he used tap water to save himself trouble.

In a short note on manganese the author observes that exposure to clouds of manganese dust causes atrophic changes in the basal ganglia of the brain and that oral administration may cause cirrhosis of the liver. Reference might perhaps have been made here to another condition in which there is an association between cirrhosis of the liver and lesions in the basal ganglia—namely, in the rare clinical condition known as atrophic degeneration or Wilson's disease. The two chapters on hormones include a few illustrations which tell a lot in a short space. Particularly effective is the photograph of two frogs in a dish, one of which had been injected by an antiserum against the pars intermedia of the pituitary; this frog is completely black from the expansion of its melanophores, while its untreated control is normally speckled.

Some of Prof. Gaddum's notes on the therapeutic uses of the substances he discusses are tantalizing because he whets the appetite without always satisfying it. Primarily, of course, his book is not a book on therapeutics, but if he discusses the clinical use of androgens in old age and eunuchoidism one would like to see a brief summing up of the question of the hormone treatment of enlarged prostate. There are one or two small points of criticism: for example, should not aneurism be spelt thus—i.e., without a terminal "e"? And is it really correct to say that progesterin is "Greek for pregnancy hormone"?

### Notes on Books

The report presented by the Director-General to the second session of the Council of the United Nations Relief and Rehabilitation Administration, held in Montreal last September, has been published on behalf of the European Regional Office of U.N.R.R.A. (11, Portland Place, London, W.1) by H.M. Stationery Office at 2s. 6d. This report covers the progress of the administration's past activities and its proposed activities during the immediately foreseeable future, as well as the work of the Central Council since its first session. A further publication will follow containing statements made by representatives of the combined chiefs of staff, the reports of the

intergovernmental allocating agencies, and the text of the council's resolutions.

On Aug. 30, 1944, Dr. The Svedberg, professor of physical chemistry in the University of Uppsala, reached the age of 69. His colleagues, pupils and other friends in scientific and industrial research decided to commemorate the occasion by a book dedicated to him and bearing his name on the cover. For reasons explained in the preface the contributions have been limited to the field of chemistry in its widest sense including work in the borderland of other sciences, and technology in particular, to which Prof. Svedberg during recent years has devoted so much of his time and energy. The editorial committee hopes that this volume will give something in the nature of a cross-section of Swedish activities in chemical research during difficult years.

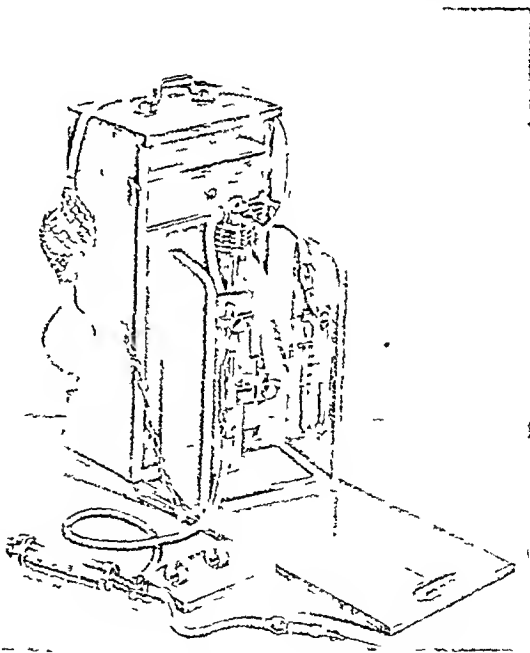
## Preparations and Appliances

### APPARATUS FOR CONTINUOUS PENTOTHAL

Major D. E. DUNNILL, R.A.M.C., writes

The preparation of a simple portable and completely self-contained apparatus for the giving of continuous pentothal anaesthesia seems to fill a gap in the anaesthetist's armamentarium and the following notes and illustration describe one which has been evolved in the light of experience gained during three years of use.

It consists of a case, size 13 x 6½ x 6 in., which contains a standard Army transfusion bottle for giving intravenous saline. Positive pressure is applied with a bellows and measured on a mercury manometer and the rate of flow through the drip feed is regulated by a screw clamp. The rubber tubing from the drip feed to the intravenous needle has interposed a two-



way tap the second arm of which takes a standard Record syringe, so that at any time the saline can be cut off and pentothal injected. All that is necessary to maintain a steady flow of saline into the vein is an occasional glance at the manometer and drip feed, and a squeeze on the bellows when the pressure falls. Pentothal is injected as often as desired from the syringe, which contains the usual 5% solution.

The case is designed to fit the arm of an operating-table, but can be used anywhere else, such as on a bedside table, and the whole apparatus is easily removed for sterilization. Since, however, the tubing from the two-way tap to the needle is detachable for boiling after each case, the rest of the apparatus remains sterile and can be used repeatedly.

The apparatus is manufactured by Messrs. Down Bros., Ltd., 22a, Cavendish Square, London, W.1.

## BRITISH MEDICAL JOURNAL

LONDON

SATURDAY DECEMBER 16 1944

## A.R.M. ON WHITE PAPER

The Annual Representative Meeting held last week was one of the most momentous in the history of the B.M.A. Nearly 270 Representatives from all parts of the British Isles left their practices for the greater part of a week at a time of the year and a time of the war when work is as hard as it can be. By attending in what must be a record number they thus showed how fully they felt their responsibility to the future of the profession they represent. Any chairman of such a meeting may well have felt dismayed when confronted with more than 370 motions on the White Paper. To add to his apprehensions was the news of the formation of a "ginger group" of the deepest blue, some 80 strong, who, with the intention of forming a solid voting block in the A.R.M., were formulating their policy at private meetings. But the solid good sense of the meeting and the suave tact of the Chairman of the R.B. turned to good use the combustible material that was there, and the representative machine proceeded, somewhat unevenly at times, to a stage from which the Negotiating Body can safely continue the next part of the journey. Throughout the whole four days the skilful guiding hand of the Chairman of Council took the meeting out of the mazes into which it occasionally wandered. The A.R.M., indeed, owed much to his remarkable grasp of the present medico-political situation, and to the sheer practical common sense with which he cleared away the fogs of confused thought.

The net result of the four days' discussion was a decision to negotiate with the Government on the basis of the White Paper only if it were altered in essentials. The starting-point for negotiations is summed up in this motion, put by the Chairman of Council and carried unanimously:

"That it be an instruction to the Association's representatives in the Negotiating Committee that, without prejudice to other issues, including the 100% question, remuneration and compensation, consideration of administrative structure, central and local, should precede consideration of all other questions, and that agreement on this subject is an essential prerequisite to discussion of other subjects."

This gathers up the trends of the many discussions and deliberations that have taken place since the White Paper was published. The medical profession will refuse to work any scheme for a comprehensive National Health Service unless it is fully satisfied that the administrative structure, central and local, is properly framed to receive such a scheme. While at times several speakers found it hard to distinguish between administration and control, and so urged the doubtful thesis, "No control, therefore no administration," the two concepts were finally disentangled. Sound administration is essential, but the profession will resist any administrative proposals which, in the words of one motion, would tend "in any respect to limit the free-

dom of judgment and of action of the practitioner, or to weaken his full responsibility for the patient." This was part of a motion moved on the first day by Glasgow under the agenda heading of "General Attitude." It stated, in addition, opposition to a State-salaried service, to civil direction of practitioners, to government of the profession by local health authorities, and, in short, "to most of the machinery of the White Paper." This general attitude was reinforced by another motion which declared the administrative proposals and form of control envisaged by the White Paper to be "inimical to efficiency and progress"; and the fear of Government interference with the doctor-patient relationship found expression in another motion that was passed. In fact, the general trend of the debate showed that current disapproval of the White Paper as a whole is shared by a much bigger proportion than the 53% of the Questionary. Further reflection and deliberation on the Government's proposals have clearly expanded the volume of discontent with it. This discontent finds its most concrete expression on what is known as the 100% issue. The alternating waves of assent and dissent on this question should make quite plain to the general public that the medical profession is not interpreting this matter in terms of finance. Effective ridicule was directed by one speaker against those who screeched out the old parrot cry, "Vested interest!" against anyone who thought it unnecessary to make public provision for medical advice and treatment for those well able to secure these things for themselves. The medical profession has one "vested interest" which it is its first duty to defend, and that is the sane and unbroken tradition of professional beliefs and institutions that have evolved along with society over hundreds of years. It is this tradition and these institutions which have made possible the emerging of medicine out of magic into medical science. It is therefore the first duty of the profession to preserve what is good in this tradition so that it can continue to evolve in ways that have been well tested by generation after generation of medical men and women. The public will never get good medical service except from men who are rightly proud of their profession and satisfied with the scope of service offered by it.

The Representative Meeting passed as a substantial motion the Isle of Wight amendment that "pending further information on . . . the machinery whereby private practice is to be continued . . . there be confirmed the view of the A.R.M., 1943, 'that a comprehensive medical service should be available to all who need it, but it is unnecessary for the State to provide it for those who are willing and able to provide it for themselves.'" This vote was against that unification of services under central control which is characteristic of totalitarian regimes. In its opposition the meeting showed a characteristic British distrust of the simplified logic of the doctrinaire. It preferred, in the opening words of a motion by Bournemouth, "that health legislation should proceed by evolution," and went on to pass a motion which urged as the first objective the completion of the National Health Insurance scheme for those at present insured under it by making available to them "institutional, specialist, and all auxiliary services." When this has been done, then the completed service should be

extended to dependants of the insured and to others of like economic status. The approach is at least realistic, and takes into account the fact that medical men have come to live on more or less easy terms with the N.H.I. scheme, this being so it would seem logical to complete it, to extend it and to make it more acceptable to the profession by making the capitation fee in adequate reward for work done. We may relate this to an important motion passed with a unanimous vote later in the meeting—namely, that new legislation on health service proposals should be presented in a separate Bill, and should not be incorporated in or be dependent on the financial provisions of the social insurance measure. It would certainly be unfortunate if the Government were to legislate for a new health service in the present session as a way of giving the public an apparent morsel of the new social security measure, legislation on which will not be introduced until a new Parliament has been elected.

As to the administrative machine to be devised, the meeting dropped the idea of putting central administration in the hands of a corporate body, and supported with a large majority the Council's proposals set out in paragraph 40 under the heading of "The Central Body" in the Council's Report on the National Health Service published in the *Journal* of May 13 (p. 646). From the point of view of the profession, the essence of administration is that doctors should have an effective voice at all levels of organization and that this effective voice should be secured by electing medical men on to the various responsible bodies. For fear lest politics should muzzle medicine, the meeting insisted upon the safeguard that the statutory body corresponding to the Central Medical Advisory Committee should have the right of publication of its recommendations, whether they are agreed to or not by the Minister. As to local administration, the meeting agreed with the Council's recommendation that regional councils should be set up, these to be 'representative of local authorities, the medical profession, including general practitioners and the medical staffs of voluntary and municipal hospitals, the representatives to be appointed by the groups or bodies concerned'.

At the end of the meeting the Chairman of Council summed up the four days' deliberations (reported in this week's *Supplement*) in the fewest possible words, which we reproduce here, as they give birth to the matter.

We have expressed ourselves in favour of development of the service.

We have disapproved of the White Paper as it stands.

"We have decided to negotiate."

We have appointed our share of the Negotiating Body.

We prefer the service to proceed by evolution from N.H.I. by first the development of the hospital system and then the extension of the general practitioner services.

We have stated emphatically that we do not wish to be employed by local authorities, that there should be no civil direction, that there shall be no whole time salaried service for general practice, and that we shall have no clinical control.

We have instructed our negotiators that their first action shall be to try to agree with the Government the form of administrative structure, and that no action shall be taken in the matter of negotiations until the administrative proposals have been agreed.

## THE BLACK TWIN OF SILICOSIS

According to Rosen's recent book,<sup>1</sup> medical and public interest in the disease now officially known as the pneumoconiosis of coalworkers (aptly termed by a working miner "the black twin of silicosis") has fluctuated during the past few centuries. Certainly the evidence points to a considerable incidence in the English and Scottish bituminous coalfields after the industrial revolution, but this seems to have declined by the 1880s—probably due to improved ventilation and working conditions—only to be succeeded by a wave in the Welsh coalfields, where anthracite seams were being developed rapidly at the close of the century. The present day particular association of pulmonary diseases due to dust with anthracite mining was demonstrated by independent surveys carried out about the same time in the U.S.A.,<sup>2</sup> the U.S.S.R.,<sup>3</sup> and in this country.<sup>4</sup> Not that the association is exclusive, for in the Welsh steam coal mines the incidence is by no means negligible; indeed, a remarkable correlation between "rank" of coal and incidence of pneumoconiosis, from highest in anthracite to lowest in bituminous is evident when various criteria are used.<sup>4</sup> The coal mining industry dominates all others as a source of pulmonary disease. The seriousness of the problem in the Welsh coalfield is shown by an incidence rate over fifty times that of the rest of Britain, while disablement certificates in Wales have increased from 387 in 1939 to 985 in 1943 (a new compensation scheme operated from July 1943) in a population that had declined from 130,000 to 113,000 in the same period.<sup>5</sup> Cases are becoming so common that the Silicosis Medical Board has a waiting list of six months, even with preliminary filtration by general practitioners and the Welsh National Memorial Association. There is no doubt that the major cause of this recent rapid increase is the detection of hitherto unrecognized cases, and this process is not likely to slacken until the recommended periodic examinations become part of the health control of miners and until men who are underground though partly disabled are given the opportunity of alternative productive work.

Pneumoconiosis in miners is still a complex and rather baffling disease. Though some American workers believe the relatively small amount of quartz in the dust to be the main cause, it is doubtful if this is the whole story, it may be that other silicates, antidotal substances, and the adjuvant action of the coal itself are important. The progress of the disease is slow and insidious<sup>6</sup>, its predominant symptom is breathlessness on exertion, its main complications are tuberculosis and cardiac failure, its diagnosis in life rests largely on the x-ray picture (for an atlas of the chest x-ray changes see the first M.R.C. report<sup>4</sup>). There is frequent lack of correspondence between x-ray appearance and symptoms in individual cases, but if statistical groups are taken, the more extensive and severe the disease

<sup>1</sup> Rosen, G. *History of Miners' Diseases* 1943. See *British Medical Journal* 1944, 2, 187.

<sup>2</sup> *Publ. Hlth Bull. Wash.* No. 221, 1935 and No. 270, 1941 summarized in 4.

<sup>3</sup> Moshkowsky, I. I. *Tuberculosis and Pneumoconiosis among Underground Workers, U.S.S.R.*, 1941. Summarized in *British Medical Journal* 1942, 1, 223 and in 4.

<sup>4</sup> M.R.C. Spec. Rep. Ser. No. 243, 1942. No. 244, 1943. No. 250, 1944.

<sup>5</sup> Report of Advisory Committee of the Ministry of Fuel and Power on Treatment and Rehabilitation of Coal-miners in the Wales Region suffering from Pneumoconiosis, H.M.S.O., 1944 (reviewed in the *Journal*, 1944, 2, 347).

<sup>6</sup> Aslett, E. A., Davies, T. W., and Jenkins, T. I., *Brit. J. Radiol.* 1943, 16, 108.

on the radiograph the more likely is disability to be present.

What of the future? Treatment of the established condition was symptomatic until powdered aluminium came into use; suggestive results in metalliferous miners suffering from silicosis have been recorded lately,<sup>7</sup> and a carefully controlled trial in coal-miners is indicated. Rehabilitation and resettlement schemes for men partly or even wholly disabled from mining are an urgent and immediate problem; some thousands have gone into war industries of their own accord and have been working happily there, but planned arrangements will be needed for peacetime conditions. For purposes of prevention great hope lies in water infusion of the coal face to allay the dust at its source.<sup>8 9 10</sup> This method, which was first introduced in Britain, certainly reduces the dust; but it will be imperative, by follow-up of selected groups, to be able to say in five to ten years whether the reduction has been adequate to eliminate serious disease. Mechanization, though it tends often to increase dustiness, may, if combined with dust-allaying methods, be ultimately beneficial through reducing the human factor; perhaps we shall even see underground gasification, as in some Russian mines.<sup>11</sup> To carry out and co-ordinate these socio-medical tasks, together with further basic pathological research into causation, a special research centre has been recommended.<sup>5</sup> This may lead to a National Pneumoconiosis Bureau that shall take over the compensation functions of the present Silicosis Board, conduct periodic examinations of all miners, and be concerned, together with the Ministry of Fuel and Power, with preventive methods<sup>5</sup>; the experience of the South African Miners' Phthisis Bureau would justify such a development.

### POSTERIOR PITUITARY AND THE UTERUS

It was in 1906 that Dale discovered the stimulating action of an extract of the posterior pituitary gland on the isolated uterus. It was subsequently shown that the posterior pituitary contains two active principles, though neither has yet been isolated in a pure form, and it is still not certain that they have separate existences in the body. The oxytocic principle (pitocin) acts exclusively on the uterine muscle, and the vasopressor principle (pitressin) on the muscle of the arteries and certain smooth muscle of the abdominal viscera. The antidiuretic function of the posterior pituitary is apparently associated with pitressin. The reaction of the isolated uterus to posterior pituitary extract varies from species to species. In certain circumstances pitressin stimulates the human uterus, and pitocin has its greatest effect towards the end of pregnancy and in labour. Chassir Moir<sup>12</sup> has recently studied this problem. The non-pregnant uterus undergoes regular small contractions in the first half of the menstrual cycle. Later these are gradually replaced by larger and more prolonged contractions which merge eventually with the contractions of menstruation. The uterus reacts to undifferentiated posterior pituitary extract at all stages of the cycle, but it was found—rather surprisingly—that the non-pregnant uterus reacts only to pitressin and not at all to

pitocin. In early pregnancy the reaction of the undisturbed uterus to pituitary extract is slight, though after evacuation of the uterus the reaction is more pronounced. Both pitocin and pitressin were found to have a motor effect on the aborting uterus, though the response to pitressin is more constant and probably greater. In late pregnancy posterior pituitary fractions have a very variable effect, but, in general, much larger contractions are caused by pitocin than by pitressin, and in labour also. For the first three or four days after parturition pitocin is still more active than pitressin, but towards the end of the first week the oxytocic effect of these two principles is about equal. This extremely important study has certain clinical corollaries. If pituitary extract is used to check haemorrhage in abortion the undifferentiated extract should be used, because pitocin is relatively inactive at this time. But in later pregnancy and in labour pitocin has some advantages; it is relatively free from antidiuretic effect and may therefore be employed for the induction of labour in cases of toxæmia; it is less apt to cause pituitary shock and is therefore to be preferred for the treatment of post-partum haemorrhage; it should be used when intravenous injection is required, but in a dose not exceeding 2 units.

Moir<sup>13</sup> has also reviewed the literature and clinical use of oxytocic drugs generally. Pituitary extract seems to have little advantage over ergometrine in the treatment of post-partum haemorrhage, though he believes that pituitary extract is the more active of the two preparations in the anaesthetized patient. Against this is the danger of pituitary shock—a complication especially likely to occur if the extract is given more than once within a space of half an hour. Pituitary extracts have a relatively transient action on the uterus, which passes off in about half an hour. In a recent letter in these columns<sup>14</sup> Moir points out that advantage may be taken of this fact by injecting pitocin into the fundus of the uterus to aid in the expulsion of the placenta. If expression of the placenta is unsuccessful haemorrhage is checked, and manual removal may be performed half an hour later. While deprecating the routine use of oxytocic drugs before the placenta is delivered, he points out that this manoeuvre may, in suitable cases, avoid the necessity for manual removal. It may be added that the evanescence of the effect of posterior pituitary extracts is in itself a danger, and when they are given for post-partum haemorrhage it is well to supplement them with an oxytocic of more prolonged effect, such as ergometrine.

### THE NUTRITIVE VALUE OF YEAST

Weight for weight yeast is the most nutritious foodstuff known. Perhaps "foodstuff" is not the correct term, as yeast is not taken in any quantity as a food. The small amounts added to bread are negligible from the nutritive point of view—a point of view which is developed in a recent monograph by Somogyi.<sup>15</sup> On a dry-weight basis yeast contains some 50 to 60% of protein—far more than any animal source—and this is stated to be as good biologically as the protein in milk. No animal can rival yeast in the proportion of protein it holds in its tissues. Yeast contains the essential amino acids tryptophane, methionine, valine, leucine, isoleucine, histidine, and lysine. It is an excellent source of the B vitamins, and has nearly 2% of potassium, 5% of phosphorus, and 0.03% of iron, all essential constituents of the diet. Among other important substances in yeast are glutathione and ergosterol (both 0.5 to 0.6%), glycogen (40%), lecithin (2 to 4%), and nucleic acid (26%). If yeast is irradiated the ergosterol

<sup>7</sup> See *Brit. Med. Journal*, 1944, 2, 601.

<sup>8</sup> Jones, P. T., *Proc. S. Wales Inst. Eng.*, 1943, 59, 306.

<sup>9</sup> Ministry of Fuel, S.R. & O., No. 1696, 1943, H.M.S.O., London.

<sup>10</sup> Ministry of Fuel Safety Pamphlet No. 12, 1944, H.M.S.O., London.

<sup>11</sup> See No. 16, 1944, 154, 590.

<sup>12</sup> *J. Obstet. Gynaec. Brit. Emp.*, 1944, 51, 181.

<sup>13</sup> *J. Obstet. Gynaec. Brit. Emp.*, 1944, 51, 511.

<sup>14</sup> *British Medical Journal*, Nov. 4, 1944, p. 606.

<sup>15</sup> *Beihft. Z. Vitaminforsch.*, No. 4, 1944, Berne.

is transformed into calciferol equivalent to 3,000 to 4,000 i.u. of vitamin D per gramme of yeast. A fifth of a gramme of irradiated yeast a day would thus suffice for the prophylaxis of rickets in the young infant. If there are no technical difficulties in the way of producing irradiated yeast on a commercial scale rickets could be prevented for a trifling sum.

The vitamin-B content varies in different kinds of yeasts, the best source being brewers' yeast, which may contain up to 25 mg. of vitamin B<sub>1</sub> per 100 grammes, this may be increased to 90 mg. per 100 grammes if the yeast is grown in special media. The "average man," it may be recalled, is thought to require about 2 mg. of vitamin B<sub>1</sub> daily. The riboflavin content of yeast varies from 1.8 mg. to 5 mg. per 100 grammes, and that of nicotinic acid from 10 mg. to 100 mg. Yeast is the richest-known source of vitamin B<sub>6</sub>, of pantothenic acid, and of biotin—three other members of the vitamin B complex.

It is possible that yeast may play an important part in human nutrition in the future. It is a source of protein and vitamins (far cheaper than vitamins out of a bottle) and could be used to fortify the refined diets of our modern civilization. Bakers' and brewers' yeast are not altogether suitable for human consumption because they are not tasty enough. As pointed out previously,<sup>16</sup> food yeast, or the dried yeast *Torulopsis utilis*, is more palatable than bakers' and brewers' yeast and can be manufactured more cheaply. If it is made on the scale now contemplated it can be produced for sixpence a pound. Thus for three-halfpence a day it would be possible to obtain 50 grammes of first-class protein and an adequate supply of all the B vitamins necessary for human nutrition—but who would eat it?

### CONWAY EVANS PRIZE

The Presidents of the Royal Society and of the Royal College of Physicians have awarded the Conway Evans prize to Sir Thomas Lewis, M.D., F.R.S., F.R.C.P., in recognition of his great contribution to medical knowledge in the normal and abnormal mechanisms of the heart and circulation of the blood. This prize, in accordance with the will of the late Dr Conway Evans, who was medical officer for the Strand district, is awarded from time to time for scientific work of outstanding distinction. It was given to Sir Charles Sherrington in 1927, and since then to the late Dr John S. Haldane in 1933 and to Gowland Hopkins in 1938. It will be seen that so the prizes have been awarded infrequently with the intention that they should be given only in recognition of outstanding contributions to science, thus fulfilling the intention of the donor. Sir Thomas Lewis has worked essentially in a field which he has called "clinical science," and he has clearly indicated how the modern developments of science in general can be applied to the many problems of medicine at the bedside.

### THIRTY YEARS OF DISTRICT NURSING

District nursing—the service if not the name—has been in existence not for thirty but for a hundred years. It may perhaps be dated from the foundation by Elizabeth Fry of the Institute of Nursing Sisters for the poor in their own homes. Queen Victoria's Jubilee Nurses date back for more than half a century. But it was in 1914 that the Central Council for District Nursing in London was established. To commemorate thirty years' history a pamphlet has been published recalling some of the Council's achieve-

ments. At the inaugural meeting, held at the offices of the old Local Government Board, Sir William Collins was elected chairman, and he is still chairman to-day, a noteworthy record of public service among many others which Sir William has to his credit. Dr (now Lord) Addison, first Minister of Health, was the first vice-chairman. The Council, in addition to the general co-ordination of the work of district nurses, has applied itself to many useful activities. An early effort was to produce a directory of 20,000 streets in the County of London, showing the nursing association by which each was served. Arrangements were made for the home nursing of measles, rubella, and whooping-cough, and, at a later date, of scarlet fever. Maternity nursing had special attention. Nursing of public assistance patients was put on a new basis with the abolition of Boards of Guardians and the taking over of public assistance by the L.C.C. in 1929. A system of daily visits to people who could not meet the expense of, or even accommodate, a private nurse, and yet were not eligible for charitable nursing, was inaugurated. The Council has also done much to make uniform and more adequate the salaries paid to district nurses. To-day it can be said that in Greater London, with the exception of some new areas of population in Middlesex, an adequate service of district nursing is functioning and forms an indispensable auxiliary to the work of hospitals and medical practitioners.

### TREATMENT IN PSYCHIATRY

The annual report of the medical director of the Cassel Hospital, Dr C. H. Rogerson, is concerned largely with a contrast between the older and the newer methods of treatment in psychiatry. The more recent treatments are already well known. After paying a well-deserved tribute to the psychotherapeutic work of the late Dr T. A. Ross, the first director of the hospital, the report mentions the additional techniques of analysis and elucidation which have been developed in the past few years, and describes especially the method of "narco-analysis." At the Cassel Hospital, instead of receiving an intravenous barbiturate for the purpose, the patient inhales nitrous oxide from a standard apparatus for obstetric anaesthesia. The report considers that it has much value where a deadlock in the process of psychological analysis is reached. Continuous narcosis has been used for the early stages of acute anxiety states and for more chronic cases associated with much agitation or excitement. Modified insulin therapy has been used to hasten the disappearance of basic anxiety symptoms after the psychological treatment has made the root of the neurotic symptoms clear. Electric shock therapy, which is so valuable for endogenous depressions, has not been found of benefit in anxiety neurosis, conversion hysteria and obsessional neurosis. (Incidentally, the term "affective neurosis" is used instead of anxiety neurosis, and the term "affective psychosis" for mild depression.) A remarkably successful example of prefrontal leucotomy is reported. The new methods obviously open up the field of treatment in a convincing variety of ways, but in the opinion of the director they do not supersede the older methods. The postgraduate training scheme in psychiatric nursing made possible by the bursaries provided by Sir Felix Cassel is described. It represents a comprehensive curriculum which should prove most stimulating to the nurses fortunate enough to obtain this opportunity.

At the recent meeting of the General Medical Council Sir Herbert Lightfoot Eason, C.B., C.M.G., M.S., was elected President for the term ending on Nov. 30, 1947.

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Competition between, and overlapping responsibilities of, different departments, so often insurmountable obstacles in tackling this major problem of public health, can, as the Doncaster case proves, be overcome with some good will and understanding among the parties concerned.—I am, etc.,

Doncaster.

E. G. W. HOFFSTAEDT.

### "Unusual" Case of Tuberculosis

SIR.—The case of generalized tuberculosis reported by Major Mylchreest and Capt. Scott (Nov. 25, p. 693) is hardly to be considered "unusual" if we take a wide view of tuberculosis. It is certainly unusual in these islands and among the white inhabitants of America, though it is not unknown. The authors do not say whether their patient was a white or a black American, but I assume he was white. The case is very much in line with the common tuberculosis of the African, and the authors will find the contrast between Africa and European tuberculosis well set forth in the report of the South African Tuberculosis Committee (1932), "Tuberculosis in South African Natives with Special Reference to the Mine Labourers on the Witwatersrand," on page 156. I think that most workers would differ from the authors in the conclusion that "the absence of macroscopic cavitation in the various affected organs argues a comparatively high resistance on the part of the patient." The persistent pyrexia and erythema nodosum are common in the early undeclassified cases of tuberculosis without such or any resistance to the germ. It is, perhaps, a natural error for medical men brought up in the midst of the very "resistant" types of tuberculosis common in this country to regard as unusual any variation from the normal and chronic type seen here, but I feel that the case quoted is not unusual if we take into account the whole of tuberculosis from a wider point of view.—I am, etc.,

S. LYLE CUMMINS.

### Injuries from Flying Glass

SIR.—In his interesting article on flying-bomb casualties Dr. R. C. Bell (Nov. 25, p. 689) states: "The penetrating power of flying glass is, in the main, low. It is unusual for it to pierce the deep fascia; usually it lies just under the skin in the fat." This has not been my experience, and I doubt if it is the experience of many who have had to deal with these cases. Penetration depends on a good deal on the thickness of the glass, its velocity on impact, and whether the glass hits the tissues edge-on. The cases with which we had to deal were wounded by ordinary window-glass of dwelling-houses, and most of those dealt with as in-patients suffered only from superficial but also from penetrating wounds, as obvious from the bombing raids of 1940-1 that glass did penetrate deeply, and early on you were kind enough to publish some observations of mine giving examples of such raids (*B.M.J.*, 1940 2, 719). The same holds true for glass cases caused by flying bombs—only all the more so, as one would expect from the greater blast effect.

With recent casualties we have found glass wedged in the bones of the skull, embedded deeply in the neck, in the chest causing a sucking wound, and in the abdominal cavity. It has been found in the muscles of the extremities and in the muscles of the back, and has cut right through tendons. It has severed main arteries and nerves, and, according to Romanis (*Practitioner*, Aug., 1944), most of the big arteries of the body have been cut by flying glass. Two of our neck wounds involved the trachea on its lateral aspect in one the injury was suspected owing to the air suction in the wound, and the glass splinter was found projecting into the trachea; in the other case the left recurrent laryngeal nerve was injured, but the real cause was not discovered until the patient coughed up the splinter. The abdominal injuries included laceration of the transverse colon, the caecum, and the mesentery. In one case post mortem it was found that glass had traversed the greater part of the lung, pierced the diaphragm, and caused a large haematoma in the liver. But it is unnecessary to go on citing cases. As a rule glass shows up well on x-ray films, and many radiographs bear evidence of the depth to which glass splinters may penetrate.

I agree with Dr. Bell that it is unwise to attempt to deal seriously with multiple surface wounds. Excision of these as

recommended by some is out of the question, and the wounds are sometimes so numerous that one case alone would provide enough emergency work for two or three surgeons. Such treatment would undoubtedly re-establish shock, which one has probably laboured hard to counteract. In any event, with present-day methods of counteracting sepsis these wounds do not require elaborate or prolonged surgery. Wounds of the face sometimes require attention on account of haemorrhage, and if conditions allow should be cleansed thoroughly to rid them of dirt or grit; otherwise staining remains. Prof. Kulner (*Practitioner*, Aug., 1944) recommends washing with C.T.A.B. (cetavlon), hydrogen peroxide, and saline, and if dirt or grit is still present removing with a fine curette or nail brush. In general it is surprising how tissues whose viability is in doubt often recover. An elderly man had the cartilaginous portion of his nose almost completely shorn away. It was found wrapped in a handkerchief but still attached by a central bridge of skin at the philtrum. It was cleansed and stitched back in position and it healed without loss of tissue.

But one must be alive to the possibility, or rather probability, of glass penetrating deeply, and what on the surface may appear, a simple puncture may go deep and involve important structures. X-ray examination will help then and later. There must be a goodly number of people going about with glass in their tissues, and if the surgeon is sometimes puzzled by an unusual tumour he may find on removal that it proves to be glass.—I am, etc.,

London W 1

MICHAEL J. SMYTH.

### Insulin Syringes

SIR.—May I observe in your columns the confusion occasioned by the presence of an "insulin syringe" provided for the simplification of insulin dosage. Insulin is now dispensed in strengths of 20, 40, and 80 units per c.cm. The syringes are all marked in graduations equivalent to 20 units per c.cm. I have had two recent examples of dangerous inaccuracy of dosage when the carrying out of the injections was delegated to persons about the household.

The first was a new case living a few miles out in the country. I provided the family with the necessary equipment, including a bottle of insulin of 40 units per c.cm. strength and an ordinary c.cm. syringe, graduated in c.cms and minimum marks, and advised them that it was not an "insulin syringe." I then asked the district nurse to co-operate by giving the injections and teaching the patient's wife to give the injections. The patient having refused to go to hospital, I proposed to start with a low dosage—10 units twice a day. In a very few days I was asked for a further supply of insulin. The insulin provided should have lasted about a week. On investigation I found that the nurse had been using the minimum graduations as insulin unit graduations, drawing the insulin up to its 10 minimum mark, and this was equivalent to 24 units of insulin, which was what the patient was receiving twice a day. This accident saved a good deal of time in finally stabilizing the patient's glycosuria at 36 units twice a day.

The other case was one that I had taken over and found was having two doses a day of 40 and 35 units of protamine insulin of 40 units per c.cm. strength. The patient was not well though more or less sugar-controlled. I sent him to a consultant for advice as to changing his treatment, and he was immediately changed to the same dosage of soluble insulin with immediate improvement in his health and also improvement in his sugar control in the urine. But on this new treatment I was very soon asked for a further supply of insulin, so I asked to be shown the syringe used and how far up the insulin was drawn. The syringe was a 2-c.cm. "insulin syringe," marked in c.cms, and insulin units up to 40 in the 2 c.cms, and I was shown that for the morning dose the insulin was drawn up to the c.cm. (40 units) mark. In other words this patient had been having, unknown to himself and his doctor, 80 units of protamine insulin in the morning and 70 in the evening. Small wonder that he had not been feeling well. But neither the consultant nor myself found out the reason for his ill-health immediately.

Apparently the sum of simple proportion required to calculate the correct dose of insulin is too complicated even for the best-educated sometimes in these days of concentrated insulin solutions when using the so-called "insulin syringe." I would therefore advocate that the best syringe for insulin injections in the home is the standard syringe marked in c.cms, and tenths of a c.cm., because the calculation required in making up the dose from whatever insulin is provided is more simple.—I am, etc.,

Thetford, Norfolk.

T. L. OLIVER.

### Vitamin B in Post-operative Treatment of Head Injuries

SIR.—One of the many purposes for which the vitamin B complex can be employed is in the post-operative treatment of head wounds, such as the penetrating cranial injuries we are seeing due to the campaign on the Western Front. Such injuries are commonly followed by a psychological state involving a shallow emotivity and undue dependability, a sort of vaguely juvenile state, difficult to describe but readily recognizable by observers who have seen any quantity of these cases. Some of these cases are complicated by schizoid tendencies, such as negativism, though these latter tend to be fleeting and are not exhibited in any dramatic degree of development. The administration of the vitamin B complex unmistakably accelerates the return to normal of these cases. It also tends to dissipate more quickly the disorientation and confusion exhibited in a proportion of them. Where these latter symptom complexes are displayed the addition of extra nicotinic acid to the regime is advisable. The preparations used are tab. benerva co., the dosage being, for the most part, two tablets three times a day. Tablets of nicotinic acid (mg. 50) three or four times daily were added in some cases.

The improvement in the physical condition of cases so treated is quite unmistakable. We have noticed a particularly striking improvement where speech difficulties were associated with lesions in the neighbourhood of Broca's area. One patient in particular, able to enunciate indistinctly only husky monosyllables, chiefly affirmatives and negatives, was able after three weeks to hold a short but clearly distinct conversation. Making every allowance for the fact that his improvement may have stood in a merely coincidental relationship with the administration of vitamin B, we feel the suddenness of the improvement and its rate of acceleration subsequent to the administration of the vitamin B can only be ascribed to the effect of the latter.

One case where confusion was a marked feature of the condition improved considerably with vitamin B, which later, due to an error, was then not given for several days. During this period the patient's condition slumped badly, but showed considerable amelioration when the vitamin was again utilized.

In the experience of one of us vitamin B is also efficacious in clearing up the symptoms of the post-concussional syndrome, where the latter is not accompanied by penetrating wounds or tangible intracranial injury.

We realize to the full that we have not accumulated sufficient data to write dogmatically or to produce a paper on the efficacy of the vitamin B complex in cases of head injury. We are, however, sufficiently satisfied with its beneficial effects to feel that it is worth an extended trial. Our main motive in writing this letter is to stimulate the interest of others in this particular treatment of a type of injury of cardinal importance at the present time.—We are, etc.,

A. GUIRDHAM,  
F. KOHN.

### Pseudo-migraine and its Relation to Neurofibrositis of the Scalp

SIR—I was interested in the observation made by Dr. Pether on the effect of barometric changes on the recurrence of migraine in some of his patients. It is, of course, a well-established fact that patients who suffer from the various rheumatic ailments are most susceptible to barometric changes, and I find that when seen they will say that their pains were much worse on days when the weather was most changeable. There can be no doubt that those patients who suffer from neurofibrositis of rheumatic origin feel barometric changes the most. And so it would appear that many so-called sufferers from migraine who have attacks during barometric changes are really suffering from neurofibrositis of the scalp, which gives rise to headaches of a migrainous character exacerbated by emotional disturbances, barometric changes, dietetic errors, and exposure to inclement weather.

The condition is due to a fibrositis of the scalp, and the painful spots are usually found in the temporal muscles, above the eyebrows, and in the tissues at the origin of the sterno-mastoid muscles at the base of the skull. After firm digital pressure has been applied to any of these spots the patient will complain that this manipulation is causing a headache, similar in character to those from which he suffers.

After the acute attack has subsided massage over the tender spots should be started, using the tips of the thumb and index finger of the right hand. A vigorous side-to-side movement is used over the tender spots for a few seconds only, as at the first sitting it is extremely painful. This treatment should be carried out on alternate days, using, at each subsequent sitting, deeper and more prolonged massage, which now can be more easily tolerated. Within a few days the headaches will be far less severe, and within a month the patient should be cured. The operator will feel that the tissues around the painful spots become, after three or four treatments, much softer, thus demonstrating that the fibrositis is being resolved into healthy tissues; this coincides with the amelioration of headaches.

It would appear that the cause is metabolic in origin, so that it is advisable for patients to go on a purin-free diet and while they are under treatment to keep their head warm. Many sufferers from chronic headaches that are no migrainous in character will also derive great benefit from this type of treatment. In this category would be placed patients suffering from headaches following trauma and men who suffer from headaches which they think are due to hyperpiesis. In the latter the painful nodules are found at the origin of the sterno-mastoid muscles at the base of the skull.

In true migraine there are no tender nodules on the scalp.—I am, etc.,

London, W.1.

LOUIS MOSS.

### Latent Mastoiditis in Infancy

SIR.—Frequent reference has recently been made to latent mastoiditis. It is stated that in infants advanced mastoid infection is commonly present without otoscopic signs of middle-ear disease.

Patterson and Stewart Smith (Nov. 18, p. 659) report 71 cases with evidence of mastoiditis post mortem, only 12 of which showed clinical otitis media before death. Leathart (Nov. 1, p. 637) apparently discards otoscopic signs in favour of a bal patch on the back of the head and glands in the posterior triangle of the neck. Alexander and Eiser, in their excellent paper (Sept. 30, p. 425), found purulent otitis media in 60 of 140 cases of infantile D. and V. Leathart contends that the majority of the remaining 80 cases, in fact, had mastoiditis without otoscopic signs.

Is it, therefore, to be accepted that this delicate membrane the tympanum, which alone conceals a suppurating cavity, frequently shows no detectable change? It is generally agreed that the mastoid antrum and the middle ear in infants should be regarded as one cavity, and though, theoretically, obstruction in the aditus may lead to resolution in the one and progress of the infection of the other, at necropsy these infants invariably have pus in middle ear and antrum. It is the experience of many observers that the tympanum does, in fact, show inflammatory signs in the great majority of infants suffering from the common febrile illnesses, whether gastro-enteritic, respiratory tract infection. In a recent closed epidemic of severe gastro-enteritis involving 13 infants under 9 months of age, definite otoscopic signs of otitis media were found in all save one. These cases were not all in the suppurating stage when myringotomy was performed, but in more than half frank pus was found, and the majority of the remainder developed purulent otorrhoea during the ensuing two days. It is suggested, therefore, that the otoscopic signs of middle-ear disease in infants are not as unreliable as Leathart and others believe.

Is it not rather that our examination of the tympanic membrane is imperfect? First, it is not easy to obtain a completely unobstructed view of the whole drum in a good light, and the conclusion reached with an indifferent view can be most misleading. Secondly, a frost-like layer of desquamated epithelium (or drying exudate) commonly covers the drumhead in acute cases, which gives it a false white appearance. Only when this is gently removed with a moist swab is a fiery-red membrane revealed. Swabbing of a normal drumhead, even in a crying baby, never reproduces the appearance of inflammation. Thirdly, after a few days of active infection in the middle ear the tympanum wears a greyish thickened appearance with very little bulge, and only slight dulling of the lustre.

which may be most deceptive. This drum, which is tough to miss, invariably conceals frank pus. These signs are well known to those who have experience of infants, may there not be others equally misleading?

It is important that the frequency of otitic infection in the infant be more widely recognized, and vital that its relation to D. and V. be better understood. The dogmatic statements of Mr. Leathart on this matter, however, may do more harm than good—I am, etc.,

Newmarket

R ARDEN JONES

SIR—The article by Drs. Patterson and Smith is an important one showing as it does the extremely great frequency with which pus is found post mortem in the mastoids of infants. For the past 12 months I have had the privilege of assisting Mr. P. W. Leathart in his work at the Royal Liverpool Children's Infirmary, and I venture to suggest that a large number of the cases considered in this article would never have come to post mortem if an attempt at mastoid exploration had been made during the illness.

It is stated "none of our patients had any of the local complications which might reasonably be expected if the pus found in the mastoids was the result of an acute primary active process, and, moreover, so virulent as to cause death from toxicæmia and dehydration." Mastoid infections in infants are rarely of the acute fulminating type, hence the difficulty of diagnosis. They nevertheless do great harm by acting as a low grade subacute or chronic septic focus with toxic absorption, which, in the delicate infantile organism, often precipitates diarrhoea and vomiting. This condition is then maintained until either the mastoid infection resolves or the infant dies. Unfortunately, without operation, resolution is uncommon.

It is not contended that diarrhoea and vomiting alone is invariably the means to death in mastoiditis of infancy, but that it is very commonly so. The chronic septic absorption may in a smaller number of cases result in a susceptibility to respiratory infections, marasmus, and sometimes septicaemia as terminal events. The article fully supports this view, as in the diarrhoea and vomiting group 71% of cases had mastoid pus. This is quite considerably more than in the other groups considered which showed 26%, 50%, and 33%. The diversity of organisms found in no way affects the argument. Any septic condition within the mastoid will provide toxins.

Drs. Patterson and Smith write "Finally, the highly infectious nature and the mode of spread of gastro enteritis in infants' wards in hospital form, we think, one of the strongest points against latent mastoid infection, being the key to the etiology of this condition." True, infective gastro enteritis of the type mentioned is, in our experience, rare, and the infants almost invariably recover providing a mastoiditis secondary to the vomiting is not contracted.

The operation for mastoid drainage in an infant can be performed with very little disturbance to the patient. It is so fortunate that this article (drawing as it does conclusions not justified by the facts) discourages what is so often a life-saving procedure—I am, etc.,

Liverpool

H ZALIN

### Artificial Insemination

SIR—As this seemed exotic and unlikely to appeal to the people of this country, one felt it was better to remain silent. The fact that the secretary of the M.D.U. thinks it necessary to prepare safeguards—from a legal standpoint—for doctors participating makes one anxious to assess the profession's attitude. A statement in the *Journal* of Nov. 25 by Dr. Malleison affirms that recent correspondents find fault with the procedure from the point of view of the Catholic Church (whose dictates on other obstetric matters are not accepted by the profession at large). It might be remarked here that the Church promulgates and upholds the moral law and that artificial insemination is not a mere obstetric matter. An epitome of the views of an eminent Catholic theologian will make this clear. I asked him about this and about the statements in the *Journal* that the Church had not spoken on the subject.

This is not a mere medical question. To regard it as such is to miss the important side—that this matter is bound up

with human relations, vital human relations. The emphasis must be on human relations, as opposed to the reproductive relations of animals. There is nothing so fundamental in human society as the union of man and woman. Everything else is built on that. Human love unites husband and wife, permeates the family, and holds together human society. The question of the union of the sexes and the procreation which follows is a sociological question in its widest sense. Artificial insemination, therefore, raises a sociological problem in which the medical profession as such has only a minor role to play. The Church, as the moral guide of the many millions of its members, has a duty as well as a right to pronounce on the moral aspect of all problems of human conduct, whether they be problems of purely individual conduct or problems that involve social relations. On this question of artificial insemination the Church has given a carefully considered decision. The Church pronounced it to be morally wrong in 1897. The reasons (not all of which apply to every case) are mainly: (1) A woman must be inseminated by her husband. They are two in one flesh and belong to one another. An invasion by other semen is a violation of their sacred union. (2) Insemination is not a medical operation but the climax of the physical expression of love. (3) Artificial insemination implies onanism (solitary self abuse or masturbation), which is immoral.

These are the main direct reasons, but in addition, and partly following from these, one may add that artificial insemination strikes at the very foundation of the family for the family is built up around the father and mother whose co-ordinated love and efforts direct the offspring, who are flesh of their flesh. There must be this vital link binding husband, wife, and children—I am, etc.,

Boscombe, Bournemouth

P. P. McKINNEY

SIR—To reinforce the opinion so reasonably expressed by Dr. Joan Malleison (*Journal* Nov. 25) may I quote one case that supports her arguments indisputably, and proves that the love of children produced by artificial insemination is of the same quality and subject to the same variations as those produced in the usual manner.

A married couple whose home life was very near collapse undertook artificial insemination as a last resort in spite of the prognostications of their priestly advisers. It is impossible to describe the mental and physical improvement that has resulted from the production of a child and the change in the atmosphere of the home during gestation and after the arrival. A second child was produced after an interval of two years in the usual manner. Both are healthy, strong, and intelligent.

A question that is often asked is: Will the child of artificial insemination be the same physically and mentally as one produced normally?

The veterinarians have had much more experience in these investigations, and with more accurate knowledge the results look more hopeful but are still unsatisfactory though the famous horse Rock and was produced by artificial insemination and won the Derby, the Guineas, and the Oaks—which undoubtedly require speed, stamina and intelligence—I am, etc.,

Bath

J. HOBART NIXON

SIR—Many people look upon medical practitioners as sane and unbiased individuals capable, through long years of training of assessing a situation on its merits without undue prejudice or emotional over-emphasis. It is fortunate, perhaps, that the *Journal* has a limited circulation, for some of the letters that have been printed concerning artificial insemination prove how unreliable many of our colleagues are when medical questions with an ethical fringe are concerned. Those who invoke outworn religious dogma as a logical criticism of a new method of increasing the birth rate and bringing some degree of happiness to a barren couple are clearly swayed out of all reason by purely emotional (and therefore limited to personal) values. If such "reasoning" is of value it might be of interest to learn the views of any sterile doctors. Would they, I wonder, be so shrilly antagonistic? Incidentally, it is of interest to note that two women doctors—namely, Margaret H. Jackson and Joan Malleison—have recently written most intelligent letters in favour of this limited, but most useful, procedure.

The mental gymnastics indulged in by some doctors who adhere unrestrictedly to religious dogma are quite astounding. I have never been able to comprehend the odd and incongruous position of the Roman Catholic gynaecologist who advises against contraception regardless of all other factors in a given case. I recently referred a patient for advice on contraception to a well-known gynaecologist without knowing that he was an R.C. The patient received a short address on the evils of contraception and then departed—she had no time to tell him that she was living in a strange town where her husband was temporarily billeted, that accommodation was extremely scarce, and that the only available “digs” had been described by the landlady as “very quiet, with no animals, children, or other nuisances!” What chance had she of producing an infant in congenial and suitable surroundings? Certainly much less than the gynaecologist, who was living in his own home and who could, presumably, have a baby every year as a logical outcome of his own beliefs. Surely as doctors we should in all matters consider individual cases—i.e., our patients—rather than spout at them our own, often distorted, ideas, that are frequently legacies of the unenlightened doctrines of the Victorian era.

As individuals many may not yet be emancipated from this incomprehensible dogma, but when shall we learn to present an impartial case to our patients, who are entitled to hold views of their own?—I am, etc.,

IAN G WICKES

SIR,—May I be permitted to reply to the letter of Dr Joan Malleon in your issue of Nov 25. She pleads the “hard case” most eloquently, which, if I may say so, does more credit to her sympathies than to her good sense. But it is still a truism that “hard cases make bad law.” The Catholic Church condemns artificial insemination with donated semen on moral grounds, as she has condemned artificial birth restriction and euthanasia, which are likewise founded on the “hard case.” And may I remind Dr. Malleon of another true statement—namely, “the end does not justify the means”—and that, however much one may sympathize with the childless married couple (and the Church regrets this more than Dr. Malleon), it is nevertheless unjustifiable to infringe the moral law on their behalf, however attractive the results may appear to be. Dr. Malleon, in fact, paints a very appealing picture of the benefits which are supposed to accrue from this practice, but may I suggest that this is all very theoretical and is no doubt coloured by that emotionalism and lack of objectivity which she states characterizes the opposition.

It should be self-evident that a country's social health is dependent on the family as the social unit. The Church's pronouncements on the moral law have as one of their main objectives the preservation of this unit, and her condemnations are directed against those who would endanger it. Artificial insemination, using donated semen, entails self-abuse on the part of the donor, and this, when wilfully and deliberately carried out, is a moral offence no matter what the objective is. In the case of the woman inseminated, I should think the condition is closely akin to adultery in that the semen in her uterus is not that of her husband. It is surely obvious that both of these prerequisites constitute a grave danger to healthy family life.

It is interesting to note that the Catholic Church is frequently attacked for opposite reasons at the same time. In recent years she has been howled at by the “birth control” fanatics for objecting to artificial birth restriction and now her advice is scorned because she does not approve of unnatural means of promoting childbirth. It is in my opinion probable that this demand for stud farm procreation follows on the evil results of so called birth control which to quote the late G. K. Chesterton, really means “less birth and no control.”—I am, etc.

JOSEPH PHILAN

SIR,—May I put clearly the difference in major premise which is between those who have recently written against the use of artificial insemination and those who appear to favour it? Argument at cross purposes and resultant confusion of thought may thus be avoided. One group would assert that knowledge of physiological facts as a result of research or invention implies the right to use such facts for any end deemed useful

to man. The other group would say that man should be guided in his actions by certain primary principles which are independent of his own changing subjective notions, as well as by what seems to him right and useful. In other words, that the end does not always justify the means even in hard cases. This attitude, which may be thought hard, involves a belief that departures from principle are “sinful” in the sense that if adopted with whatever good intention they will result ultimately in harm not only to others but also to those who adopt them. Dr. Ladell admits that masturbation is a departure from the normal, but finds justification for it in certain circumstances for those who have reached adult psychological development, can he not see that he could not logically deny the application of the same argument to homosexuality among troops normally heterosexual? This last may serve to indicate the value of principles and the unexpected secondary sequelae when they are jettisoned apparently for a good reason—I am, etc.,

Edgware, Middlesex

F HARWOOD STEVENSON

### A Renal Service

SIR,—May I support Dr. Osman's plea for a national renal service? Little progress has been made in the treatment of those diseases of the kidney first described by Bright. There is no hospital in the London area which has a ward set aside for the study of nephritis, and I am doubtful whether there is one in the Provinces. There is an obvious need for a hospital of at least 100 beds in London in which to treat medical and surgical diseases of the genito-urinary tract—I am, etc.,

London W 1

CLIFFORD MORSON

### Extra Milk for Patients

SIR,—My experience in trying to obtain extra milk for a patient who needs it very definitely, though her case does not come within any of the categories entitling her to be supplied with two pints daily, raises issues which must have considerable general interest. I have the impression that I—and my patient—are being penalized because I have not simply certified her as suffering from gastric ulcer, thus saving trouble to the officials concerned. On Oct 25, having been informed that the allowance of 2 pints daily must cease in a month's time unless I could supply a certificate in accordance with regulations, I wrote as follows to the officer in charge of the Food Office at B.

“I am very appreciative of your courtesy in dealing with this rather difficult case, and of the fact that you are in no way responsible for the regulations which it is your duty to administer. Since I understand, however, that this report is to be forwarded to a medical committee, I wish to take the opportunity of protesting to them (1) that I have not at any time been notified of the existence of a committee competent to vary the regulations in special cases, and (2) that I am compelled to submit an intimate medical report about a patient to a non-medical officer.”

“Mrs. A. is a married woman aged about 55 who has long been apart from her husband. She is a very difficult personality and has been under treatment for twenty years or more by various physicians, and for many years latterly by myself. She is what may be called a professional invalid, enjoying (almost literally) poor health both mentally and physically, she calls her mental condition, more or less correctly, a neurosis, and I shall be glad to give further details of this if required. Her physical condition has been poor throughout the time I have known her. I understand that she was treated for several attacks of severe colitis before she came under my notice. She has an extreme degree of general anæmiosis. For more than fifteen years she has lived on a special diet, consisting chiefly of bread-and-butter, milk, fish, chicken and oatmeal, with a little minced raw apple and occasional prunes. She has declared herself unable to retain any other articles of diet, and this seems to be a fact, whether the mechanism is physical or psychological. Under the restriction of a war dietary she has not materially altered her menu but has simply gone without the articles which were unobtainable, her height is 5 ft 8 in., and she has never to my knowledge weighed more than 9 st., during the war it has dropped by 1 st. and is now 7 st 6 lb with clothes, despite the fact that up to the present I have contrived (without perjuring myself) to obtain for her two pints of milk daily. She has no discoverable fat and is very anæmic, and I believe that she will die from inanition or otherwise within two or three months if she is not allowed this extra nourishment. I hope therefore that the committee may think fit to permit her to be supplied with this permanently, since no improvement in her condition is to be expected.”

Some three weeks later I was informed by telephone that higher authority had rejected the appeal on the ground that no increased ration could be permitted to anyone who voluntarily refused to consume the rations provided. Being informed that it was not in order for the local office to put this into writing, I took up the matter immediately by telephone with the Regional Office Tunbridge Wells, asking both that the statement made should be sent to me in writing and that it should be put into touch with a medical officer competent to discuss the matter on behalf of the Ministry. I stated my intention to publish the correspondence. I have not heard from any medical officer, but I have now received a letter from Mr B Knott of the Ministry of Food, Rationing Division, Colwyn Bay, the main part of which runs as follows:

"I understand you have approached the Divisional Food Office, Tunbridge Wells, about the refusal of your application for a priority supply of 2 pints of liquid milk a day for Mrs. A of B."

"I would point out that your application and detailed statement of Mrs. A's condition were carefully considered by the Food Rationing (Special Diet) Advisory Committee of the Medical Research Council, who guide the Ministry in all matters concerning invalid diet. They are firmly of the opinion that no special rations or allowances of foodstuffs should be granted to people suffering from a neurosis or whose condition is psychological rather than physical in origin. They infer from your medical certificate that your patient is suffering from no organic disease which would prevent her from eating ordinary food, and in these circumstances they are unable to recommend that your request should be granted."

"The Ministry must of course abide by the authoritative opinion of its advisers especially at the present time, when supplies of milk are so restricted, and it is particularly important that priority allowances should only be granted where they are a medical necessity."

"I understand that your patient Mrs. A was allowed a priority supply of 2 pints of liquid milk a day when she submitted a medical certificate to the local food office some months ago stating that she was suffering from Classes II (c) and II (d) of the Schedule of Conditions qualifying for priority supplies of milk. This grant was, I am afraid, made in error. Your patient can only receive a priority supply under one class of the schedule, and her 'priority' must now be adjusted accordingly. Should you feel that you can justifiably certify this lady under Class II (c) or Class II (d) of the Schedule of Conditions she will be supplied with 7 pints of liquid milk a week. This, however, is the most the Ministry can allow, since the medical advisers consider that this provision is quite adequate for the treatment of people with either or both of these conditions."

The only comments I wish to make are (1) that my offer to give further information is ignored, (2) that I have given evidence of physical ill health, and (3) that Mr Knott being a non medical officer may quite possibly have never heard of fatal cases of anorexia nervosa nor of the acute melancholias die if they are not tube fed with milk. The inflexible cation of these regulations constitutes a temptation to the truth in the interest of one's patient, and I should be grateful for any suggestion as to a more satisfactory method in such a case—I am, etc

J NORMAN GLAISTER

## Obituary

EDWIN GOODALL, CBE MD, FRCP

We regret to announce the death on Nov 29 at Hove of Lieut-Col E Goodall, for many years medical superintendent of the Cardiff City Mental Hospital and afterwards honorary consulting physician to that institution and (for psychiatry) to the Cardiff Royal Infirmary. He had been lecturer in mental diseases at the Welsh National School of Medicine and until his retirement from active work was a leading figure in the world of psychiatry. Everything that pertained to the pathology of the psychoses attracted and held his forward-looking mind, and no one felt keener disappointment when progress slackened at any point.

Edwin Goodall son of E B Goodall a Calcutta solicitor, was born in 1863 and studied medicine at Guy's Hospital, graduating MB BS Lond in 1886 and MD in 1888, and taking the MRCP a year later. After postgraduate work in the University of Tübingen he became pathologist and assistant medical officer to the West Riding Asylum at Wakefield, he

was next appointed medical superintendent of the Joint Counties Asylum, Carmarthen, and later medical superintendent of the Cardiff Mental Hospital, whence his reputation spread far and wide as a pioneer in the scientific study and treatment of mental disorders.

At the Annual Meeting of the BMA in 1903 he held office as vice-president of the Section of Psychiatry, in 1911 he was president of the Section of Neurology and Psychological Medicine, and at the Cardiff Meeting in 1928 he again presided over the same Section, he was also a past president of the Section of Psychiatry of the Royal Society of Medicine, and a Foreign Member of the Society of Medical Psychology of Paris. He was elected a Fellow of the Royal College of Physicians in 1903, delivered the Croonian Lectures on the pathology of mental disorders in 1914, and served on the Council of the College for two years. His presidential address to the Royal Medical Psychological Association, on conditions—bacteriological, toxicological, and haematological—bearing upon the psychoses, appeared in the *Journal of Mental Science* in 1923, and his Maudsley Lecture on the pathology of insanity in 1927. He was largely responsible for the opening of an outpatient department for early mental cases at Cardiff. A problem that deeply concerned him was how to get hold of the schizophrenics of psychiatry and the encephalitics of general medicine at the earliest possible stage and bring them in touch with research centres. Under his guidance the Cardiff City Mental Hospital came into close working association with the Cardiff Royal Infirmary, the latter being equipped with the necessary staff and laboratory facilities and authority to conduct animal experimentation, apparatus for collecting material was kept at the pathological laboratory of the Infirmary as well as at the Mental Hospital. A point he made over and over again was that the psychiatric clinic must be an integral part of the general hospital.

Edwin Goodall did excellent work in his branch of medicine during the last war, when he held the rank of lieutenant-col, R.A.M.C. For this he was mentioned in despatches and created CBE in 1919. He kept up with foreign work in psychopathology carefully assessed its bearings upon diagnosis and treatment and set out his conclusions in clear and forceful language.

W A COCHRANE MB FRCS Ed

Mr William A Cochrane the well known Scottish orthopaedic surgeon died at the age of 81 on Nov 30 in Edinburgh where he was born and educated and held many appointments. From Daniel Stewart's College he entered the University and graduated MB ChB in 1915, afterwards serving in France and Flanders with a commission in the R.A.M.C. as a battalion M.O. His war experience filled him with a desire to restore the maimed to useful life and on his return from the B.E.F. in 1918 he was appointed to the orthopaedic staff at Bangour Hospital then the main Services orthopaedic centre for Scotland and he there came under the influence of Sir Harold Stiles, the chief surgeon and Sir Robert Jones, who visited the hospital as consultant. After serving there he spent some time in the United States as temporary assistant in orthopaedics at the Massachusetts General Hospital Boston, working in Dr Goldthwait's clinic. He returned to Edinburgh in 1921 well equipped for his chosen branch of the profession and took the FRCS Ed.

Cochrane played an active part in the development of the Fairmilehead Hospital for Cripples (now named after Princess Margaret Rose) of which he was surgeon in charge and did much to create a network of orthopaedic clinics in the south-east of Scotland. In 1937 he became a member of the National Advisory Council for Scotland on Physical Training and Recreation, he was also one of the orthopaedists for the south-east area of the Scottish Command. In Edinburgh where he practised, he was appointed associate assistant surgeon in orthopaedics at the Royal Infirmary and lecturer on that subject in the University. Cochrane joined the BMA in 1924, was a member of the Orthopaedics Group Committee from 1938 onwards and for twelve years acted as assistant honorary secretary of the Edinburgh Branch for the purpose of clinical and scientific meetings. At the Annual Meeting of the Association held at Winnipeg in 1930 he was vice president of the Section of Orthopaedics. He was the author jointly with

## EPIDEMIOLOGICAL NOTES

## Discussion of Table

In England and Wales returns for measles, dysentery, and acute pneumonia were higher than last week by 1,136, 163, and 129 respectively. Only small fluctuations were shown by the other notifiable diseases.

There were 20 fewer cases of diphtheria than last week recorded in Durham, and 19 fewer in Glamorganshire. However, in the combined regions of London, south-east, south-west, south midland, and the eastern areas the notifications rose from 83 to 120. In these areas whooping-cough notifications rose by 74, but in the rest of England and Wales they fell by 96.

Acute pneumonia was slightly more prevalent throughout the country. Measles showed the largest weekly increase since February, 1943, and was particularly marked in the north. Lancashire had 295 more cases than last week, Warwickshire 202, Cheshire 135, Southampton 77, Staffordshire 68, Yorks West Riding 68, Nottinghamshire 64, Gloucestershire 50, and London 45.

The increase in dysentery was due mainly to the large outbreak in Yorks West Riding, Wortley R.D., where 130 cases were reported. The largest of the other returns were Lancashire 49, London 44, Surrey 20, Norfolk 16, and Glamorganshire 11.

In Scotland there was a general rise in the incidence of infectious diseases. The rises over last week's totals included measles 114, acute pneumonia 81, diphtheria 38, whooping-cough 35. A small increase in the incidence of diphtheria was general throughout the country: the largest returns were Glasgow 69, Lanark County 30, Edinburgh 19, Fife County 12, and Dundee 11.

In Eire there were 23 more cases of diphtheria than last week. Thirty-two cases were recorded in Dublin C.B., and the remaining 101 notifications involved forty-eight registration areas.

In Northern Ireland the incidence of measles rose by 68, and scarlet fever by 27. All but one of the 259 cases of measles were notified in Belfast C.B., which also reported 48 of the 117 cases of scarlet fever.

## Week Ending December 2

The returns of infectious diseases in England and Wales during the week included: scarlet fever 2,279, whooping-cough 1,474, diphtheria 63, measles 7,810, acute pneumonia 761, cerebrospinal fever 3, dysentery 381, paratyphoid 3, typhoid 7, poliomyelitis 10.

## Medical News

Prof. J. M. Mackintosh, M.D., F.R.C.P., has been appointed Dean of the London School of Hygiene and Tropical Medicine from January 1, 1945.

A meeting of the Association for Scientific Photography will be held at the Caxton Hall, Westminster, S.W., on Saturday, Dec. 30, at 2.30 p.m., to discuss "The Choice of Materials for Scientific Photography."

A meeting of the Eugenics Society will be held on Tuesday, Dec. 19, at 5 o'clock in the rooms of the Royal Society, Burlington House, Piccadilly, W., for a discussion on "Aspects of the Housing Problem." All interested in the subject are invited to attend.

Vacancies are available for training in child psychiatry at centres recognized by the National Provisional Council of Mental Health for this purpose. Applicants should have the D.P.M. or equivalent mental health experience, together with experience of children in specialist or general practice. Training fee, £60; length of training, one year, half-time. Application may also be made for grants or loans. Applications should be sent to the secretary, Child Guidance Department, 39, Queen Anne Street, London, W.1.

Grants for more than £825,000, made by the United Kingdom Government under the Colonial Development and Welfare Act, 1940, have enabled the Uganda Protectorate to plan for the largest hospital and one of the most extensive health services in the British Colonial Empire. A grant of £477,500 will provide for the reconstruction and extension of Mulago Hospital, Kampala, so that 1,120 beds are available. A further sum of £350,000 for the extension of medical services will be used for the following: training of staff, £92,000; antimalarial campaign, £75,000; antivenereal diseases campaign, £63,000; anti-tuberculosis campaign, £50,000; nutrition survey, £40,000; ambulance service, £30,000.

Mr. Thomas F. A. Stowell, M.D., F.R.C.S., has been re-elected to the Council of the Industrial Welfare Society, of whose advisory medical committee he is chairman.

## Universities and Colleges

## UNIVERSITY OF MANCHESTER

The following appointment is announced: Dr. G. J. Langley, F.R.C.P., Dean of Postgraduate Medical Studies.

The University has received a grant of £750 for the Department of Education of the Deaf from the Nuffield Provincial Hospitals Trust per the Manchester, Salford, and Stretford Hospitals Advisory Board.

## ROYAL FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW

At a meeting of the Faculty held on Dec. 4 with the President, Mr. William A. Sewell, in the chair, James Black, M.D., and Matthew McLeerie, M.B., Ch.B., were admitted Fellows of Faculty.

## Letters, Notes, and Answers

All communications with regard to editorial business should be addressed to THE EDITOR, BRITISH MEDICAL JOURNAL, B.M.A. HOUSE, TAVISTOCK SQUARE, LONDON, W.C.1. TELEPHONE: EUSTON 2111. TELEGRAMS: *Antology Western, London*. ORIGINAL ARTICLES AND LETTERS forwarded for publication are understood to be offered to the *British Medical Journal* alone unless the contrary be stated.

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B.M.A. SCOTTISH OFFICE: 7, Drumshrub Gardens, Edinburgh.

## ANY QUESTIONS?

## Etherington-Wilson Technique for Spinal Analgesia

Q.—What is the Etherington-Wilson technique for spinal anaesthesia, and where may full descriptions of the method be found? Is it a widely used technique?

A.—The original spinal technique described by Etherington-Wilson made use of Howard Jones's "light" or hypobaric 1 in 1,500 procaine solution in 0.5% saline. The lumbar puncture was performed in the sitting position, and the volume of solution injected and the time allowed for sitting up were calculated according to the desired height of analgesia. A full description of the method will be found in the *British Journal of Anaesthesia* (1934, 11, 43). Several modifications of the technique were recently described by Etherington-Wilson at a meeting of the Anaesthetics Section of the Royal Society of Medicine, and these will presumably be published in the *Proceedings*. The original method has been fairly widely used by some anaesthetists.

## Stilboestrol for Masturbation

Q.—Are there any records of the treatment of masturbation by the administration of stilboestrol? Also, are there any contraindications against the administration of stilboestrol for long periods in the years of early and acute sexual desire?

A.—Yes. A record may be found in the *Journal of Nervous and Mental Diseases* (June, 1944, 99, 928) describing the case of a psychopathic seaman 19 years old whose sexual preoccupation and frequent masturbation were very favourably modified by 1 mg. of stilboestrol by mouth daily, the only apparent adverse effect being mild gynaecomastia. Treatment was given intermittently (see also *J. Amer. med. Ass.*, 1944; 125, 760). The writer has used stilboestrol in 5-mg. doses in a lad of 17 brought before the courts for sexual assault. The patient was gigantic with some acromegaloïd features. The stilboestrol permitted him to control intense sexual desire, and to reduce the frequency of masturbation considerably. Here, too, there was some resulting tenderness and swelling of the breasts.

Large doses of stilboestrol in the normal male, or in cases of carcinoma of prostate, may produce disappearance of libido, and impotence; also a considerable diminution in the sperm count, where such is possible. Experimentally, disintegration of the testicular structure occurs in small animals, but regeneration and normal sexual function follow withdrawal of the stilboestrol. It would appear that controlled doses of stilboestrol, given intermittently, may prove a useful and harmless form of therapy in selected cases. Prolonging the administration is associated with certain dangers indicated above. It would be unwise to neglect the appropriate treatment of an underlying psychoneurosis where such is present.



**Chronic Otorrhoea**

**Q.**—*In cases of chronic or relapsing otorrhoea in adults, is there any treatment other than the usual (and generally ineffectual) application of guttae spl. c. boric. (or similar)? Is there any danger in irrigating, not syringing, the meatus with sterile saline solution? Can any sulphonamide preparation be used locally?*

**A.**—As there are many cases of chronic otorrhoea in which local treatment alone is useless the first step in successful treatment is accuracy in diagnosis. Two common causes of chronicity must be kept in mind: unsuspected nasal sinusitis, and chronic infection of the bone of the attic and mastoid. The success of local treatment depends as much on efficient removal of discharge from the middle ear as on the type of local application. Syringing is harmless, providing the ear is dried with cotton-wool or spirit. Inflation or suction may be needed before the middle ear is empty. After cleaning, powders—either sulphonamide, or boric, or boric and iodine—give on the whole better results than drops.

**Leucodermia**

**Q.**—*A girl aged 3 years is suffering from leucodermia. The first patch was noticed six months ago in the epigastric area. Patches are now present symmetrically in axillae, groins, knees, and anterior aspect of the neck, and are about 5 in. in diameter, slowly increasing in size. General health is good, although the tonsils are enlarged. What form of treatment, if any, will improve this complaint?*

**A.**—There is little to be done for leucodermia. Oil of bergamot 10% in spirit applied to the white areas has been suggested, and its effect may be augmented by exposure to ultra-violet radiation. Injection of one of the gold preparations is supposed to increase the chance of pigmentation, but in my experience it is valueless for this purpose. The skilful use of cosmetic preparations is a simple, if not very satisfactory, solution.

**Sprouting Legumes**

**Q.**—*In these days of shortage of citrus fruits, may we know the technique of sprouting legumes? Is this an economic proposition, which legumes are best used, and what and how much cooking is required?*

**A.**—When legumes are sprouted in order to improve the ascorbic acid content of the diet, it is usually recommended that they should be soaked for about 24 hours, drained, and then allowed to germinate for three or four days. The preliminary soaking is important and should be carried out at room temperature. If too hot water is used there is a tendency for the legumes subsequently to become mouldy, while if the soaking water is too cold germination may be delayed. On the family scale, germination may be carried out by allowing the soaked legumes to stand in a colander, but when larger quantities are involved the use of trays is advocated. The sprouting of legumes before cooking appears to be an economic proposition, and

respiration has ceased, the heart sounds are inaudible, but the cardiac complexes may persist for a considerable period of time; the onset of rigor mortis is the only certain proof of death.

**Obstetric Forceps**

**Q.**—*What type of short obstetrical forceps can be recommended for extraction of the head when it is low down on the perineum?*

**A.**—Wrigley's forceps were designed specifically as low forceps for extracting the foetal head through the vaginal orifice. It is an excellent instrument for this type of case. If, however, the foetal head is higher up, the best instrument is that advocated by DeLee under the name of the Vienna School forceps. This is a modification of the original Simpson's pattern. These forceps are quite simple to use. Most obstetricians use forceps of this kind for all cases and do not find it necessary to use Wrigley's forceps.

**Smegma under the Prepuce**

**Q.**—*What is the cause of smegma under the prepuce and how can it be treated? Several patients have complained of this disturbing factor, and it has been more marked after, ratings have been on detached duties where regular bathing has not been possible. Is it the cause, or vice versa, of non-venereal warts? Microscopically only debris and varied crystals are seen.*

**A.**—Smegma is the normal secretion of Tyson's glands. It tends to be formed in excessive amounts in hot climates, and by evaporation it gives rise to dried debris and sometimes even to concretions. It is stated to be a cause of non-venereal warts, but this is by no means certain. Washing of course removes excess of the secretion, but under conditions of active service this may be difficult to effect.

**LETTERS, NOTES, ETC.****Piercing the Ears**

Dr. P. C. MATTHEW (St. Ives, Cornwall) writes: I have performed this small operation fairly often, and find that the following refinements in technique are well worth while. (1) I inject 1/2 c.cm. local anaesthetic in each lobe; the patient then feels nothing except the initial prick with an 18-gauge hypodermic needle. (2) For piercing I use a large-bore intramuscular needle, pushed through the lobe into a cork; then I remove the cork, place one end of the split-ring or "keeper" in the open end of the needle, and withdraw the needle through the lobe, with the keeper following through. This avoids some difficult groping with the none-too-sharp end of the keeper, to find the holes. (3) I grease the keepers with vaseline and tell the patient to move them round at least once a day, and not to take them out until they remain perfectly free. This may require up to two weeks. (4) I make the perforation high up in the lobe; in time the lobe stretches, particularly with heavy ear-rings, and a hole made in the centre will eventually appear to be near the bottom, with the result that certain kinds of flat ear-rings will not

# BRITISH MEDICAL JOURNAL

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## THE SUPPLY OF BODIES FOR DISSECTION: A HISTORICAL REVIEW\*

by

NEVILLE M. GOODMAN, M.D.

The subject falls naturally into three periods from the Middle Ages until the revival of dissection as part of the general training of medical students in the mid eighteenth century, from then until the passing of the Anatomy Act of 1832, and from 1832 until the present time

### First Period

The first date of importance is 1231, when the Emperor Frederick II decreed that a human dissection should be performed at Salerno at least once in five years, but, although dissection was legalized in various parts of the empire in the 13th and 14th centuries, no statutory requirement seems to have been made to provide subjects until, in 1387, we find that the Statutes of the University of Florence request the authorities to see to the delivery of the bodies of three alien criminals each year for this purpose. The connexion between dissection and the punishment of crime was to last for 400 years.

In England and Wales the claims of anatomical dissection were recognized by the Charter given in 1540 by Henry VIII to the United Company of Barbers and Surgeons, which enacted that "the sayd masters or governours of the mistery and communalte of barbouris and surgeons of Londõ & their successours yerely for ever after their sad discrecions at their free liberte and pleasure shal and maie have and take without contradiction foure persons condemned adjudged and put to deathe for feloni by the due order of the Kynges lawe of this realme for anatomies and so on

Scotland had been somewhat earlier in the field, the Town Council of Edinburgh having given in 1505 the Incorporation of Surgeons and Barbers "once a year a condemned man after he be dead, to make anatomy of, wherethrough we may have experience to instruct others. And we shall do suffrage for the soul." In 1694 this grant was extended to include

those bodies that dye in the correction-house; the bodies of fundlings who dye betwixt the tyme that they are weaned and thir being put to schools or trades, also the dead bodies of such that are stufet in the birih, which are exposed, and have none to owne them, as also the dead bodies of such as are felo de se, likewise the bodies of such as are put to death by sentence of the magistrat." This was granted subject to dissections being made only in the winter months and the intestines being buried within 48 hours and the rest within ten days. Although in Ireland no specific provision for anatomical subjects seems to have been made, eight persons are mentioned as Readers of Anatomy in the Charter to the Barbers, Surgeons, Apothecaries, and Periwig Makers of 1687. In France by the middle of the 17th century, dissection was practised so openly that Moliere makes a lover ask his mistress to come and see the dissection of a woman, provoking the maid's comment that "some people take their mistresses to a comedy, but to take them to a dissection is far more gallant!"

Here, the official arrangements for dissection soon proved inadequate, and by the first half of the 18th century "private anatomies" were becoming so common that it was clear that the attempts to put them down were hopeless, already the prevalence of body-snatching had led to riots in Edinburgh in

1725 and 1742. In 1722 the official supply was somewhat augmented by an Act (25 George II, Cap 37) which gave the bodies of murderers executed in London and Middlesex to the Surgeons' Company, and those of murderers executed outside this area might be given to local surgeons chosen by the judge or hung in chains at his discretion.

The revival of anatomy about 1750 under the Hunters in London and the Monros in Edinburgh rapidly increased the number of students and still more the demand for bodies, since formal demonstration by the lecturer no longer sufficed and students carried out many dissections for themselves. The number of medical students in Edinburgh was 57 in 1720, about 340 in 1780-90 and over 400 after 1800. In London the number of students of anatomy was 300 in 1798 and 1 000 in 1823.

### Second Period: The Resurrectionists

This brings us to our second period—the Golden Age of the Resurrectionists. These were of two types, the students themselves, often led by the professors' assistants, and professional body-snatchers, who worked at first singly or in pairs but later were organized into rival gangs. The professional body-snatchers depended mainly on disinterment, but used other tricks such as impersonation of relatives and stealing before burial. At first prosecutions were rare—indeed, the law on the subject was doubtful and the body-snatchers themselves were convinced that they could not be indicted unless they removed the grave clothes or a portion of the coffin—but in *Rex v. Lynn* in 1788 the King's Bench decided it to be a misdemeanour to carry away a dead body from a churchyard even for dissection, as being an offence *contra bonos mores* and common decency, and it was later decided by the courts that a person would be indictable if he was a party to the non-interment as well as to the disinterment of a dead body (*Rex v. Young* and *Rex v. Cundick*).

With the increase of the traffic, more frequent and open disinterment led to public odium, and the extraordinary state of affairs is best described in the sober words of the Report of the Parliamentary Select Committee on Anatomy of 1828:

"In proportion as the public became vigilant, the laws relating to sepulture were interpreted and executed with increasing rigour and as the price of subjects rose with the difficulty of obtaining them, the premium for breaking the laws increased with the penalty. The exhumations increased in number, and, being now treated as criminals, became of a more desperate and degraded character. The parties of daring men who now took to raising bodies, did it happen (as was frequently the case) that, while in pursuit of the same spoil they felt in one with another, actuated by vindictive feeling, and regardless of the caution and secrecy on which the successful continuance of their hazardous occupation must depend, had contests in the places of sepulture—left the graves open to public gaze, or gave information to magistrates, or the relatives of the disinterred, against their rivals." The public were excited against the teachers of anatomy by these outrageous acts, "and this to such a degree, that of late, in many cases, individuals, out of solicitude to guard the dead, have taken upon themselves to dispense with the laws of their country, and have fired upon parties attempting disinterment."

By 1820 the matter had become a public scandal. In 1828 of 800 students in London, about 500 actually dissected. Since the optimum number of subjects per student was then said to be three—two for dissection and one for operative surgery—

\* Abridged from an Arms and Gale Lecture, 1944

about 1,500 bodies were annually required. Students were resorting to Paris, Dublin, and other foreign schools. Sir Astley Cooper stated to the Select Committee in 1828 that about 450 subjects were actually dissected in the London schools in one season. The price was 8 to 10 guineas, and had been as high as 16 guineas, as compared with 1 to 2 guineas thirty years previously. The state of public opinion was such that, according to Sir Astley Cooper, there was practically no chance of obtaining bodies from London burial grounds by disinterment, and the chief source of supply was importation from abroad, mainly from Dublin. These might be seized by the Customs if detected, and were often so putrefied as to be unfit for use. An ingenious ex-naval captain in Dublin not only organized the export of bodies from that city but raised a public fund to pay watchers to prevent exhumation; with the fund he paid his own agents, ostensibly as watchers but actually as resurrectionists. In Edinburgh the situation was even worse. Well-to-do persons hired watchers with loaded blunderbusses at 6d. a night, with free liquor, to guard the graves of relatives until putrefaction was too far advanced for the bodies to be worth exhuming, and I have seen mort safes—iron cages to prevent exhumation—still existing in graveyards more than fifty miles from Edinburgh.

I wish that space allowed me to quote more of the macabre evidence of the surgeons, magistrates, police officers, and resurrection men who appeared before the Select Committee. A resurrectionist—probably the notorious Ben Crouch—admitted to having made a complete corner in the supply for London between 1809 and 1813. According to his book, in 1890 "the number in England was 305 adults and 44 small subjects under three feet; but the same year there were 37 for Edinburgh and 18 we had on hand that were never used at all." Other matters dealt with in the evidence included the extraction of teeth as a profitable side-line; the importation of subjects from Ireland; the attitude of Home Secretaries—Robert Peel and the Marquis of Lansdowne—and of the police; and the easier position and arrangements made for subjects in Dublin, Paris, Göttingen, and Italy.

Many petitions had been received by Parliament, uniformly praying for an amendment of the existing law. One from the Royal College of Surgeons pointed out that they had a legal duty to examine students, especially as regards surgeons for the Army and Navy. For this purpose dissection was necessary. But the Regulations of the College on this point tended to encourage violation of the law and establish "in the procurers of dead bodies a set of men living by practices which are revolting to the feelings of Society, exposed to the hatred and contempt of those around them, and likely, by the joint operation of these causes, to become trained and gradually habituated to the commission of still greater crimes": the law

on Anatomy, already referred to, under the chairmanship of Mr. Henry Warburton, M.P. The Select Committee began its sittings on April 22, 1828, and reported on July 22. Its report did not make specific recommendations, but strongly urged legislative action. At this time Parliament was intensely preoccupied with debates on the repeal of the Test and Corporation Acts and with the state of Ireland consequent on the election of O'Connell for Co. Clare. Nevertheless, its obligations with regard to anatomical supply were brought unexpectedly and forcibly to the notice of the whole nation by the discovery of the sixteen murders of Burke and Hare in Edinburgh, the details of which are too well known to recall here. Suffice it to say that the murders created intense popular excitement and indignation; ruined, in Dr. Knox, the country's leading teacher of anatomy; and gave a new word to the language.

On April 4, 1829, the Catholic Relief Bill passed the Lords, and on the 7th Mr. Warburton moved for a Select Committee to give effect to the recommendations of the Committee on Anatomy of the previous year. As a result, Mr. Warburton's first "Bill for preventing the unlawful disinterment of human bodies, and for regulating Schools of Anatomy," was introduced on May 5. The main features of the Bill were, broadly, those embodied in the Act of 1832—viz., the licensing and control of places and persons for carrying on human dissection; the legalization of bequests for dissection purposes; and the handing over for dissection of bodies of persons dying in prisons, hospitals, and workhouses, if unclaimed within 72 hours, to licensees, who were responsible for burial and the keeping of records. The Bill also laid down specific penalties for disinterment. But it contained a number of features which caused strong opposition, and it also failed to repeal the clause of the 1752 Bill which gave up the bodies of murderers for dissection—an amendment to this effect being defeated by 40 votes to 8. The Royal College of Surgeons petitioned against the Bill on the ground that the appointment of seven Commissioners, of whom a majority were not to be physicians, surgeons, or apothecaries, to control medical schools and places of dissection, would infringe the privileges of the College. The proprietors of private anatomy schools were afraid that the phrasing of the Bill would lead to their extinction, and the *Lancet* supported the opposition because it feared an adverse effect on the study of anatomy outside London and the Universities. Also the Bill did not apply to Ireland, and it was thought that it might increase the traffic in human bodies from that country. The Bill had a second reading in the Commons, but was dropped on June 5, 1829, in the Lords, although its principles received general support.

Nothing more was done in the following 12 months, and on June 26, 1830, George IV died and Parliament was dissolved. In November, following the elections, the long Tory reign of

first Bill of 1829, but most of the features which had roused the greatest opposition were removed in committee. The preamble may be quoted.

"Whereas a Knowledge of the Causes and Nature of sundry Diseases which affect the Body, and of the best Methods of treating and curing such Diseases, and of healing and repairing divers Wounds and Injuries to which the Human Frame is liable, cannot be acquired without the Aid of Anatomical Examination: And whereas the legal Supply of Human Bodies for such Anatomical Examination is insufficient fully to provide the Means of such Knowledge: And whereas, in order further to supply Human Bodies for such Purposes, divers great and grievous Crimes have been committed, and lately Murder, for the single Object of selling for such Purposes the Bodies of the Persons so murdered: And whereas, therefore, it is highly expedient to give Protection, under certain Regulations, to the Study and Practice of Anatomy, and to prevent, as far as may be, such great and grievous Crimes and Murder as aforesaid: be it therefore enacted . . ."

### The Anatomy Act of 1832

The substance of the Act may be summarized as follows: Clause I gives power to the Secretary of State for the Home Department and the Chief Secretary for Ireland to grant licences to practise anatomy to qualified medical practitioners, teachers of anatomy, medicine, or surgery, and students attending schools of anatomy, upon application countersigned by two Justices of the Peace. Clauses II and III give the Secretary of State power to appoint "not fewer than Three Persons to be Inspectors of Places where Anatomy is carried on," and to appoint them to districts and lay down their duties. Quarterly returns of bodies removed for anatomical purposes must be made by the Inspectors.

The most important clause is the VIIIth, which gives power to persons having the lawful custody of a body to allow it to be dissected in certain circumstances and under certain conditions; from this clause 97% of our present supply is derived—i.e., from unclaimed bodies in the custody of local authorities. This power to permit the anatomical dissection of a body is overridden (1) if the person when living expressed in writing or in the presence of two witnesses his wish not to be dissected, or (2) if the husband, wife, or any known relative of the deceased objects. Clause VIII deals with so-called "bequests"—as there is no legal property in a body, the term is not accurate: it authorizes those having custody of the body of a person who during life directed that an anatomical examination should be made of his body after death, to have this done, again unless the husband, wife, "nearest known relative or any One or more of such person's nearest known Relatives, being of Kin in the same Degree," objects.

Bodies must not be removed for anatomical examination until 48 hours after death and 24 hours after notice has been given to the Inspector, and must be accompanied by a medical certificate of the cause of death. Persons licensed as above to receive bodies for dissection must transmit the particulars and the medical certificate to the Inspector and keep a register (Clauses X and XI). One week's notice must be given to the Secretary of State of places where anatomy is taught or bodies are received for dissection (Clause XII). Bodies must be removed in a "decent coffin or shell," interred with the appropriate religious rites, and a certificate of interment sent to the Inspector within six weeks (XIII). Nothing in the Act is to interfere with necropsies directed by a competent legal authority (XV). The Act directing the bodies of murderers to be dissected is repealed (XVI). Punishments for offences against the Act are laid down as a maximum of three months' imprisonment or a fine not exceeding £50.

The Act was immediately and completely successful in bringing body-snatching to an end. Dr. James Somerville, the first Inspector appointed for England and Wales under the Act, gave evidence before the Parliamentary Select Committee on Medical Education in April, 1834—20 months after the Act's coming into force. He stated that exhumation had entirely ceased: prices of subjects were greatly reduced, and they were obtained in a much fresher condition. In the first year after the passing of the Act 600 subjects were supplied to the London schools, as compared with his estimate of about 300 previously. There were temporary declines in supply, Dr. Somerville stated, through "the extraordinary mildness of the season" causing

a lower death rate following the extraordinary previous mortality from cholera and "the late influenza"; also because of the "exceptional diffusion of comfort" among the working classes. Both these causes are liable to cause shortages to-day. In Scotland the success of the Act had not been so instantaneous, but difficulties had been smoothed by the Inspector for Scotland, Dr. Craigie. The Return of Licences under the Act at the time showed 8 hospital medical schools and 8 private schools in London and 16 hospitals and private schools in the Provinces; in addition 19 persons in the Provinces were licensed to practise anatomy for their own information or that of their private pupils.

### Legal and Administrative Changes since 1832

Before discussing the supply position from 1832 to the present time, certain legal and administrative changes since the passing of the Act must be mentioned. The Amending Act of 1871 (34 Vict., Cap. 16) merely gave power to the Secretary of State to vary, by Order, the period within which the certificate of interment must be sent to the Inspector of Anatomy—i.e., to vary the time within which the dissected subject must be buried. A change was desirable as the result of improved methods of preserving bodies, together with a gradual fall in the supply in relation to the number of students. The first Order in 1871 extended the period from six weeks to six months. At various dates the period was further extended, and in 1940 a similar Order to that of the last war was made for England and Wales—i.e., at the present time the period during which a body may be retained for dissection is two years.

The functions of the Home Office under the Anatomy Acts were transferred in 1919 to the Ministry of Health. When the Local Government Act of 1929 came into force a circular was issued transferring the functions of the Boards of Guardians under the Anatomy Acts to the Councils of the appropriate local authorities—i.e., to the Councils of Counties and County Boroughs.

Certain changes in the appointments and duties of the Inspectors of Anatomy must also be noted. Dr. James Somerville was Inspector for England and Wales from 1832 until 1842, when separate Inspectors were appointed for London and for the Provinces. In 1921 a single Inspector, Dr. Alexander Macphail, was appointed for the whole of England and Wales, and in 1939 Prof. Henderson, his successor and the present Inspector of Anatomy—now serving with the Royal Navy—was appointed Inspector for Scotland also. Originally the Inspectors of Anatomy were concerned with the administration of the Anatomy Acts and not with questions of supply. In 1921, however, when the supply position was extremely serious, the Minister of Health, Lord Addison—himself an anatomist—agreed that Dr. Macphail should be appointed as Inspector of Anatomy and also as a whole-time medical officer on the staff of the Ministry of Health, and should concern himself with questions of supply. Since then the Inspector has held what might be described as a watching brief over the supply of bodies for dissection. In agreement with the professors of anatomy concerned, he opens up new sources by approaching local authorities to give their sanction to co-operation in the work of the Anatomy Acts; stimulates existing sources by correspondence and visits; corresponds with other Government Departments on matters which have given rise to difficulties or disputes; and so on. For London, the Inspector has agreed to take the more direct responsibility of allocating supplies to the different schools, in co-operation with the London Committee of Licensed Teachers of Anatomy, whose meetings he attends by invitation. In Scotland, the Inspector attends the statutory Annual Meeting of the Edinburgh Anatomical Committee, the Glasgow Institute of Anatomy, and the Aberdeen Funerary Committee. His statutory duties under the Anatomy Acts include occasional visits of inspection to the medical schools and the supervision of the work performed by the Clerks to the Anatomy Offices in London and Edinburgh.

Turning to supply, reasonably correct and comprehensive figures are fortunately available to show the variations in supply in relation to the number of medical students from 1832 to the present time.

Let us now examine the nature of these elements in the case of the radiant-heat cradle. They are, first, the lamps, which emit radiation of a temperature of about  $1,800^{\circ}\text{C}$ . (carbon filaments), and which may be considered as point sources. Not all their radiation, however, arrives at the skin of the patient, because the glass envelopes of the bulbs absorb all wave-lengths greater than about  $3\mu$ . The absorbed fraction amounts to about one-third of the total radiation emitted by the filaments, and heats the glass envelopes to a temperature of about  $100^{\circ}\text{C}$ . Thus the envelopes in their turn become sources of radiation; but since their temperature is very much lower than that of the filaments, the energy distribution of the radiation emitted by them is quite different from that of the absorbed radiation. Finally, the metal background of the cradle is also heated by radiation from the lamps to a temperature of about  $120^{\circ}\text{C}$ ., and therefore it, too, acts as a radiator, which, because of its large surface, plays a very important part in producing the flux received on the skin of the patient (Brown, Evans, and Mendlesohn, 1943). If the background is polished the problem is further complicated by reflection of part of the radiation.

Another difficulty, and one of great importance for the clinician, is introduced by the fact that the heating up of the envelopes and the background is a gradual process, which may take as long as several hours. As we shall see, at the end of this time the patient is receiving *three times* as much radiant energy every minute as when the cradle was first switched on. Although we selected the particular example of the cradle because we had studied it closely in previous work, the same problem of complexity presents itself in connexion with practically any form of clinical treatment lamp.

### Computation

The difficulties stressed above will make it clear that a numerical computation of the radiation flux received by the patient is a complicated procedure which, even in the simplest cases, requires considerable mathematical skill and laborious numerical calculation. We have in fact carried out such computations for the radiation flux received on a horizontal plane stretching across the cradle at its widest part—i.e., at 7 in. above the base, or roughly the height of the ventral surface of the patient. The results of these calculations, which are shown in Fig. 3 (B) and Fig. 4 (B), will be discussed below. The mathematical details, which are of a somewhat complex character, will be published elsewhere. In contrast, therefore, to x-ray work, computation cannot be advised as a feasible means for the clinician of estimating dosage of radiant heat. Each separate case constitutes quite a considerable problem of mathematical physics, and any error in calculation, or the neglect of any contributing factor, might easily result in a dangerously incorrect estimate of dosage.

### Direct Measurement of Radiation Flux

Our efforts will therefore be directed towards the development of an instrument which can be placed at a position which the patient's skin will occupy, and which directly measures the radiation flux. The fact that such an instrument—for which we should like to propose the general name of thermo-radiometer—does not exist serves as an indication that certain difficulties stand in the way of its development. A thermo-radiometer must record the flux of radiant energy received throughout the whole range of wave-lengths emitted by the treatment source. The radiant energy arriving at the receiver surface of the radiometer must be converted into heat, the quantity of which can then be determined by one of several methods. This means that the instrument must register only energy received by radiation, and must not register energy received in any other way. But under any treatment source the air may be warmed, and therefore heat is apt to be transferred to the receiver surface not only by radiation but also by heat conduction through the air. In scientific determinations

\* Practically no quantitative information is available on the question of how great this conduction may be. Certainly it is not related in any simple way to the quantity of heat received by radiation. It should be possible to devise a simple method for determining the quantity of heat received by the skin through air conduction, and the results would be of interest to the physician; but the whole question is a very complex one, and is beyond the scope of a discussion of heat transfer by radiation.

of infra-red radiation this difficulty is often overcome by enclosing the receiver surface in an evacuated envelope, and this method has also been used in attempts to determine radiation flux for medical purposes.

The method is, however, limited by the fact that no material suitable for the construction of the vacuum container is known which is uniformly transparent throughout the whole spectral range. A glass envelope, for instance, as used by Mayneord and Tulley in some of their work, is quite opaque for wave-lengths greater than  $3\text{--}3.5\mu$ —a fact which was pointed out by these authors. How seriously this limitation can affect the dosage based on the readings of such an instrument is clearly shown in the case of the cradle, where all the radiation flux coming from the envelopes of the lamps and from the metal background is stopped before it reaches the recording surface, because it is all in wave-lengths greater than  $3\mu$ . This means that, although at the beginning of a treatment the patient may be receiving something like the flux indicated by the reading of the instrument, after a lapse of time he will actually be receiving three times as much, though there will have been little or no change in the reading. The acceptance of such readings at their face value therefore introduces a serious danger of overdose.

We have accordingly attacked the problem in a different way. Instead of excluding heat conduction we have employed a differential arrangement in which the energy received by two surfaces is compared. Only one of these surfaces is exposed to the radiation from the treatment source, while both of them receive heat by conduction through the air. Since the distance between the two surfaces is small, the air-surrounding them has the same temperature, and the amount of heat received by conduction is the same for both, and cancels out, leaving a direct indication of the radiation flux—i.e., of the quantity which we wish to measure. The physical method by which we determine the amount of heat received by the surface must

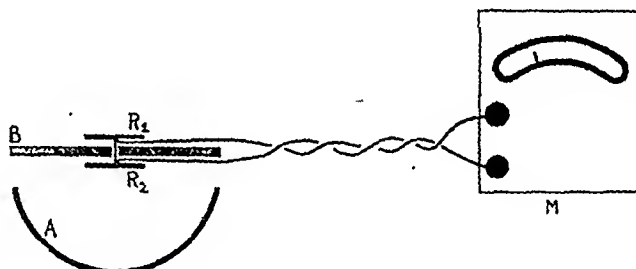


FIG. 2a.—Diagram showing thermo-radiometer connected with millivoltmeter.

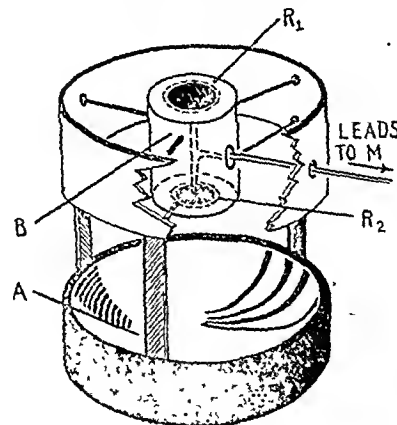


FIG. 2b.—Diagram of the thermo-radiometer.

employ some sort of calorimeter. A primary method, for instance, consists in measuring the rise in temperature of a copper block of given weight in a given time. We have indeed used such an arrangement, comparing the energy received by two such copper blocks, the blackened surface of one of which was exposed to the radiation. Observations with such a thermo-radiometer are very useful for the determination of absolute values of radiation flux, but are too time-consuming for clinical practice.

We therefore propose for general use a simpler arrangement (Figs. 2a and 2b), having two receiver plates,  $R_1$  and  $R_2$ , with blackened surfaces, the temperature difference between which is measured by means of a set of thermocouples attached to their reverse faces.  $R_1$  is exposed to the radiation flux to be measured, whereas  $R_2$  is screened from this radiation by the baffle,  $B$ . In order to give a constant flux with which the radiation to be measured may be compared,  $R_2$  is placed before a metal screen,  $A$ , which is maintained at constant (room) temperature.

When the instrument is used,  $R_1$  is placed in the radiation field at the position which would be occupied by the skin of the patient.  $R_2$  receives the radiation flux which the patient will receive, and  $R$  receives a standard flux from  $A$ . Both, however, are exposed to the same air conduction. The temperature difference between  $R_1$  and  $R_2$  rapidly becomes steady, and this difference depends only on the flux falling on  $R_1$ , provided the flux on  $R_2$  is kept constant.

The instrument must be calibrated against known radiation fluxes (which may be determined by the primary calorimetric method described above, or otherwise), but, once this has been done, the scale of the millivoltmeter  $M$  can be graduated directly in units of flux (gramme calories per square centimetre per minute). The physician can therefore read off at a glance the flux which the patient will receive on any part of his skin, simply by placing the little instrument in the position which that part of the skin will occupy.

We have constructed such an instrument and have checked its readings against the flux received from well-defined radiation sources, and by comparison with the primary calorimeter. The technical details of this work will be published elsewhere.

Using this instrument we have measured the radiation flux in radiant-heat cradles. The results, which are of considerable significance for the clinical use of these cradles, are shown in Figs 3 (a) and 4 (a). Each figure is a map of a horizontal plane 7 in. above the base of the cradle and the results are given in the form of a series of "contour lines" along each of which the radiation flux is constant. At any point on the curve marked "1.5," for example the flux is 1.5 calories per square centimetre per minute, and at any point between the curves marked "1.5" and "1.6" the flux is intermediate between these two values, and so on. Each map is divided into two halves: the left-hand halves (a) show the values actually measured with our instrument while the right-hand halves (b) show the values calculated as mentioned above.

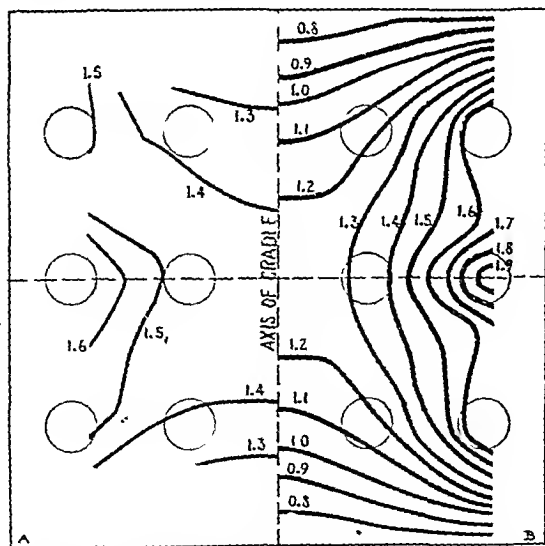


FIG. 3.—Distribution of radiation flux under standard heat cradle with blackened background. The flux is that due to the lamps plus that due to the background. Numerals on contour lines give the amount of radiant energy in calories per sq. cm. received in each minute on a plane 7 in. above base of cradle. (a)=measured values, (b)=calculated values. Positions of lamps above plane are represented by circles.

Fig. 3 refers to an ordinary cradle with a blackened background, and the flux at each point is therefore the sum of that due to the lamps and that due to the heated background. In Fig. 4 the flux due to the lamps only is shown; experimentally, this was secured by cooling the metal background. Thus Fig. 4 shows the flux

received by the patient immediately after switching on and before the background has had time to heat up, while Fig. 3 shows the very much greater flux received by the patient after the background has had time to heat up and become a source of radiation on its own. The agreement between the measured and calculated values is surprisingly good, and indicates the general correctness both of our line of theoretical reasoning and of our methods of measurement.

A comparison of Figs 3 and 4 shows that during the course of treatment the flux received by the patient may increase threefold—a fact which brings home the serious danger of overdosage which

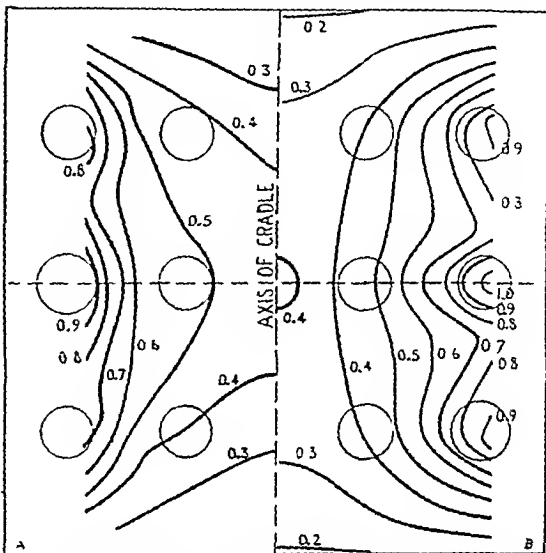


FIG. 4.—Distribution of radiation flux under standard heat cradle with blackened background cooled. Flux due to lamps alone. (a)=measured values, (b)=calculated values.

may be incurred if the increase of the power of the source with time is not taken into consideration. It may be remarked that the results of Fig. 4 (no radiation from the background) are very similar to those of Mayneord and Tuley (1943), who excluded the long-wave radiation from the background by the glass envelope of their radiometer.

Some other investigations (results not shown) are of interest. The results of Figs 3 and 4 refer to the case when the cradle is blackened but the bulbs are not shielded, in contrast to the conditions used in work previously described (Brown, Evans, and Mendelssohn, 1943). In one of the additional investigations the flux was determined with the background left polished and kept cool, and with the bulbs unshielded. The conditions were exactly the same as those for the results of Fig. 4, except that rays from the lamps were reflected from the metal background. The results were almost exactly the same as those shown in Fig. 4, which means that the reflection of rays from the polished background is of very little importance in producing the distribution of flux received by the patient.

We also determined the flux in a cradle in which the background was blackened and not cooled, and in which the lamps were covered with thin metal shields. The average value for the flux in this case was about 1 calorie per square centimetre per minute, and the flux was extremely uniform all over the cradle area.

All these results and particularly the preponderant part played by the radiation from the cradle background, represent a gratifying confirmation of our first rough analysis of the action of heat cradles.

### Conclusion

The thermo-radiometer used by us is essentially a laboratory instrument, but it holds out good prospect for development into a simple radiation-flux indicator for clinical use. When this problem of accurate estimation of total flux has been solved the next step must be to devise an instrument capable of differentiating flux received by the patient in different wavelengths—i.e., an instrument capable of assessing the quality of radiation.

Meanwhile, a great deal can be done by an accurate determination of the total radiation flux received under various conditions from standard treatment lamps, and thus to ensure



more reproducible and better-defined conditions of treatment by infra-red rays. There remains, of course, the great and complex problem of the physiological action of heat radiation. Here again the position is much more difficult than in the case of x rays. Whereas x rays are more or less uniformly absorbed by the tissues, in which they produce chemical changes, the action of infra-red rays results mainly in an increase in temperature produced near the surface of the skin, which is counteracted by perspiration and by dissipation of the local increase in temperature by the circulation. While a certain amount of information as to the penetration of infra-red radiation exists, little is known about the specific action of heat radiation under clinical conditions. As has been pointed out before (Brown and Mendelssohn, 1944), the physiological action of a given type of heat radiation is likely to be quite different in local and in general administration. The greatest need is for clinical observations of the effects of infra-red radiation administered in known quantities and under well-defined conditions, and we hope that the considerations advanced in this paper will aid the clinician in establishing conditions of treatment which will provide a sound physical basis for the study of clinical observations.

### Summary

The physical factors involved in the clinical application of radiant heat have been enumerated and discussed. Computation of dosage based on the consideration of the nature of the treatment source is liable to grave error and should be discouraged. Treatment should be based on the direct measurement of radiation flux—i.e., the amount of radiant energy received on the surface of the patient's skin. The methods by which such measurements may be made have been discussed, and one particular radiometer has been described and recommended for clinical use.

Dangerous overdosage may be caused by: (a) neglect of the fact that the radiation from almost all treatment sources increases during the time of application; (b) attempts to determine the flux received by the patient with unsuitable radiometers which yield results far below the true values.

We should like to thank Prof. L. J. Wills for his interest and suggestions, and for the provision of experimental facilities during part of this investigation.

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## RADICAL OPERATION FOR VARICOSE VEINS

BY

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To call an operation for varicose veins radical is a substantial claim, especially when the ingenious and occasionally heroic procedures of the past are recalled—e.g., multiple ligatures and excisions, the Trendelenburg operation with and without excision of the prominent veins, the stripping operation, injection therapy, etc. Since 1930 the operation of simultaneous ligature and injection in various forms has been developed and reported (Dodd and Oldham, 1940; Dickson Wright, 1940), started in 1932, and this article details the position after 800 operations which a follow-up has shown to merit the term 'radical'. Since 1939 modified procedures have been described which give good immediate results, but, in my experience and that of others, recurrence takes place in three months to three years, and these easier methods are not advised (Russell, 1941).

The radical operation for varicose veins premisses several factors. First the veins must be varicose—that is, they must be distinguished from compensatory veins which have developed in response to thrombosis of the deep conduits. Then, having decided that the veins are varicose, the type must be diagnosed, so that the correct radical measure can be chosen. There are at least seven varieties of varicose veins which require operation to cure: most of the remainder will respond to efficient injections. The types of varicose veins are diagnosed as follows, depending on incompetence of the valves in or at:

- (1) the termination of the great saphenous vein; (2) the termination of the external saphenous vein; (3) the internal and the external saphenous veins coincidentally; (4) the communicating veins between the deep and superficial venous systems of the leg (which normally allow blood to flow inwards); (5) the communicating veins between the deep and superficial venous systems, plus (1); (6) the communicating veins between the deep and superficial venous systems, plus (2); (7) the communicating veins, plus (3).

The radical operation consists in the permanent obliteration of the varicose veins. It is achieved by a combination of ligatures and division at the termination of the internal or external saphenous veins or of the communicating veins, and thrombosis and sclerosis of the varices by injection of an effective and adequate amount of sclerosing agent at the same time. These two factors—i.e., the agent and its volume—are determined by the grossness of the veins to be destroyed.

### Radical Operation for Varicosity of Internal Saphenous Vein

This is the commonest presentation, and the plan to be detailed often suffices for the occasional associated incompetence of the communicating veins, particularly those in the thigh.

*The Anaesthetic.*—A local or general anaesthetic is admirable; a spinal gives pleasantly empty veins and the patient stops in bed for 24 hours. In my practice patients get up the night of the operation, and thereafter morning and evening for lengthening periods, the object being to avoid pulmonary embolism and to keep up muscle power.

The operation necessitates incisions in the groin and at the internal malleolus at the ankle. The grossest veins require a third ligature, injection, and division above the knee. The veins are exposed, tied, and divided, and 20 to 40 c.cm. of 30% saline is injected downwards at the groin and upwards at the ankle. The result is a firm sclerosis of the internal saphenous system, and in some cases of varicose veins in the external saphenous area as well. The thrombosis is palpable before the patient leaves the operating-table, so that the adequacy of the operation is apparent.

### Technique of the Operation

*The Landmark of the Incision.*—The incision runs 1/4 in. below and parallel to the natural fold of the groin. It is 2 to 3 in. long, according to the obesity of the patient. Its centre lies where a line dropped from the pubic spine at right angles to the fold of the groin intersects the incision. The location of the internal saphenous vein is somewhat variable, but this exposure leads immediately to it. The centre of each lip of the wound is seized and forcibly elevated and retracted. This stretches the subcutaneous tissue and makes it possible to cut steadily through the two layers of subcutaneous fascia to expose the vein. The internal saphenous vein—recognized by its large size—is dissected "nude" with the scalpel until its three upper and occasionally one or two downward branches are revealed and also until the inward turn of the main trunk to join the deep femoral vein is defined.

Saphena varices are notoriously friable and are handled fondly like old china. The branches are tied and divided between ligatures. The common femoral vein is exposed sufficiently to ensure that the lower part is patent: the operation is abandoned if it isn't, for then the internal saphenous vein must be compensatory. The end of the saphena magna at its union with the femoral vein is tied with stout thread: to tie it distal to this point leaves a cul-de-sac of vein in which a thrombus can form, and pass into the main venous system, with undesirable pulmonary embolism.

*An Abnormality.*—Occasionally what appears to be the internal saphenous vein is small; this stimulates the search for a duplicate vessel which may lie underneath separated by a layer of fat or occasionally parallel in the same plane of fascia. The common femoral vein, which may be mistaken for it, is recognized by its size, its straightness, the depth at which it lies, and the pulsation of the femoral artery adjoining it. I have once tied and injected the femoral vein, and on two other occasions have had the ligature around it, discovering the mistake only just in time. A good exposure is the best preventive.

The great saphenous vein collapses on ligature, as its content is mainly a regurgitation from the femoral vein

**The Injection**—The distal portion of the vein is injected with 20 ccm of 30% saline, making sure that the fluid does go into the lumen and that it is not put into the deep tissues, which results in gross sloughing and delayed healing. A less effective alternative is 5 to 10 ccm of ethamolin. When injecting some veins they dilate and the sclerosing fluid sprays out alongside of the needle, indicating that the terminal valve in the collapsed vein has become competent. In this event the technique is as follows:

The lower end of the exposed vein is clipped with a haemostat. Another ligature is passed loosely round the centre of the exposed vessel. The vein is half divided by a scalpel between the two ligatures, and an olive-headed needle or ureteric catheter is threaded into the vessel. When the head is beyond the lower ligature, this is pulled tight to avoid bleeding, and the forceps is removed. The long needle or catheter is introduced gently down the internal saphenous vein. These instruments hitch occasionally on the valves, but manipulation disengages them and allows 10 to 18 in. of the vein to be traversed. Handling should be dainty, to avoid poking the instrument through the venous wall, when gross sloughing occurs. The concentrated saline (30%) is injected through the olive-headed needle (it fits a Record syringe) or ureteric catheter, slowly withdrawing it while doing so and avoiding leakage of the sclerosing agent from the vein. If the anaesthetic is local infiltration a painful spasm follows. The needle or catheter is now removed and the lower ligature tied.

**Transfixion Stitch**—When the internal saphenous vein is divided there is no valve between it and the right side of the heart, so that a torrential haemorrhage follows if the proximal ligature slips. When this happened once, seven pints of blood were required to restore the loss. This danger is minimized by a second tie, transfixing the stump with fine thread in the same way that a hernial sac is secured. The wound is cleaned especially when it has been soiled with the injection, the dead space is obliterated, and the skin is closed accurately and a pressure dressing applied.

#### Ligature of Internal Saphenous Vein at the Ankle

The internal saphenous vein at the ankle lies in a groove at the anterior border of the internal malleolus intimately bound to the deep fascia. It is important to find the great saphenous vein and not a large superficial radicle. An incision 1 in. long is made over the front edge of the internal malleolus, and the lips of the wound are opened and elevated. In some females fat overlies the vein, but usually it is visible through the deep fascia and is picked up, cleaned, and tied at its lower end. A loose ligature is passed round the upper end. The vein is half cut through transversely and the olive-headed needle or ureteric catheter is inserted upwards very gently. Sometimes the ureteric catheter will pass when the needle won't, and vice versa. They frequently hitch where a large communicating vein joins. The delicate introduction is essential otherwise the needle or catheter may be thrust through the wall of the inelastic vein and the sclerosing fluid be inserted into the subcutaneous tissue causing a huge slough of the skin, fat and deep fascia that requires months to heal. The catheter or needle is withdrawn during the introduction of 20 to 30 ccm of 30% saline. Soiling of the wound must be avoided. The upper ligature is tied and the vessel divided. The skin is sutured accurately, it unites slowly in this area, especially if pigmented or eczematous or ulcerated.

**The Dressing**—A pressure dressing is put on both wounds. Skill is required, and asepsis must be good, for suppurative and dermatitis will incapacitate otherwise fit men and women for weeks or even months.

#### Ligature above the Knee

When saline 30% is used the varices are palpably thrombosed at the end of the operation. Should those about the knee not be solid, a third ligature of the internal saphenous vein above the knee is required. The vessel is exposed on the antero-internal aspect a hand's breadth above the joint line, and a ligature is applied. If the upper section is solid nothing further is necessary, but if it is fluid 5 ccm of saline 30% will make sclerosis certain. Below the tie 5 to 15 ccm of the hypertonic saline is put in it either through a hypodermic needle or through the olive-headed needle or catheter, managed

as before. Then the vessel is again ligatured and divided. The wound is closed.

#### Ligature of External Saphenous Vein

**The Anatomy**—The external or short saphenous vein perforates the deep fascia about the lower part of the popliteal space and runs under it until it reaches approximately the bend of the knee-joint, where it turns in deeply and joins the popliteal vein, usually 1/2 to 1 in. higher. Gray's *Anatomy* points out that 'the mode of ending of the short saphenous vein is subject to considerable variations. It may join the long saphenous vein in the upper one-third of the thigh or may divide into two branches, one of which joins the long saphenous vein, the other the popliteal vein or the deep posterior veins of the thigh. Occasionally it ends below the level of the knee-joint, in the long saphenous vein or in the deep muscular veins of the calf.'

**Technique of Operation**—The patient lies on the face. Originally the incision was longitudinally over the line of the vein and was extended up or down as required, but this often heals indifferently, sometimes with a thickened and sensitive scar. The incision made in the central transverse crease behind the knee is better. A sandbag under the foot produces a slight laxity of the otherwise tight gastrocnemius muscles. The incision is deepened through the deep fascia. The external saphenous vein lies surrounded by fat in the groove between the inner and outer heads of the gastrocnemius. It may be duplicated or triplicated, and the sural branches of the internal popliteal nerve may be closely associated. A deep dissection is required, and the successful complete exposure, ligature, injection, and division can be a major surgical exercise. The union with the popliteal vein must be exposed and the associated branches divided between ligatures. The vessel is ligatured and injected similarly to the internal saphenous vein in the groin, giving meticulous attention to technique. No further ligature or injection is needed for the external saphenous drainage area.

#### Incompetent Communicating Veins

Occasionally the communicating veins between the superficial and deep systems are so gross as to require deliberate exposure and division of the connexion and repair of the considerable defect in the deep fascia. These points usually lie at the lower inner third of the thigh and at the leg on the inner surface. They are located by palpation with the help of the finger when the elastic varix and the hole in the deep fascia are felt or after emptying the veins by moving two tourniquets closer together on the limbs and watching the vessels fill up.

In the average case of incompetent communicating veins, ligature and injection at the groin and ankle or of the external popliteal vein behind the knee suffice to obliterate them. In the lower third of the leg the inefficient communicating vein may be so large and the pressure in it so great that direct attack is required. In fact, the already described procedure by obliterating a large part of the superficial venous system has the effect of increasing the content of the deep veins and thereby the pressure in the communicating veins. The clinical result in large communicating veins is more swelling and pain in the lower third of the leg than before the operation, which may raise the suspicion of obliterated deep veins. It is usually this which explains the recurrences after the operation. A hint of a marked communicating vein of the leg is given by pigmented skin, oedema, or ulcer in the lower inner third of the leg.

**The Remedy**—The treatment of the communicating veins consists in finding them, dividing them between ligatures, and closing the hole in the deep fascia. They are located in one of two places on the inner surface of the leg—either 2 to 3 in. above the tip of the internal malleolus or at the junction of the middle and lower thirds of the leg. Their position is determined by palpating systematically over the skin, when elastic sensation and a defect feeling like a button-hole in the deep fascia are found. One or two demonstrations soon give the peculiar experience. The incision is made vertically over the area. There are usually a few overlying small varices, and bleeding is copious. The deep fascia is exposed and the penetrating vein will be located coming off at an unexpected

angle. It is divided between ligatures, and the slit in the deep fascia is closed. The skin in these conditions heals poorly; it is often eczematous, or there may be adjoining ulceration. One stitch and a firm pressure dressing only are required, and patients stop in bed until healed, getting up morning and evening for lengthening periods. The results are excellent.

The communicating veins in the lower third of the thigh seldom call for direct attack, and are settled either by incision, ligature, and injection of the groin or by a similar procedure to the internal saphenous vein, 3 to 4 in. above the knee on its antero-internal surface.

**Subsequent Injections.**—In the majority of cases no further treatment is required, but occasionally small areas of veins remain patent, and these respond to immediate injection by ethamolin or quinine and urethane, 2 to 5 c.cm. of each. Sodium chloride 30% is not used for ordinary injection because gross sloughing follows if a few drops leak outside the vein.

Conclusion

The radical operation for varicose veins depends on the pathology and diagnosis of the varicosities. There are two types of varicosities: those due to loss of elasticity of the internal and external saphenous venous system with incompetence of the valve guarding their terminations, putting the superficial veins in direct communication with the right side of the heart, and those due to enlargement of the communicating veins between the deep and superficial venous systems—these are mainly at the lower third of the thigh and leg.

There are seven main diagnoses made up of combinations of these.

Up to five small but essential operations are required to cure the varicose veins in a limb.

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SULPHONAMIDE ALLERGY  
THE PERSISTENCE OF DESENSITIZATION

BY  
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(From a Military Hospital in the Middle East)

There are two types of allergic sensitivity which can arise during sulphonamide therapy—according to whether the drug is taken internally or is applied to the skin. The internal type may take many different clinical forms, of which fever, morbilliform erythema, and leucocytosis are the commonest features. In the cutaneous type the reaction is an eczematous dermatitis. In either case violent reactions are apt to follow administration by mouth, and one question which comes up is, Can these people be desensitized as a safeguard for the future?

The answer is that they can. Schlesinger and Mitchell (1938) reported that cases of sulphanilamide fever and rash cleared up in three or four days even though the drug was continued, and that one such case was followed up two months later and found to be insensitive. In 1942 Erskine stated that allergic cases could be desensitized either by keeping on with full doses the time of the reaction or by giving ascending doses at a later date. In a previous report (Park, 1944) on a patient who developed sulphapyridine neutropenia and was still sensitive after three months, details of a successful desensitization were given.

In the eczematous type desensitization was introduced by Tate in 1943 (personal communication), either at the expense of a severe reaction by full doses over about four days or by smaller doses for about three weeks, causing milder reactions.

Methods Used

My experience over the last 18 months has been that desensitization has been consistently successful in these allergic

states. The drug has been given in all cases by mouth, in four or five divided doses per day—enough to keep up a fairly constant level in the blood stream. Beginning with an amount too small to cause a reaction, the dose is doubled each day until a mild reaction appears. It is then kept the same until all symptoms have subsided, when it is again increased.

The two forms of allergy differ sharply in their response to desensitization. In the internal type, in which the first sign of a reaction is a rise in temperature, it is usually possible to start with 0.1 g. at each dose, doubling up daily to reach 1 g. in four or five days. More sensitive cases, such as the one reported below, take longer; the most sensitive one yet encountered had to start with 0.005 g. and took nine weeks to work up to 1 g. In the eczemas this high degree of sensitivity is the rule. The average case takes about six weeks to desensitize if the dosage is kept below reaction level.

The next question which springs to the mind is, How long does this benefit last? Does the allergic state return in the way that it does each season after hay-fever desensitization, or is it permanent? This question has not been answered up till now, and it is only from its answer that we can learn whether this desensitization to sulphonamides is really worth while. The following case is reported as a single pointer to the possible solution of this problem.

Case Report

Sapper X., aged 40, began treatment for chancroid with sulphanilamide on July 21, 1943, taking 1 g. four times a day. On the sixth day his temperature rose to 103° F. and he developed a general morbilliform erythema, showing no tendency to photosensitivity. It was slightly irritable. He complained of pains in the knees and other joints, but there were no objective findings. The drug was stopped at once. He gave a history of having received sulphapyridine for pneumonia six months previously without any reaction. On successive days his temperature reached peaks of 103°, 101.6°, and 100° F. A leucocyte count showed a total of 10,000. From July 30 onwards he was afebrile. On Aug. 8 he was put on divided doses of 1 g. of sulphapyridine. A few hours after the first dose he developed a temperature of 101° F. and further joint pains, but no rash. The fever lasted 48 hours.

Desensitization with sulphanilamide was started on Aug. 8 with four doses per day of 0.125 g. After two doses, however, he again reacted with a fever up to 102° F., a recurrence of the rash, and further joint pains. The drug was stopped and his symptoms subsided. Sulphanilamide was continued as follows:

Date	Doses per Day	Amount (g.)	Result
Aug. 11	4	0.02	No reaction
12	4	0.04	" "
13	4	0.08	" "
14	4	0.125	Fever of 99-6°
15	3	0.125	" " 101-6°
16	Nil		Still febrile
17	"		Almost afebrile
18	"		Afebrile
19	"		"
20-22	4	0.02	No reaction
23-24	4	0.04	" "
25-26	4	0.08	Mild reaction
27-28	4	0.04	No reaction
29-30	4	0.06	" "
Aug 31-Sept. 2	4	0.08	" "
Sept. 3-5	4	0.125	" "
6-11	4	0.15	" "
12-14	4	0.19	" "
15-16	4	0.4	" "
17	4	0.5	" "
18	4	0.6	" "
19	4	0.75	" "
20	4	0.9	" "
21	4	1.0	" "

He was discharged from hospital and nothing more was seen of him until Sept. 1, 1944, when he reported at the V.D. Dept. to have a routine injection for syphilis, which he had contracted in the meantime. He gave the story that in June, 1944, he developed a sore on his penis. At this time he was given sulphanilamide in seven doses of 1 g. over two days. This caused a febrile reaction accompanied by a recurrence of his previous symptoms, subsiding in two or three days. A diagnosis of syphilis was then made, and from that time he had been receiving weekly N.A.B. and bismuth.

He was brought in for further investigation and given the following drugs:

Sept. 3, sulphathiazole, 1 dose of 1 g.  
" 4, " 4 doses of 1 g.  
" 6, sulphapyridine, 1 dose of 1 g.  
" 7, " 4 doses of 1 g.

No reactions to the above were seen. On Sept 9 a dose of 1 g of sulphamylamide was given, and caused a pyrexia up to 100° F., with the same pains in the joints. This was confirmed by a similar reaction the next day to a dose of 2 g. On Sept 12, 13, and 14 single doses of 3 g each of sulphapyridine, sulphathiazole, and sulphamyl acid respectively were given, with no reactions. At this stage he had to leave hospital urgently for other reasons, and it was not possible to give him any further desensitization.

### Discussion

To sum up this patient developed a highly allergic state during sulphamylamide therapy, so that he reacted to as little as 0.25 g with a sharp pyrexia. He was also allergic to sulphapyridine in a lesser degree, with a milder reaction to a dose of 1 g. Desensitization took six weeks, but succeeded in working him up to full doses without reaction. Nine months later he apparently had a reaction to further full doses.

Reinvestigation one year after desensitization showed mild reactions to doses of 1 g and 2 g of sulphamylamide, but none at all to doses up to 3 g of other sulphonamides. His allergy had therefore partially returned, but only to a fraction of its original level.

If we may be allowed to theorize on the possible immunological mechanisms underlying this and other drug allergies, the following working hypothesis would fit the facts as they are at present known. In some people sulphonamides stimulate the formation of antibodies. These will then unite with future doses of the drug to cause allergic reactions. Their formation goes on after the drug has been stopped, but gradually tapers off and finally stops. Small desensitizing doses will use up these antibodies and abolish the allergic state. If desensitization is carried out before they cease to be formed, the allergy may partly recur, but if an interval is allowed to elapse before starting desensitization it may be expected to be permanent. It now remains for this hypothesis to be tested in practice.

### Summary

Desensitization to sulphonamides has been a consistent success by the method described.

An opportunity of following up a desensitized case showed that allergy had returned after one year to only a fraction of its former level.

There is theoretical reason to believe that if such cases are left for a time before being desensitized the benefit may be permanent.

I wish to thank the Director of Medical Services, 2 N.Z.E.F., for permission to publish this report.

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## PENICILLIN IN CIVILIAN PRACTICE

BY

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Supplies of British made penicillin have now been available for civilian use for three months, being distributed by the Ministry of Health to the Deans of Medical Schools and, through them to their own and associated hospitals. An indication of the types of case which have received penicillin from one centre might be considered to be of general interest.

Forty million units of penicillin a month were allotted to this centre, and the administrative heads of 43 hospitals were circularized but, largely owing to the publicity given in the Press to the fact that supplies were limited, the amount asked for in the first month was only 3 million units, in the second month it rose to 13.5 million units, and in the third month to 22 million units. No request for penicillin was refused in cases in which the infection was caused or was probably caused by a sensitive organism, and systemic treatment when needed was as a rule started before full laboratory investigations had been carried out, although in cases in which local treatment was indicated penicillin was usually withheld until a sensitive organism had been isolated. It was suggested that for systemic treatment the penicillin should be given as a continuous intramuscular drip, using 100,000 units a day dissolved in a pint of

saline and administered into the outer side of the thigh. In each case 5 days' supply was provided.

### Conditions Treated

Cases receiving penicillin comprised 15 of osteomyelitis, 5 of staphylococcal pyaemia, 2 of brain abscess, 2 of sulphonamide-resistant gonorrhoea, and 1 case each of staphylococcal orbital cellulitis, staphylococcal jugular phlebitis after mastoidectomy, streptococcal puerperal septicaemia, septic abortion, actinomycosis, pneumococcal meningitis, staphylococcal meningitis, salpingitis of undetermined aetiology not reacting to sulphonamides, generalized staphylococcal pyoderma, post-operative pneumonia of doubtful aetiology not reacting to sulphonamides, staphylococcal pericarditis, suppurative pneumonitis with multiple small abscesses demonstrated in radiographs of the chest (this patient subsequently had a pneumonectomy performed with success), and a case of severe human bite which showed a mixed flora, including *Staph. pyogenes*, *F. fusiformis* and an anaerobic streptococcus.

Local treatment was employed alone in 50 cases of staphylococcal skin infection, mainly sycosis barbae, 20 cases of staphylococcal infections of the hand, 5 cases of staphylococcal or pneumococcal conjunctivitis, 4 cases of pneumonectomy or lobectomy to prevent post-operative empyema, 4 cases of empyema—one being a case of tuberculous empyema with an associated staphylococcal infection—2 cases of staphylococcal carbuncle, and 1 case each of infected gangrene of the foot, streptococcal arthritis of the shoulder-joint, and generalized peritonitis secondary to a perforated gangrenous appendicitis.

### Results

A number of these cases will no doubt be reported in detail by individual clinicians, but certain general conclusions emerge from the series as a whole. The results of penicillin treatment have confirmed the findings of earlier clinical trials: very serious staphylococcal infections, such as meningitis and pyaemia with a high colony count in the blood culture, have been cured, but two patients with multiple lung abscesses died. In very early cases of osteomyelitis it was possible to bring about apparent cure without operative intervention, but in those seen late in the disease penicillin seemed to have disappointingly little effect. It is therefore more than ever necessary for practitioners to get cases of osteomyelitis into hospital at the earliest possible moment. The cases in which the bacteriology was unknown—viz., those of salpingitis, post-operative pneumonia, and septic abortion—all did badly, as would be expected the result of the administration of penicillin without bacteriological control is likely to prove unsatisfactory. The case of human bite improved rapidly under general and local penicillin treatment. The patient was a negroess who had been bitten on the thumb by a negro, and as Boland (1941) showed these bites carry a high morbidity rate due to spreading cellulitis. In this case the patient was treated with injections of 20,000 units every three hours and with local penicillin cream, the inflammation remained localized, and she was discharged from hospital in 27 days. One patient complained of considerable local pain when being treated with a continuous intramuscular drip, it was noted that blood concentrations of penicillin were lower than usual, and at necropsy there was evidence of considerable muscle damage.

**Systemic Treatment**—The number of patients for whom penicillin was requested for systemic use was the same in the second and the third months in which supplies were available, although in the latter, owing to increasing supplies, greater individual doses were prescribed. It is probable, therefore, that, although spectacularly successful in suitable cases, the number of patients in hospitals needing systemic penicillin is by no means large, and the total quantity which will be used even when supplies are freely purchasable will be smaller than many of us expected.

**Local Application**—The general practitioner will find local penicillin treatment of great value in suitable cases of conjunctivitis and staphylococcal skin diseases. For conjunctival instillation the solution of 1,000 units per c.c.m. is less painful than the application of penicillin cream, but for sycosis the lotion was less effective than the cream, this was prepared according to the formula of Clark *et al.* (1943), and results from

all hospitals have been excellent. For infections of the hand the instillation of the solution at a concentration of 1,000 units per c.cm. seemed to be more effective than the cream; but dressings have to be done more often, and were more painful. Small boils were successfully aborted in 24 hours by injecting 0.1 c.cm. of a strong solution of 10,000 units per c.cm. into the boil; the treatment, however, is painful, and not more than 0.1 c.cm. should be injected at a time. Local application uses up comparatively small quantities of penicillin.

#### Comment

Penicillin cream is certain to be used very widely in civilian practice, and the difficulty that practitioners and pharmacists have encountered was largely in the preparation of the sterile lanette wax and castor-oil base, which has to be autoclaved. This can, however, be prepared in bulk, and will keep indefinitely; when needed, the appropriate amount can be melted, cooled to 60° C., and the penicillin solution added to make a final concentration of 200 units per gramme.

It would be a great advantage if supplies of sterile cream base were available from a central store so that pharmacists and practitioners in small hospitals could make up their own penicillin cream as they needed it. A self-sterilizing cream would be very desirable, but until this is available it is essential that practitioners supplying patients with penicillin cream for application at home to a skin lesion should be careful to provide them with precise instructions on how to remove the cream from the jar with reasonably sterile precautions. We have found it satisfactory to tell patients to immerse the blade of a metal-handled table-knife in boiling water for five minutes and then cool it under a freely running cold tap; the cream is removed without delay, and the knife is not replaced in the jar without resterilizing. The tablets of penicillin proved to be easier to handle and more economical in use than the ampoules in which American and Canadian penicillin is dispensed. If in the future British penicillin is to be sold in ampoules it would be of considerable advantage if the glass used were soft enough to be cracked without considerable effort or, better still, if the substance could be dried in a bottle or ampoule with a rubber seal in order that the reconstituted solution could be removed in small quantities with a syringe and needle.

#### Summary

The types of case in which penicillin is likely to be of value in civilian practice are indicated by the conditions treated in the first three months in which British penicillin was freely available.

The general practitioner will probably use penicillin cream locally more often than any other preparation of the substance.

Sterilized penicillin cream base should be available to practitioners and pharmacists, who will then be quite capable of making up the cream from penicillin tablets.

With adequate instruction patients can carry out treatment of skin conditions with penicillin cream quite successfully in their own homes.

The consumption of penicillin is largely conditioned by the number of cases needing systemic treatment, and this was smaller than was anticipated.

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The third annual report of the North-Eastern Regional Hospitals Advisory Council contains as an appendix a report by Prof. J. C. on the Durham University department of child health at Royal Victoria Infirmary, Newcastle-upon-Tyne, which opened up in 1943. The main work of the children's clinic is the medical consultation service provided each afternoon in sessions held by experienced children's specialists. In collaboration with the health department of the Newcastle City Council a child welfare clinic was placed in the new department and opened in May last to serve as a training centre for doctors and nurses taking up this work. The main in-patient clinical work of the department is carried out in the children's wards of the Royal Victoria Infirmary, with additional wards in the Babies' Hospital. The teaching of undergraduate students in child health and clinical paediatrics is now established. It is intended that research shall become one of the chief features of the department's activities; already several important lines of research are being pursued.

## Medical Memoranda

### A Case of Exomphalos complicated by Acute Intestinal Obstruction

The following notes of a case of exomphalos which has come under my care may prove of interest.

#### CASE REPORT

At noon on Dec. 14, 1943, I was called to a ward where a Munyarwanda woman had just given birth to a male child with exomphalos. The proximal portion of the cord was in the form of a bag covered with translucent amniotic membrane. It was about the size and shape of a large lemon, and through the membrane covering coils of small intestine could easily be made out. The sac was attached to the abdomen by a skin-covered pedicle 1 in. in length and 1 in. in diameter. In all other respects the infant appeared normal and strong. The cord was ligated and severed distal to the sac.

At 3 p.m., three hours after birth, I performed an operation. Naturally the question of the most suitable anaesthetic arose. Langton Hewer states that in acute abdominal conditions in young children the techniques involving local and spinal blocks show a higher mortality than general anaesthesia. Lambert Rogers (1941) operated upon a very severe case of exomphalos 20 minutes after the birth of a baby. In this case the operation was so near the birth that he felt it might be considered a mere prolongation of normal birth trauma, and consequently used no anaesthetic. The child suffered no shock, respiratory distress, or other complication. Three hours was perhaps too long after birth to consider a severe operation as a prolongation of the physiological process of birth. Carman (1941), after operating on a 4-day-old baby for strangulated hernia, reported favourably on ether and oxygen as the anaesthetic agent, after premedication with atropine 1/200 gr. I had no ether or oxygen available. However, Ley (1942), in reporting a successful operation in a case of severe exomphalos on a baby 10 hours old, stressed the value of pure chloroform anaesthesia for abdominal sections in very young children. Accordingly I instructed my comparatively inexperienced native orderly to administer pure chloroform.

A transverse incision was made, as in Mayo's operation for umbilical hernia, through the skin and subcutaneous tissue. The inner layers of the neck of the sac consisted of tense, tight fibrous tissue, and so the superior-anterior surface of the sac itself was incised and the sac opened. It was seen to contain almost the whole of the small intestine, the coils of which were very congested indeed, and I was in doubt whether one of the coils was viable or not. The umbilical vessels were found on the inferior wall of the sac; these were carefully ligated and tied, and the sac was then opened completely. As the opening through the neck was so tight it was obviously impossible to attempt the return of the bowel through it. The fibrous ring was therefore cut. At this stage, the anaesthesia being light, the child strained and almost the rest of the bowel prolapsed. The normal pink colour of the freshly prolapsed coils was in marked contrast to those already seen. There was a distinct compression ring on the two coils which had been constricted in the neck.

Smellie, in Ley's case, was compelled to use "deep chloroform anaesthesia." As it was found impossible to replace the intestines under light anaesthesia I instructed the orderly to push the chloroform. This was done; but very soon, in spite of the constant use of towels wrung out in hot saline, the child became cold and clammy and its breathing very intermittent and gasping, like that of a baby just born with asphyxia neonatorum. I did not think it could survive the rest of the operation. With difficulty the bowel was replaced. The abdomen was closed with one purse-string suture through the peritoneum and fascia, and the skin with interrupted silkwool-gut sutures. The apparently moribund child was returned to the ward wrapped in cotton-wool, surrounded with hot-water bottles, and placed with its head low down. The operation had lasted about 1½ hours.

To my amazement the child rapidly recovered. That night it vomited only once. It almost immediately started taking the breast, passed water normally the first night, and had a normal action of the bowels the second night. With the exception of slight sepsis of the wound, which rapidly responded to fomentations and sulph-anilamide powder, it made a complete and speedy recovery. The weight of the baby was 6 lb.

#### DISCUSSION

Exomphalos, when a true sac is present, is a very rare condition, with a high mortality rate; but the above case, and more especially those reported by Lambert Rogers (1941) and Ley (1942), show that even marked degrees of this abnormality are viable if submitted to operation at once. Sheldon (1936) states: "Operative treatment is usually required, but, in the absence of intestinal obstruction, conservative treatment, by simply protecting the sac from injury, has been followed by slow natural repair." Intestinal obstruction is always a serious condition, and the younger the patient the more serious it is. Therefore a conservative treatment which awaits the signs of



obstruction seems one that is likely to deprive the infant of that chance of survival which surgery can give it. A further reason against expectant treatment is, as McGavin and Choyce (1932) pointed out, that the vascular amniotic membranes slough and rupture, leading to a fetitious ectopia of the viscera and resultant death from shock or sepsis.

Brailsford (1939) has drawn attention to the possibility of diagnosing antenatally several of the severe forms of congenital deformity by a radiograph of the foetus. In a case of exomphalos he noticed a marked shortening of the spinal column. In the present case, in Lambert Rogers's, and apparently in Ley's, no such shortening was present, so that the absence of shortening in a foetal radiograph certainly does not indicate an absence of this deformity.

I would like to pay tribute to the splendid anaesthesia given by my native boy and, in doing so, to state what fine anaesthetists and nurses our comparatively uneducated Banjara boys make. With their services as anaesthetists and assistants there are very few surgical procedures which we are unable to tackle in our little and primitive hospital.

Gabini Ruanda,  
Central Africa

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### Muscle Spasm apparently due to Lack of Sodium Chloride

The following report may help other doctors who have to deal with a similar case.

#### CASE REPORT

At 12.15 a.m. on Aug. 10 after a week of increasingly hot weather culminating in an extremely hot day and night, I saw a boy of 17 years with the following history and condition. He had gone to bed at 10.30 p.m. on Aug. 9 feeling weak and poorly, and, like everyone that night, sweating freely. At about 11 p.m. he began to have "pins and needles" first in the arms, later also in his legs and face, followed in about ten minutes by a mild attack of cramp in each biceps humerus lasting a moment or so and passing off. Some ten minutes later another attack of cramp involving more flexor muscles occurred, passed off, and so on, each attack being worse and involving more muscles, the "pins and needles" persisting throughout.

When I saw him he was just going into a spasm, which lasted 3½ minutes and at its peak was as follows. The arms were tightly folded as in a swimmer's photograph, fingers clawed, legs in the frog position, head flexed, trunk slightly flexed, face screwed up with pain but not a risus sardonicus, copious sweating, respirations the incredible rate of 50 per minute, pulse forceful and 90 per minute. It was quite impossible to straighten even the fingers.

The spasm left him utterly relaxed and exhausted, temperature 96.4°F, "pins and needles" present and strong, mind clear throughout. Tetanus and tetany were ruled out, no abnormal signs in chest or abdomen, no rash. Direct questioning elicited "Yes" to "Do you sweat a lot?" and "Do you dislike table salt?" Three teaspoonfuls of sodium chloride in one third of a pint of warm water was given, and, interestingly, he volunteered that it tasted good, nor was there any nausea. Three minutes later another attack started, but less violent and long. Another drink of two teaspoonfuls to one third of a pint was given, which, he said, tasted a bit strong. Within 1½ minutes of the first drink the "pins and needles" had begun to go and within 30 minutes had gone. He felt hungry; temperature 97.6°F. I left him eating two huge "doorsteps" of bread and margarine.

Later that day I visited him, he was up, had no physical signs of anything abnormal in the chest, temperature 98°F, and he said he had an appetite for the first time in three weeks.

#### COMMENT

One must decide, was it an acute shortage of sodium chloride in the blood giving rise to cramp of a most unusual violence and cured by the strong saline draught, or was it something else which had reached its peak as I arrived and went off despite the treatment? I think the former, but unfortunately I did not taste his sweat (it might have been saltless), nor do conditions in a council house encourage taking blood for a sodium chloride estimation when the nearest laboratory is sixteen miles away. There can be no doubt that had the condition not cleared up his heart would not have stood up to the strain for more than another six or seven hours. Also why does this sort of cramp and athlete's cramp always affect the flexor muscles?

Stamford Lincs.

A. H. GREGSON, M.B., CH.B.

## Reviews

### NEUROSYPHILIS

*The Management of Neurosyphilis*. By Bernhard Dattner, M.D., Jur.D. with the collaboration of Evan W. Thomas M.D. and Gertrude Wexler M.D. Foreword by Joseph Earle Moore M.D. (Pp. 398. 55/0 or 25s.) New York: Grune and Stratton, London: William Heinemann, 1944.

Dr. Dattner, formerly assistant in the Vienna clinic of Wagner-Jauregg, has written a useful and much-needed book. His subject is one that is common to syphilology, neurology, and psychiatry, and it is good to find it treated as an all-round problem of its own and not one-sidedly as an incidental topic in one of the three major specialties.

The book is well documented, the findings of other workers are culled from far and wide, and useful personal observations are included. There is no rushing at conclusions, and controversial problems are squarely faced. We are glad to see the author's insistence on the importance of spinal-fluid findings in diagnosis and during the early stages of syphilis, and he puts the matter of therapeutic results in true perspective when he stresses negative serology and longevity—and not clinical improvements—as the chief criteria for estimating the efficacy of particular treatments.

One might disagree with certain statements—e.g., that a post-malarial fluid once negative remains so—but these are only minor matters. One criticism that must be made, however, is that little or no space is devoted to flocculation tests. It is high time that the Wassermann were dislodged from its preferential position, and a reference to the greater sensitivity of the Metnick, Muller, and Kahn tests (to mention a few) would have been welcome, it would, incidentally, have had an important bearing upon the question of the frequency of negative serology after treatment and also upon the likelihood of finding negative blood results in cases of untreated meningo-vascular syphilis. Moreover the inclusion of the flocculation tests might have led to a consideration of the all-too-neglected problem of standards of cure—standards of satisfactory progress (beyond which intensive treatment is no longer necessary) which will never be established until we are all agreed as to which tests we will accept.

The book is a timely one clearly and capably written, and it can be confidently recommended to all concerned in the recognition and treatment of neurosyphilis.

### SURGERY FOR STUDENTS

*Surgery: A Textbook for Students*. By Charles Aubrey Pannett, M.D. F.R.C.S. (Pp. 740, illustrated 35s.) London: Hodder and Stoughton, 1944.

With the sentiments Prof. Pannett expresses in his preface the majority of surgeons, and, we hope, all surgical examiners, will agree. The gist of the matter is that he believes a textbook for undergraduate students should be the product of a single author, since "it does not seem fair to expect the student to have more exact knowledge than his examiner possesses, or to have read a series of monographs by experts." The specialist may have acquired special facility in technique by confining his work within narrow limits, "but the facts of the specialty and the principles on which he works are within the compass of the general surgeon's wit." The object of the book is "to present the facts of general surgery in as few words as possible"—a very desirable aim in these days of prolixity.

In the application of these principles, however, we cannot help feeling that the author has not been entirely successful. In large portions of the book the condensation has been overdone, which has made it a guide more suited to the nurse or medical auxiliary than to the medical student. It will be accepted, too, that the greater the conciseness the more the need for extreme accuracy, and in this the book unfortunately falls short of expectations. We are, of course, not criticizing legitimate expressions of opinion, but factual statements, as the following examples will show. "The brilliant discovery by Metchnikoff of arsenamine" although one of the numerous synonyms for "606" is Ehrlich-Hata compound, "the secretion of testosterone by the spermatogenic cells": true, it has been



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## BRITISH MEDICAL JOURNAL

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## PENICILLIN IN SYPHILIS

It is now a year since the first announcement that penicillin has an action on syphilis. Further information has been awaited with deep interest, because the successful outcome of clinical trials would mean a complete revolution in the treatment of this disease and a far greater likelihood of its ultimate extermination. These hopes are based on the fact that penicillin is for all practical purposes non-toxic; so that a single course lasting about a week, and free from the dangers of intensive arsenotherapy, may prove to be all that is needed to effect cure. The main drawback is that administration has to be continued day and night, and therefore requires admission to hospital. The necessity for continuous treatment presents less difficulty in the armed Forces, and the advantage to them of being able to return a man to duty after so short a period of treatment is paralleled only by the corresponding advantage already secured by the penicillin treatment of gonorrhoea.

Study of the penicillin treatment of syphilis has been pursued extensively and with great vigour and thoroughness in the United States on a plan laid down by the National Research Council, and a series of three reports<sup>1</sup> has now appeared which represent experience at a large number of centres. All the authors are agreed that penicillin treatment causes rapid disappearance of *T. pallida*—usually within less than 24 hours—and rapid healing of primary and secondary lesions. Herxheimer reactions are common, although naturally of little account in superficial lesions. It is also the general experience that all serological tests for syphilis pass through a stage of diminishing positiveness to become negative in a majority of cases usually within 3 months. In a large proportion they have remained negative so far as observation has yet gone; others have shown a tendency to the redevelopment of positive reactions. J. F. Mahoney and his colleagues give examples in the first paper of different types of serological history, as revealed by the performance of ten different tests on as many as twenty or more occasions. They also report the results to date in 100 patients, 4 of whom were the first to be treated: 3 of these have remained clinically well and serologically negative; the fourth has a recurrence probably due to reinfection.

Mahoney, J. E. Moore, Commander W. Schwartz, and Lieut.-Col. T. Sternberg are the authors of a second paper which is based on the work at twenty-three centres, Service and civilian, where 1,587 cases have been treated, 1,418 of which are suitable for analysis. Treatment at all these centres followed a plan, all patients being given 3-hourly intramuscular injections for 7½ days; they were divided

into 4 groups in which the individual dose was 1,000, 5,000, 10,000, or 20,000 units. Even the smallest dose caused disappearance of *T. pallida* and healing of lesions, but the smaller the dose the less often did serological tests become negative and the more frequent was relapse. The largest dose employed is therefore now considered the minimum necessary. Slightly better results than any obtained with penicillin alone followed the administration of either 60,000 or 300,000 units of penicillin in all, together with a subcurative dose (320 mg.) of mapharsen. There is clear evidence that the earlier treatment is begun the more certain is its effect. Among patients treated with penicillin alone the frequency of relapse in sero-negative primary syphilis was 3.2%, while in sero-positive primary it was 5% and in secondary 9.8%. In view of this finding it is not surprising that the results of treating late syphilis, which are described by J. H. Stokes *et al.* in the third of these papers, are much more equivocal. Among 182 cases, of which 122 had neurosyphilis, the proportion in which serological tests became actually negative was only 10%, though some reduction in positiveness occurred in about 50%. Clinical improvement and spinal-fluid changes corresponded, about half the patients improving definitely, a few strikingly, and the remainder little or not at all. Herxheimer reactions occurred in 20% and are considered to call for cautious early dosage. The effect on gummata of the skin and bones is more encouraging; these disappear with almost unfailing regularity after only moderate dosage.

It is impossible fully to assess the significance of these findings, in spite of their massive scale and elaborate control, if only because in syphilis time alone can tell. A continued hope that a full single course will cure the disease in the primary stage seems justified, and results may be bettered by improved methods of dosage and administration. It is noteworthy that all these patients were treated by spaced intramuscular injections, and there is no mention anywhere of blood estimations to determine whether an adequate concentration was maintained in the blood throughout the intervals between injections. No one knows what an adequate concentration actually is for attacking *T. pallida*, but it is well known that the concentration falls to a very low level between individual injections. According to I. W. J. McAdam, J. P. Duguid, and S. W. Challinor,<sup>2</sup> to keep the blood continuously bacteriostatic for *Staph. aureus* the daily dose required if given 2-hourly is 120,000 units, if 3-hourly 200,000 units, and if 4-hourly 600,000 units. The same effect can be achieved by giving only 100,000 units by continuous intramuscular drip, and this on general principles would appear to be the method of choice for treating syphilis.

It is a remarkable fact that both principal forms of venereal disease should prove to be amenable to the same drug. To the thoughtless it might even appear highly convenient, in that if necessary two birds can be killed with one stone. Owing to the different times of appearance of the two diseases it is in fact occasionally a grave drawback. C. R. Wise and D. M. Pillsbury<sup>3</sup> mention two cases in which the treatment of gonorrhoea with 100,000

<sup>1</sup> *Lancet*, 1944, 2, 336.<sup>2</sup> *Brit. J. Surg.*, Special Issue, "Penicillin in Warfare," 1944, p. 214.<sup>3</sup> *J. Amer. med. Ass.*, 1944, 128, 63, 67, 73.

units of penicillin apparently suppressed a coincident syphilitic infection, which became manifest only on the delayed appearance of secondary lesions. This possibility is perhaps an argument in favour of treating gonorrhoea initially with sulphonamides.

## PREVENTION OF PROSTITUTION

The League of Nations has done much useful work on the rehabilitation of adult prostitutes.<sup>1</sup> Its advisory committee on social questions, recognizing that rehabilitation is inevitably more difficult and less effective than prevention, has since 1938 been collaborating with the International Labour Office in a study of how to prevent prostitution, especially in minors.<sup>2</sup> The causes which lead women into prostitution can be divided, it says, into two main categories—one social and the other individual. At all events before the present war social causes alone were rarely determinant unless they were linked up with predisposing characteristics. The more important of these are weak character, poor mental equipment, and grave physical disability; less important are an oversexed constitution or inherent depravity. Predisposition to such a way of life is apparently very rare—6 to 10%—and these women are psychopathic. The chief social causes are disintegration of family ties or separation of the adolescent from the shelter of the family; faulty education and upbringing; slums, want, and, in some occupations, insufficient social protection against risks due to the environment, the temptations or conditions of life which it entails. Every improvement in the social and economic status of women is likely to strengthen the resistance of the individual woman to the hire of her body. Other things being equal, the percentage of full-time prostitutes decreases with the improvement of social services protecting the weak. The increasing opportunities for women to make lives of their own have preserved many from becoming prostitutes, but an even more important factor has been the development of social insurance and its progressive extension among women workers. Unemployment insurance bridges over dangerous periods of great material embarrassment by intervening at the critical moment, which is largely important in a marginal case—that of a woman whose resistance to financial temptation has already been weakened. The removal of financial insecurity is a powerful protective factor. In feminine occupations in which social protection is neglected the percentage of prostitutes is greater than in fully protected occupations. Organizations and social protection are vitally important in such occupations as domestic service and catering, and in night clubs and music-halls. Measures that improve the standard of living, and specially housing, tend to reduce prostitution.

Social preventive action may well include the protection of young workers when they are placed in employment. Other social measures intended to organize protection against risks arising out of the surroundings of the work may be negative, prohibiting the employment of young persons in work where the risks are serious; or positive;

organizing supervision over young people and helping them to overcome the difficulties arising out of their work. The organization of the occupation itself, and the adoption of rules devised for raising its standards, may protect against demoralization. Measures of this kind seem to be particularly suitable for overcoming the risks in domestic service.

The committee holds that insufficient attention has been paid to the demand for prostitutes. To reduce the demand would lead to a reduction of the supply. The first effect would be a temporary or permanent fall in the earnings from prostitution. Among prostitutes the part played by bad company, and especially by *souteneurs*, is infinitely greater than in any normal group of women. If the law is strict and is applied with the utmost severity, all forms of the *souteneur's* activities can be checked. For such suppression, however, a powerful and active public opinion is needed. One difficulty in this line of attack is that in regulationist countries brothel-keepers are recognized or tolerated, and therefore immune from legislation directed against the *souteneur*. The punishment of adult prostitutes for offences connected with prostitution is entirely useless and even dangerous. Imprisonment of women who are on the brink of prostitution makes them even more conscious that they are already outcasts, and makes their return to normal life infinitely more difficult. Fines merely incite to prostitution as a means of raising the money. Certain experiments carried out in the Scandinavian countries aim, without punishment, at deterring women from continuing to prostitute themselves. The principal innovations consist in the psychiatric examination of prostitutes, the treatment of those found to be feeble-minded, and the use of probation. Such methods, it is suggested, would take off the streets a large number of women who go on them because of poverty. Probation should prove a powerful deterrent to a woman who has not yet entirely lost her self-respect. One highly significant development is the recent advance in the treatment of gonorrhoea. This has much reduced the fear of disease and therefore tends to increase the demand for prostitutes. Future appeal to men will have to be based less on physical danger and more on moral grounds.

One of the chief individual as distinct from social causes of prostitution is slight mental abnormality. The great majority of prostitutes are borderline cases. Difficult mentally defective children should be more surely detected while they are at school and be adequately educated. Incapables should be protected from those realities of life that are too difficult for them. Again, many women are forced to prostitution by chronic physical disease which incapacitates them for normal work. The remedy is compulsory health and sickness insurance. Social services can contribute by helping women who have contracted venereal disease before they fall into prostitution by putting them in touch with voluntary organizations and with official and non-official help during treatment and after cure. Societies should avoid forcing women who are merely promiscuous into professional prostitution. Police raids on places of amusement are often followed by the indiscriminate detention of prostitutes and non-prostitutes. The latter run a grave risk of losing their employment in consequence; they are prone to have difficulties with their families, and to take

<sup>1</sup> Documents C 218 M 120 1938 IV, C 6 M 5 1938 IV, and C 83 M 43 1939 IV.  
<sup>2</sup> *Prevention of Prostitution*, League of Nations Publications IV, Social, 1943.  
London: Allen and Unwin. (6s.)

to the streets. The authorities in countries which practise regulation and the licensing of brothels tend to force suspected women into the rigid system of registration. The committee declares that minors should never be registered as prostitutes or be allowed to become inmates of licensed houses. Authorities and voluntary organizations should make every effort to warn women about to be registered of the serious consequences of this step, fix a long enough interval between application and the issue of the card, and keep away from their offices souteneurs, brothel-keepers, and the like, who might bring pressure to bear upon applicants. Girls who wish to be struck off the register should be helped and not obstructed. As unmarried mothers fall nearly everywhere under a social stigma, public health and social services should give them financial aid. Efforts should be made to restore them to their families or to place their children in suitable homes, and to find them employment. Such services should be organized in such a way that unmarried mothers do not hesitate to apply to them. Many girls drift into promiscuity and later into prostitution through being suddenly transferred to a strange mode of life. Voluntary organizations, says the committee, should try to enlighten young women by meetings and leaflets. Besides drawing attention to the dangers of large towns, they should impart at least rudimentary knowledge of the means of help that are available. Railway missions especially do much by protecting young girls who have run away, have met doubtful persons on their journey, or are travelling to new places of employment. These services ought to be extended to travel by road, air, and water. Women police can give much protection to minors on the fringe of prostitution by supervising cabarets, night-clubs, suspicious restaurants, and other haunts of prostitutes. In regulating countries they may be able to rescue promiscuous girls before they are caught by the *police des mœurs* and registered. Many prostitutes have started their sexual experience very early, and the severe punishment of sexual offences against children provides a certain safeguard. In some countries the age of consent could be raised without interfering with the liberty of the subject.

In conclusion the committee hopes for a further reduction in prostitution if social progress and preventive measures coincide with the growth of new standards of sexual morality. It looks forward to a period during which there will be a progressive decline by a general increase in individual consciousness of responsibility, by a further development of social services, and by deliberate official effort to lessen its incidence.

### PAIN SENSITIVITY IN DYSMENORRHOEA

The many theories put forward to explain dysmenorrhoea have included, according to the fashion of the day, various endocrine disturbances, vitamin deficiencies, and psychological difficulties. The simplest explanation is probably that women who experience dysmenorrhoea are more sensitive to pain than their more fortunate sisters. Haman<sup>1</sup> has produced evidence that this is so by comparing the sensitivity to pain in 100 women with dysmenorrhoea and 100 without, in 100 post-menopausal women, and 100 men. His method of testing pain sensitivity is a simple one

based on pressure pain, using a sensimeter. This is a simple adjustment of a standard Geneva lens measure, an instrument looking like a watch, with three projecting pointed rods, the centre one being movable and projecting beyond the other two. The rods are rested on the proximal phalanx of the thumb, and pressure is applied until it hurts, as the central rod is depressed its movement is recorded on the watch face, so that a reading of individual pain thresholds may be made. Haman publishes means and frequency distribution curves of the results in the four groups. They show no significant differences between the averages of the men, normal women, and post-menopausal women, though the latter had a slightly higher threshold than the others. The dysmenorrhoeic women, however, had a significantly lower average threshold. When divided into two subgroups—those with primary and those with secondary dysmenorrhoea—the first gave a lower average than the second. When the post-menopausal women were divided into those who had had dysmenorrhoea and those who had not, the former showed a lower average threshold than the latter. This does not entirely rule out the possibility that persistent cyclic pain such as is suffered in dysmenorrhoea may lead to a general increase in nerve sensitivity. A clinching demonstration would be to determine the pain threshold in large groups of pre-adolescent girls and see whether dysmenorrhoea was later most frequent among those with the higher thresholds.

### SCHEME FOR CANCER TREATMENT

In a discussion at the Radiological Section of the Royal Society of Medicine on post-war organization for cancer treatment (which is reported elsewhere in this number) Mr G F Stebbing mentioned a pamphlet describing an "A B C Scheme for the Organization of Cancer Treatment in London". We have now received a copy of this pamphlet.<sup>1</sup> Dr Malcolm Donaldson's object in publishing it is to persuade the voluntary hospitals in London and the surrounding counties to get together and draw up a scheme to help the local authorities, who are responsible under the Cancer Act for submitting to the Ministry of Health a plan for the organization of cancer treatment in their areas. Because of the scarcity of towns with large populations in the Home Counties and the centralization of many big hospitals in the County of London, it is considered essential in the A B C scheme that the County of London and the six surrounding counties should be regarded as one area. It is suggested that this area, comprising a population of about 12 000 000, should be divided into six sectors or groups. In each of these six sectors the hospitals would be classified as A, or B, or C. Class A hospitals—in most cases teaching hospitals—would have facilities for all methods of treatment, including radiotherapy. Class B hospitals in the County of London, it is considered essential but not radiotherapy, and Class C hospitals would be used for preliminary investigation of suspected cases of cancer. It is further suggested that if there is more than one Class A hospital in one area they should co-operate particularly in respect of radiotherapy, and should elect one of their staff as a 'co-ordinating member'. Again, it is suggested that there might be substations of radiotherapy in some of the larger towns of the Home Counties working in the closest co-operation with the A hospitals and sharing the radiotherapeutic staff. It will be seen that by this A B C scheme there would be large groups of hospitals rather than exactly defined areas, in which the A hospitals and their substations would take on the responsibility for giving radiotherapy to the patients in the B hospitals, the

<sup>1</sup> *Amer J Obstet Gynec* 1944 47, 686

<sup>1</sup> Copies can be obtained from the National Radium Commission, 12, Manchester Square, London, W 1

patients being returned to their original B hospitals for after-care and follow-up. Such a scheme does not deny an A hospital the right to treat patients from elsewhere, or a B hospital to send a patient for special treatment to an A hospital outside its group. It is suggested that there should be a medical organizing committee for each of the six groups, who would be responsible to a Cancer Council consisting of representatives of those local authorities who control the area in which the hospitals are situated. Although in the first place it may be necessary to have a Cancer Council in each sector, later one Cancer Council would probably suffice for the whole seven counties.

### HOMELESS CHILDREN

Experience in caring for children bombed out of their homes in this country will help in dealing with the far larger problem of caring for millions of homeless European children. Dr. D. W. Winnicott and Clare Britton, a physician and a psychiatric social worker, took part in the Oxfordshire scheme of setting up evacuation hostels for children who could not settle in billets.<sup>1</sup> They found themselves able to cope with children who came to them with severe symptoms when the illness was temporary and by way of a defence mechanism. Nearly all such children respond well even without individual psychotherapy, and are able to enter home life again. Several hostels form a group directly administered by the county council, and a psychiatrist visits one day a week and directs a whole-time psychiatric social worker in the routine management of the hostels. The grouping of hostels makes possible a certain amount of classification and enables children to be changed from one type of hostel to another without breach of continuity of treatment. Not more than 25 children, the authors think, should be put in one hostel; the ideal number seems to be 12. Also, the hostels should not be so near one another that the children can meet and compare notes; for that matter it is just as well that the staff should not constantly compare their own efforts with those of their neighbours. In practice the psychiatric social worker controls the whole of the work except for maintenance and alteration of buildings. She is in touch with all that each hostel has gone through; she knows which type of case goes best in each hostel, and she can appreciate the difficulties of the staff. She knows each child at every stage, and it is her function to give the children a sense of continuity. Previous training and experience as hostel wardens matter little compared with the ability to assimilate experience and to deal in a genuine, spontaneous way with the events and relationships of life. Wardens are put to such a severe test by the children that only those who are able to be themselves can stand the strain. They must also have a genuine love of children. If a man and wife are appointed this avoids many deficiencies, and many difficulties do not arise. A warden must be willing to stay in the job, for a change of warden means "casualties" among the children. The education of wardens is obviously important. It is part of the work of the psychiatrist and the social worker, and much help is given if wardens have enough confidence in themselves to be able to think along psychological lines and discuss problems with other wardens and experienced people. The subordinate staff present a problem, for, as the children are somewhat antisocial, the management cannot help being dictatorial and the assistants have their initiative much curtailed. Each hostel tries to reproduce as nearly as possible a home environment: a building, food, clothing, human love and understanding; a time-table, schooling; apparatus and ideas leading to rich play and constructive

work; substitute parents and other human relationships. Antisocial, introverted, depressed, distorted, and backward children all need separate and distinct kinds of treatment. The limitations of the experiment are obvious, and perhaps the most serious are that everyone feels the work to be temporary and entrants cannot be selected. Nevertheless, the authors think it has been well worth making. It has shown the difficulties and possibilities of providing substitute homes for children, and proves that residence in a hostel under specialized management can have definite therapeutic value. This conclusion is borne out by a valuable survey of experience under the evacuation scheme just issued by the Ministry of Health and printed in pamphlet form under the title *Hostels for "Difficult Children"* (H.M. Stationery Office; 6d.).

### FLUOROSIS IN SOUTH AFRICA

The existence of endemic fluorosis in South Africa was recognized as a serious problem about five years ago. Particularly important areas of fluorosis are at Pilansberg, Warmbaths, the Saltpan region of the Transvaal, and several areas in the Cape Province. Fluorine-bearing rock minerals, and soils are widely distributed, giving rise to domestic waters with toxic levels of fluorine, in places up to 11 parts per million and many having 6 p.p.m. The fluorine concentration in the water of dams, springs, wells and boreholes varies widely according to the rainfall. Characteristic mottling of the teeth drew attention to the existence of the fluorine. It appears that the pattern of the mottling is very variable, from chalky patches to a opaque whiteness of the whole tooth; sometimes, but not invariably, hypoplasia and pitting are severe. Not every one in a "fluorine area" is affected, nor is the extent of the reaction the same in those with fluorosis from drinking water of similar fluorine content. Ockerse<sup>1</sup> believes the differences are due to the form of fluorine compound present; they are equally likely to be due to dietary factors; for example, a high-calcium diet, especially one that includes milk, probably protects against fluorosis. Staining of the mottled enamel is, of course, recognized in South Africa, but the nature and cause of this stain are unknown. The mixed populations of South Africa make it difficult to investigate the still open question of whether mottling protects against caries. Moreover, it must be recognized that an optimum intake of fluorine might give protection with little or no mottling.<sup>2</sup>

Of even greater interest than the study of the teeth is the observation that gross skeletal changes occur at about 2 years of age after long exposure, with such symptoms: stiffness of the spine and joints; x-ray examination reveals ossification of the lumbar and thoracic vertebrae, and osteophytic deposits on the radius, ulna, and rib margins; there are also loss of appetite and emaciation. This condition finally incapacitating, resembles that shown by Shortt's cases in India. The whole syndrome is probably comparable to cases of industrial fluorine poisoning. Ockerse's report, which gives details of interest to geologists, dentists and public health workers generally, emphasizes the fact that endemic fluorosis from domestic waters with high fluorine content involves more than severe mottling of the dental enamel; severe damage may be done to the health and welfare of the users. The harmful nature of the water supply in several regions of South Africa has necessitated the use of rain-water.

<sup>1</sup> *Endemic Fluorosis in South Africa*, 1944. Union of S. Africa, Department of Public Health Report, Pretoria.

<sup>2</sup> Pillai, S. C., and Rajogopalan, R., *Ind. med. Gaz.*, 1944, 79, 261.

<sup>3</sup> Sognnaes, R. F., *J. dent. Res.*, 1941, 20, 303.

<sup>4</sup> Shortt, H. E., McRobert, G. R., Barnard, T. W., and Nayar, A. S. M., *J. med. Res.*, 1937, 25, 553.

OBSERVATIONS ON SCABIES AT THE  
ST. PANCRAS BATHING CENTRE

BY

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The prevalence and obstinacy of scabies, and the evident difficulties which many general practitioners have with it, are proffered as excuses for another article on this subject.

I have had the advantage of attending school-children at the St. Pancras Bathing Centre for the L.C.C., and younger children and adults at the same centre for the St. Pancras Borough Council. This has led to the treatment of whole families simultaneously. The intention has been to treat all immediate contacts at the same time as those affected by the disease, with a view to reducing the number of recurrences.

During 1943 the total number of new cases treated among school-children was 1,136, with 5,215 attendances—i.e., approximately 4.5 attendances (not necessarily treatments) per child. Medical examination of adults and pre-school children started only at the beginning of March, the figures for new cases in the last ten months of 1943 being adults 442, pre-school children 201, with a total of 2,138 attendances—an average of 3.3 per patient.

In nearly every case (the exceptions being babies under 1 year old) treatment has been with benzyl benzoate, painted on by trained personnel at the clinic. In a few cases only one application was given, and in a very few three paintings were applied; the great majority had two such treatments, the remaining attendances being for simple baths, observation of progress, treatment of complicating sores, or sometimes for reassurance about persistent itching or healed spots. It has been established by K. Mellanby and others that one application of benzyl benzoate will cure nearly all cases of scabies. Owing to the difficulty of collecting whole families simultaneously, it has been the practice at the clinic to give two applications at an interval of two or three days. It has been hoped that this would allow contacts and carriers to be disinfested before finally discharging those members of the family who presented themselves earliest.

Despite these precautions of doubling the treatment and persuading contacts to attend, 193 of the 1,136 school-children came back to the clinic with recurrences of scabies—i.e., nearly 17%. It has not been possible to prove that none of these recurrences were relapses, but the lapse of time in the great majority of cases pointed to reinfection. Among the adults and younger children, of the total of 643 treated and discharged, 52 returned later with active scabies—i.e., 8%.

An investigation of the 52 recurrences among the adult and small-child group revealed the following interesting facts: 22 of the recurrences occurred in families in which some contacts had not been treated; 10 further subjects knew they had been in contact with scabies outside their families; the 20 remaining could give no information revealing any probable or possible source of reinfection.

Experience at the clinic shows that it is frequently very difficult, sometimes impossible, to induce all family contacts to attend for treatment. The argument is adduced that so-and-so has not got any spots. Often it is added that the family doctor has confirmed this and declared attendance at the clinic to be unnecessary. Unfortunately this last comment is sometimes true—all doctors do not seem to realize that the sarcoptes may be present for some time before producing signs or symptoms. Only a small minority of local practitioners appear to be sending contacts for treatment, and in many cases reluctant contacts who have declared themselves free from spots have been found ultimately to have numerous typical lesions, possibly quite unwittingly. This seems surprising, but is not uncommon. As a rule, mothers of families can be persuaded to be treated as contacts; fathers are far more reluctant or find it far more difficult to attend, although every effort is made to meet their choice of time. Grandparents often jib at coming up for baths: but the most obstinate refusals are from adolescents who have left school a year or two, and who do not like anything resembling discipline. It is obvious that much propaganda is still needed, especially to educate the public in the fact that scabies has "an incubation period" and that "prevention is better than cure."

Other sources of probable reinfection have been found to be aunts, uncles, and cousins living in the same house, but rarely mentioned by either children or adults (as contacts), sometimes not even on direct inquiry. Lodgers have also to be remembered. Tact, moreover, is required to persuade unmarried bed-partners to attend the clinic; but this difficult task has been admirably carried out by a most diplomatic health visitor. On this last point, of course, no direct or indirect inquiries are ever made, but voluntary admissions are followed by a talk showing why the partner should also attend. Most cases are first brought to light in the routine

work of the L.C.C. school nurses. Many more are sent up by local doctors. Most doctors would appear to know scabies when they see it, but during 1943 six cases of chicken-pox, two of herpes zoster, one secondary syphilis, and various eczemas were sent in diagnosed as scabies by medical practitioners; so also were two cases of pediculosis, several of flea- or bug-bites, some diet rashes, and a dozen cases of acne, in all of which no signs of scabies could be found. It is doubtful if the average practitioner sees many cases of scabies either in hospital or in private practice: one or two visits to a bathing centre would probably be very helpful, and visiting colleagues are always welcome. Again, many patients ultimately come to the clinic with scabies, after having been treated a long time for some other condition—usually food rash or eczema. Even a correct diagnosis is not invariably followed by proper treatment. For example, one patient seen a week or two ago had been using sulphur ointment daily for six weeks, allegedly on her doctor's instructions. She certainly had no scabies when seen, but had a severe sulphur dermatitis.

During the present year a failure in the boiler system due to war causes made it impossible to give the usual immersion and soaking to school-children attending for treatment. For three months these children were merely sponged with warm water before being painted with benzyl benzoate. It has been interesting to observe that there was no falling-off of cures during or soon after this period. Scrubbing the skin to open burrows and lesions has long been abandoned, the only apparent difference being that children with secondary sores no longer suffer as they did under this affliction.

It is also to be noted that children occasionally attend in the morning on an empty stomach. If soaked for some time in a hot bath, then painted standing, and directed—as older children often are—to rub in the paint with their hands to facilitate drying, such children may feel, or actually become, faint. This never happened when the child was not soaked but only sponged.

It is still the practice here to treat children under 12 months old by inunction with Marcussen's ointment. This gives results comparable with those from benzyl benzoate, but the ointment is too messy and colourful for general use.

The new *National War Formulary* application of benzyl benzoate is not only economical as compared with the old spirit and soap lution but is also much better tolerated. In fact, neither adults nor children complain nowadays except (rarely) when a child rubs some of the application into an eye. Nor is a single case recollected in which benzyl benzoate application was followed by any harm.

Occasionally, when the presence of other illness rendered a patient unable or unfit to attend, benzyl benzoate has been prescribed with full instructions for use in the home. Experience has shown that home-treatment fails in most cases. Experience also shows overwhelmingly that recurrent scabies is a disease of dirt. The cleanest people may be unfortunate enough to contract scabies once. We have had families attending the clinic for as many as four attacks of scabies in a year. In all these cases, without exception, the homes have been dirty, and the patients have shown, in the state of their clothing, sometimes by concurrent infestation with lice, and the obvious neglect to use soap and water, that hygiene may receive honourable mention but has not been practised. These patients are sometimes of low mental grade.

The following formulae may be useful for complications:

## 1. Ointment for Boils and Pustules

B. Extr. ergotae liq. B.P.	..	..	..	3 vss
Zinci oxidi	..	..	..	3 i vss
Acid. carbol. pur. B.P.	..	..	..	gr. iv
Adeps lanae anhydr.	..	..	..	3 ii 3 vi
M. ft. ung.				

## 2. Ointment for Impetigo and Septic Sores

B. Sulphanilamid	..	..	..	gr. xxiv
Ung. simp.	..	..	..	ad 3 i

These have been very successful for the secondary septic infections that often follow scabies and scratching. Almost the only ointments used have been ung. zinci, with castor oil; ung. hydrarg. ammon. dil. B.P.C.; and, for persistent itch after killing sarcoptes, ung. calamin. co. (syn., ung. sed.), N.W.F.

The opportunity is taken, with pleasure, of acknowledging the loyal and efficient assistance of the County, and Borough, Council staffs in all departments, both in the treatment of patients and in the preparation of the records referred to in this article.

Geriatrics is the latest specialty of medicine to be developed, and is the subject of increasing references and articles in the medical press. Pleading that older people should be treated psychologically as well as physically, Dr. Roger I. Lee (*New Engl. J. Med.*, 1944, 230, 190) observes, "Although I do not approve of their picking up gigolos and going dancing, at the same time a certain amount of this sort of thing is to be recommended."



## PHYSICAL EDUCATION

## A PRELIMINARY TECHNICAL SURVEY

A Research Board for the correlation of medical science and physical education was formed in the middle of 1943, under the chairmanship of Brig. Frank Howitt, and with the blessing of the Ministry of Labour and the President of the Royal College of Surgeons. Its aim was to ensure a more general recognition of the need for physical education and the better co-ordination of the various authoritative groups dealing with aspects of that wide subject. It has now published an interim report in the form of a preliminary technical survey with recommendations. The work of the Board was divided into four sections—namely, physical education in respect of maternity and child welfare, of education and recreation, of the fighting Services, and of industry. The present report covers only the first three of these. The other, relating to industry, is a field so wide and at present so much disturbed by war conditions that it will be the subject of a later special report.

The section of the Board's work dealing with maternity and child welfare was undertaken under the guidance of Mr. Victor Lack; a number of recommendations concerning the provision of ante- and post-natal exercises are made. The section dealing with education and recreation was undertaken by a team of sixty under the leadership of Mr. H. M. Walton, and deals with the problem from the nursery school right up to the university. It recommends, by the way, that each university should appoint a medical officer, and that a university health committee of both staff and students should be instituted, to concern itself with students' diet and general living conditions, with preparing courses in health education, and with giving publicity to such medical services as exist in the university itself and in the locality. Another recommendation is that students should be obliged to undergo a medical and physical examination on entry into the university. The third section, concerning the Services, deals with the three groups—the normal recruit, the sub-standard recruit, and the sick, injured, and disabled. This section has been in charge of Surg. Capt. K. Digby Bell, R.N. It is urged that medical men who have worked particularly among substandard recruits during the war should be given every opportunity of putting their knowledge and experience into effect in civil life. The recommendations in the entire report number about 150, and they and the facts given are the result of first-hand knowledge derived from visits to schools and hospitals, and Service training, physical training, and rehabilitation centres. Many of the recommendations repeat and reinforce those made by the British Medical Association's Physical Education Committee in 1936. The field is so wide that they cover practically everything which has to do with "positive health," so far at least as the younger age groups in the community are concerned. No sooner had the technical subcommittees begun their work than the need for a scientific advisory committee, both on long-term questions of research and on immediate problems, became apparent, and such a committee has been established with Sir Farquhar Buzzard as chairman and Prof. Lancelot Hogben as assessor.

## Need for Co-operation

The report was formally presented at the second annual general meeting of the Board, when the Minister of Health (Mr. H. U. Willink) attended and gave a promise that the recommendations would receive serious consideration by the Government. The Minister said that physical education was no longer a matter of routine exercises to promote physical development; it was a carefully considered plan for the improvement of health, calling for consultation between doctors, physical education experts, and others concerned in national welfare.

Brig F. A. E. Crew, who also spoke at the meeting, said that in the post-war world the scientific departments of our universities would be called upon as never before to make their own special contributions to the solution of problems of social importance. It was essential, he said, that social needs should be made known to the scientists who laboured at the forge of knowledge, and that to these should be given the opportunities and facilities for dealing with such needs. He hoped that the most profitable co-operation of medicine and physical education which had taken place in the Service during the war would continue in civil life, and that physical education might be aided by medicine to become a branch of the science of biology applied to human and social affairs.

Sir Alfred Webb-Johnson spoke of the urgency of seeing that in town and school planning adequate provision was made for playing fields, areas for general recreation, and swimming baths, and also for making use of the large number of men and women specially trained for the work of physical education and rehabilitation, who within a reasonable time would be liberated from the Services.

Finally, the chairman of the Board, Brig. Frank Howitt, claimed for the recommendations that they were both practical and practicable: None of them were unduly utopian, and the Board believed that much could be done in these directions, given patience and pertinacity.

## FUTURE OF PSYCHIATRIC SERVICES

Mr. Henry Willink, Minister of Health, speaking at the centenary luncheon of the Royal Medico-Psychological Association in London on Nov. 29, said that great changes in the organization of the public health services and in medical education were in prospect. The working out of arrangements for these changes, so far as they might affect the mental health service, would call for many adjustments and the solution of some rather complex problems of organization. In this there would be full consultation with the representative bodies concerned.

## Problems of Organization

It was to be hoped that among other objects future development would include a unified control of all mental health services under a single set of authorities. It was of the first importance to have in every area a body charged with the responsibility of dealing with all aspects of mental health so that they could survey the field as a whole instead of there being a variety of authorities or combination of authorities, each concentrating on relatively limited sections of the whole field. Unified control was essential, for example, to the proper development of a comprehensive out-patient service, which was the first great step towards the application to mental health of the principles of preventive medicine. But if out-patient centres were to be developed there must be a parallel development of the ancillary services. It was obviously uneconomical to leave a highly trained psychiatrist to do his work as best he could without the knowledge of the patient's home and occupational background which a trained psychiatric social worker could give him. It was even more wasteful to leave the psychiatrist in charge of an out-patient centre without adequate clerical assistance.

Psychiatry was still a young specialty; it had suffered from the relative isolation of many mental hospitals and the difficulty which the medical staffs had in keeping in touch with general medicine. The Ministry and the Board of Control were most anxious to secure a closer relation between mental and general hospitals, not only by interchange of staff but by the establishment of psychiatric units in all the teaching hospitals and in the larger non-teaching hospitals. With good will and a common purpose on both sides none of the difficulties need be insuperable. The interim report on undergraduate education issued by the Royal College of Physicians in October, 1943, contained the suggestion that every teaching hospital should have a psychiatric department which would form a link between the general hospital and the mental hospital. This surely crystallized a very important principle that was bound to influence future developments profoundly—i.e., the closer association of the treatment of mental illness with physical illness and the mental hospital with the general hospital. A great deal of attention would inevitably have to be given to the administrative machinery and the local government problems associated with this service.

## The Training of Psychiatrists

Another important task would be the development of a more scientific system of training psychiatrists. There was a growing recognition that the time had gone by when young assistant medical officers in mental hospitals could be left to train themselves, as in the past they had sometimes had to do, with such encouragement as was afforded by the extra pay given to those who secured the Diploma in Psychological Medicine. Any scientific system of training must make provision for postgraduate work. Hitherto psychiatry had suffered from being split up into too many sections. In planning the course of postgraduate training of the psychiatrists of the future there would clearly be a need to take a broader view and include the study of mental deficiency and child psychiatry as well as adult psychiatry.

A more systematized training was, however, not enough unless combined with intensive and well-planned research. Too little was known of the causes of mental disorders and abnormalities. It was the wish of the Ministry and the Board of Control that all mental hospitals should take some part in a well planned and co-ordinated scheme of research, stimulating and beneficial to all who took part in it, quite apart from the scientific and medical value of the results attained. The danger of all institutional service was the obvious tendency to a monotonous routine; and a share in research work helped to maintain scientific interest and keenness. Another measure contributing to this end would be the institution of refresher courses for doctors who felt they were beginning to get out of date and out of touch with modern methods.

## Reports of Societies

### ORGANIZATION OF CANCER TREATMENT

Opening a discussion on the post war organization for the treatment of cancer at a meeting of the Radiological Section of the Royal Society of Medicine on Nov. 17, Sir ERNEST ROCK CARLING reminded his audience that the National Radium Commission had been in existence for fifteen years and during that time had set up regional organizations for one method of cancer treatment—namely, radiotherapy—and these organizations were largely based on university towns. It was obvious however that for a cancer organization on one kind of treatment should not predominate, and the object of his remarks would be to examine the question whether surgical treatment could be arranged on the same regional lines. He did not intend to discuss administrative problems, but would point out the danger of people who were ignorant of medical and scientific problems having too large a say in the matter, and said he felt very strongly that the profession had got to save itself by working out its own plans based on the overriding principle of what was the best for the patient. He said it was generally agreed that radiotherapy should be concentrated in a few well-equipped and strongly staffed institutions, with perhaps some associate subcentres with the headquarters at a university town, and dealing with a population of three to four million people. In exceptional circumstances this figure would have to be reduced perhaps to one million. He then discussed whether such a regionalization would suit the surgical treatment of cancer. He pointed out that certain services, such as for thoracic surgery, plastic surgery, neurosurgery, blood transfusion and pathology, had been organized on a regional basis during the war and proved to be an unqualified success, and he had no doubt that cancer surgery could be organized on similar lines.

In discussing the organization in greater detail, he said it was useful to plan from the periphery, where the case was first suspected to be cancer, to the centre. He pointed out the importance of registration as a safeguard to prevent any patient being neglected or side tracked. He envisaged a team of consultants, based on headquarters though individual members might be practising in other parts of the region, and a panel of other medical men who would take part in the cancer organization. He also dwelt on the importance of proper records, follow up of all patients suffering from cancer, and research.

Mr G F STEBBING started his paper by pointing out how very inefficient was the present treatment of cancer in this country, and then went on to examine the causes of this inefficiency. He said that methods of examination and treatment had improved very rapidly, but the medical profession had not kept pace with them. It required a team of specialists to use the implements that have recently been devised but so far there is no proper organization for bringing this team together. He pointed out the scarcity of hospital beds and the difficulty of ensuring that any particular type of cancer is treated by experts in that line. If these difficulties were to be overcome he said it was essential to have in every region an organization that is known to every practitioner that is freely and immediately at the disposal of every patient, and that is so arranged that it ensures efficient diagnosis and prompt treatment for every patient. He mentioned that Dr Malcolm Donaldson had recently published a paper describing a scheme for the organization of the diagnosis and treatment of cancer in London and the Home Counties, and he thought that it was along such lines that it would be necessary to proceed. He then discussed in detail such a regional organization pointing out that there should be a whole time director—a clinician of wide experience and taking part in the clinical work. He thought that the headquarters should be in a general hospital where there was a highly organized radiotherapeutic department and where there were surgeons, physicians, gynaecologists, and other specialists, who must have time and opportunity to discuss the problems of the work in which they are engaged. Mr Stebbing also dwelt upon the importance of a proper record department and follow up system.

Dr NUTTALL the other opener of the discussion, considered the various facets of a cancer service from the medical rather than the administrative point of view. He pointed out that facilities for diagnosis must be widely dispersed throughout the area if patients were to be persuaded to make full use of them. He considered that some 30% of cases presented a palpable or visible lesion and the diagnosis could be made in a clinic, the remainder requiring examination by means of special apparatus or technique and possibly hospitalization. He thought that special beds should be set aside for such investigations. He considered that the pathological investigations should be in the hands of specialists in tumour histology. So far as treatment was concerned, he pointed out that surgery was at least as important as radiotherapy, and there was much to be said for centralizing cancer surgery in the major hospitals. In discussing radiotherapy, he emphasized the importance of linking radium and x-ray treatment, and pointed out that for economic reasons alone it was necessary to centralize radiotherapy. He realized the difficulty of absolute centralization, and said that in some cases subcentres would be necessary. He pointed out that no cancer organization could be considered complete which does not provide for the welfare of the incurable cases. Finally he referred to the necessity for education of the public concerning the first symptoms of the disease. Among the other speakers was Air Cdre STANFORD CADE who urged the need for notification to a central authority. Dr MARGARET TOP pointed out the desirability of centralization in order to avoid delay in treatment. Dr BLOWFIELD stressed the importance of team work.

Prof WINOYER said he had been pleased to hear Sir Ernest Rock Carling's exposition of how areas of population for cancer service would fit in with the areas of population for other general medical services. Particularly had he been pleased to hear the suggestion that cancer treatment centres must be based on universities, because he felt there was a possible danger that cancer treatment might be taken too much away from the rest of medicine and that future practitioners and students would not be taught sufficient about cancer if the cancer service was segregated. He said that Dr Nuttall had touched on the question of segregation of cancer patients, suggesting special cancer blocks in a general hospital. He strongly disagreed with this suggestion, and said that the segregation of patients should be according to their treatment and nursing needs and not according to their disease.

Dr MALCOLM DONALDSON said that in the excellent opening to this discussion what had been called the ABC Scheme had been mentioned. He had published this memorandum on the organization of a cancer service for London and the Home Counties, including a classification of hospitals in that area, but he wanted to make it clear that this classification was a purely personal idea on his own part and had not been approved by any public body or authority. His memorandum had been written with the idea of making people think, and he believed that if they read it it would do so. A second objective was to try to get the teaching hospitals in the area with some of the larger voluntary hospitals to get together and to work out some sort of scheme to help the local authorities. He hoped that a meeting might take place at which such a scheme could be drawn up. Again, he had put a concrete scheme forward with the idea of getting criticism. He had got certain of his friends to read it, and so far one criticism had been made—namely, that if a scheme of this sort should come about the A hospitals which gave radiotherapy would have to bid farewell to their present clientele and to the other hospitals with which they had been working for years, and take on a new set of friends. There was nothing of that kind intended. Certain A hospitals would be responsible for certain B hospitals in which surgery alone was performed, but this would not prevent them from taking other cases as well. He hoped to see the financial arrangement the same for each class of hospital in the area, so that the local authority would not be biased by one hospital's having a cheaper service than another, and practitioner and hospital would have free choice as to which hospital was consulted in the first instance. Dr LOUIS MARTINDALE did not agree with notifications of cancer, as this would frighten the early case.

Sir ERNEST ROCK CARLING and the other opening speakers then replied.

## DIET AND TUBERCULOSIS

The Scottish Group of the Nutrition Society, at its meeting in Dundee under the chairmanship of Dr. W. T. MUNRO, discussed diet and tuberculosis. Dr. R. Y. KEERS said that although malnutrition was a factor in lowering resistance there was no unequivocal evidence that it was the sole, or even the most important, precipitating cause. Wartime diet, so far as the tuberculous subject was concerned, was not deficient in nutritive properties. The patients at Tor-na-Dee were drawn from a section of the community in which malnutrition was not encountered, yet this section had not been spared in the rising incidence of tuberculosis. The common factors among these patients were longer hours of work and a reduction of the time usually devoted to rest; in no instance had dietetic deficiency played an obvious part. Dr. Keers thought that the wartime diet was perfectly satisfactory for the patient under treatment. In a recent investigation to determine whether a larger consumption of fat was beneficial, he had found that patients who received extra fat showed a more rapid gain in weight than did controls during the first four months, but at the end of nine months there was little difference between the groups. This indicated that there was nothing to be gained, and even something to be lost, by attempting to force the intake of fat beyond that which the patient could ingest and assimilate completely. The dietetic treatment of tuberculosis demanded no more than a full well-balanced intake. Cod-liver oil was not essential and should be reserved for those whose digestion was sound.

Mr. J. N. RITCHIE, of the Ministry of Agriculture, describing progress in the eradication of bovine tuberculosis, said that in some districts the proportion of attested to non-attested herds was as high as 60%, while in others the figure was negligible. The next step would be to introduce the policy of area eradication—a plan that had been successful in America, where a very high standard had been attained.

Mr. C. H. CHALMERS, Chief Milk Inspector for Scotland, in a paper on pasteurization, pointed out that a large proportion of the milk supply was now exposed to heat before dispatch from the area of production. Heat treatment, which simply implied that the milk had been heated to an unspecified temperature for an indefinite time, did increase keeping properties, but did not guarantee freedom from living tubercle bacilli. The destruction of *B. tuberculosis* depended not only on the temperature to which the milk was heated but also on the time it was kept at that temperature. The limits for effective pasteurization were considered to lie between 145° F. for 30 minutes and 162° F. for 15 seconds. For various reasons the slower process was the more satisfactory. The enzyme phosphatase, which was present in raw milk, was destroyed by all combinations of temperature and time normally used for effective pasteurization. If a sample of milk had been heated enough to destroy 98% of the enzyme it might safely be concluded that the heating had completely destroyed all tubercle bacilli.

Dr. STUART LAIDLAW, in the subsequent discussion, pointed out that, although there had been a considerable increase in notification of tuberculosis, the death rate was little changed. The number of deaths from acute bronchopneumonic tuberculosis had decreased during the war. With regard to diet, while the calorie intake available to the tuberculous patient was satisfactory, there was no doubt that an additional allowance of protein would be helpful in aiding recovery.

## SAFEGUARDING LONDON'S WATER

In a lecture at the Royal Institution on "London's Water Supply—Safeguarding its Purity in Peace and War" Lieut.-Col. E. F. W. MACKENZIE M.B., D.P.H., showed how, originally, it was the duty of the Corporation of London to provide the water supply for the population; how this right was later surrendered to private undertakings, and was subsequently restored to public ownership when the Metropolitan Water Board was formed in 1902. The Act by which the Board was created also imposed duties with regard to laboratory examination.

Col. Mackenzie told how London was assailed with a succession of epidemics of cholera from 1831 to 1856 and how Dr. John Snow

proved that the infective agent was carried by water. At the beginning of this century London's water was purified by filtration through sand. Sir Alexander Houston, during his years of office as first Director of Water Examination, introduced many changes and improvements, including storage as a means of purification, chlorination, and mechanical filtration. These methods ensured the production of a pure and wholesome water; but, as more stringent tests for purity received authoritative approval, further steps were being taken, chiefly with regard to chlorination, to bring the water up to the desired standard.

The gathering war clouds after Munich brought new problems for those responsible for water supply, and it was considered that the enemy might attack the major works of the Board. It was realized that in the event of bomb damage and devastation chlorination might be the principal safeguard for the purity of the supply, so that every practicable step was taken to make it both adequate and reliable. Alternative laboratories were equipped in safer areas for emergencies. Safeguards against the introduction of chemical poisons and gas warfare were taken by placing special guards at the works, making provision for special tests to be performed on the works, and maintaining a staff of analysts and sample-collectors available day and night at the laboratories. Special arrangements were set up for the repair and sterilization of water mains, quite often contaminated by sewage from a fracture of an adjacent sewer. Much work was carried out in training and arranging for over 7,000 volunteers to provide emergency water supplies in the event of extensive damage to the works. The waterworks suffered almost every conceivable form of damage from air attack, but all the necessary protective measures were in readiness, and the purity of the supply of drinking water to London had been maintained as high as ever during these anxious years of war.

## ACTION OF PENICILLIN

Some account of his early work on penicillin at St. Mary's Hospital, London, and of the action of the drug was given by Sir ALEXANDER FLEMING in a Campbell Memorial Oration to the Ulster Medical Society on Nov. 2.

He said he was repeating some experiments which had been done by Bigger of Dublin when a plate became contaminated by a fungus, and he noticed that all the colonies of staphylococci close to the fungus had disappeared. The fungus was the *Penicillium notatum*. Ordinary samples of the drug as a yellowish powder were only 10% pure; pure penicillin was a white powder, and we knew it as either the sodium or the calcium salt. Strengths which destroyed sensitive bacteria—mainly the Gram-positive ones—had no effect on leucocytes. It was stable in powder form; any reactions were due to impurities. The Oxford unit was the quantity of penicillin which, when diluted 50 times, would inhibit the growth of a standard culture of staphylococcus; this had recently become the international standard. Administration was either general by intravenous, intramuscular, or subcutaneous route, or local by injection into the area or by surface application. It was rapidly excreted by the kidneys, so a constant level in the blood was best maintained by a constant drip. Poor kidney function slowed up the excretion, and so saved penicillin. At St. Mary's Hospital all the cases of staphylococcal septicaemia treated with penicillin for at least 6 hours, with one exception, recovered; the exception was complicated by endocarditis. The results of penicillin administration in venereal disease appeared miraculous, some cases of gonorrhoea being apparently cured by a single injection. In the United States Army syphilis was being treated with 2½ million units in 7 days. If these results were confirmed in the future it would be possible to impose definite regulations to control venereal disease. At the front large doses of the drug had to be given because of the long intervals between treatments; this was wasteful but unavoidable at present. The use of penicillin in plastic surgery would mean that multiple procedures could be carried out in very much less time and the boggy of sepsis almost eliminated. It was now possible with penicillin to sew up a compound comminuted fracture of the femur and get union in six weeks. Penicillin injected into an abscess cavity would remain for 24–48 hours. It could be used in the form of a cream, a powder diluted with sulphanilamide or sulphathiazole, a snuff, a paint, or in a lozenge. It must be sterile; insensitive bacilli produced penicillinase, which destroyed the penicillin. It was the first antibacterial substance to be made from a mould, and as there were thousands of different moulds it was possible that another substance with even greater powers would be found.

## Correspondence

### Thiouracil for Hyperthyroidism

SIR,—In his paper (Dec. 9, p. 745) Dr. Nussey avers to me the view that the bloated appearance and listlessness which follow overdosage with thiouracil, are *not* manifestations of mild myxoedema. If by myxoedema is to be understood hypothyroidism then Dr. Nussey has mistaken me. In my opinion these symptoms are probably due to early hypothyroidism. My hesitancy in making an outright statement that this is their nature is that I have noted in such patients that, despite their clinical appearance of hypothyroidism, the B.M.R. may be within normal limits. Possibly the misconception of my views arose from the fact that the paper embodying them (*Proc. Roy. Soc. Med.*, 1944, 37, 693) has only just appeared, and that, prior to its appearance, statements concerning my opinions on this matter had to depend on recollections of the meeting at the Royal Society of Medicine on June 13, 1944, or on reporters' accounts of that meeting.

Dr. Nussey's statement that an initial leucopenia is no contraindication to thiouracil therapy is of considerable importance. Personally I have avoided using thiouracil on such patients because I have feared that agranulocytosis might more easily be produced in them. If, as Dr. Nussey's results indicate, my fears were groundless it is welcome news, but it would be very unfortunate if his results were to give rise to the impression that the white cell count can now be disregarded in thiouracil therapy, or that treatment can be safely continued if the neutrophils in the blood are falling. It should be stressed that Dr. Nussey's statement refers only to leucopenia before treatment, and, in view of the acknowledged danger of agranulocytosis during treatment with thiouracil, it would seem advisable to await confirmation of his findings before accepting them in ordinary clinical practice.—I am, etc.,

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London, W.C.1

### Hormones and the Prostate

SIR,—The theory of treatment of an enlarged prostate by oestrogens has been based on the supposedly physiological role of female sex hormones in the hormonal make-up of the normal human male. It is not surprising that this line of treatment has not yielded satisfactory results. Perhaps, therefore, the conception that the male produces female sex hormone should be reviewed critically.

In your leader on the germinal epithelium and the prostate gland (Dec. 9, p. 759) you wrote that "the normal man secretes both androgenic and oestrogenic hormones, the former from testes and adrenals, and the latter from some tissue or tissues hitherto unknown." The use of the word "secretes" is unfortunate, and especially so in that the above sentence forms the background of the ensuing discussion concerning the alleged relation of both male and female sex hormones to the behaviour of the prostate gland.

The testis of course secretes the male sex hormone, and the adrenal cortex also elaborates a steroid derivative which contains the "androgen nucleus" but which is not androgenic in its physiological role. These hormones, slightly changed, are excreted in the urine and both are classed rather unfortunately as androgens. It is true that adrenal cortical tumours induce premature virilism, but the stimulation of certain tissues in that condition is probably due to production of (a) excess adrenal cortical hormone or a degradation product thereof, or (b) a metabolic variant with androgenic properties. As for the alleged secretion of oestrogens by the male, the evidence for this statement is based on the presence in male urine of steroids containing the "oestrogen nucleus." However, in view of the widespread distribution in Nature of substances containing the oestrogen nucleus it is likely that the greater proportion of oestrogens in male urine is exogenous and comes from the diet. If, then, a human male on an oestrogen-free diet continues to excrete oestrogenic steroids, the substance is either (a) a hormone or a hormonal metabolite, or (b) a tissue metabolite. The fact that an oestrogen can be isolated from testicular tissue is not

decisive as regards which alternative is correct, but the finding of relatively insignificant amounts of oestrogen in the urine of human males on an "oestrogen-free" diet might favour the thesis of a tissue (testicular) metabolite.

In the absence of access to his original paper it is out of place to criticize *seriatim* the experimental attempts of Turnbull, as set forth in your leader, to prove that the germinal epithelium elaborates an oestrogenic hormone which influences the prostate. There are alternative conclusions to those adopted by him in his reasoning sequence: these may or may not have been explored. It is not out of place, however, to point out that it is inherently unlikely that a tissue, such as the germinal epithelium of the testis, whose metabolic processes of cell division and differentiation are concerned essentially with the production of an external ejaculate, is engaged also in elaborating a hormone for distribution to other tissues in the body.—I am, etc.,

Department of Physiology  
London Hospital Medical School

CHARLES REID.

### Surgical Emphysema

SIR,—The report of surgical emphysema after intubation by Mr. Barrett and Dr. Thomas (Nov. 25, p. 692) reminds me of a similar occurrence, the path of the air through the trachea being, however, much more easy to understand.

In 1940 I saw a child of 2½ years who had had a persistent cough since an attack of whooping-cough 6 months before. X-ray examination suggested atelectasis of the left lower lobe. Bronchoscopy showed a moderate amount of pus in the left lower lobe bronchus. Lipiodol bronchography was done under general anaesthesia: a needle of the curved type, size 17 s.w.g., was inserted just below the cricoid for the purpose. After withdrawing the needle and during recovery there was considerable coughing, and about a quarter of an hour later the ward sister reported surgical emphysema in the neck. A quarter of an hour later the emphysema had spread to the shoulders and face, and the child was brought back to the theatre, as the persistent spread was beginning to worry us. There was no cyanosis. It was thought that the persistent cough was forcing air through the small hole in the trachea, and that the only way to stop the spread of air in the tissues was to cut down on the hole and lead any further leakage out of the neck. This was done when the abdominal wall was already cracking with air, but the small hole in the trachea could not be found; a tracheotomy was therefore performed under local anaesthesia. The child, however, gradually sank, without showing cyanosis; the superficial veins were so hidden that any overdistension could not be seen. It died about an hour afterwards.

At necropsy small air bubbles were found throughout the tissue planes, including the mediastinum and perirenal fat. The inferior and superior venae cavae were not distended, and the right heart contained only a small quantity of blood. The mechanism of death was not clear, as blockage of the great veins in the chest was not present, and no air was present inside the skull or in the blood stream.

The mucosa of the trachea is tightly bound down to the submucous and cartilaginous layers and cannot be stripped up; it is not clear how in Mr. Barrett's two cases the air got out of the air passages into the tissue planes. The mechanism is difficult to understand, especially as other cases have been reported, and I have had one myself, of idiopathic surgical emphysema of the head and neck appearing shortly after childbirth, or even after a single cough, mostly with spontaneous recovery, and in which no lesion was found on extensive investigation. Is it possible that the rupture occurred lower down in the bronchial tree and was unrelated to the tracheal trauma?—I am, etc.,

Hillingdon County Hospital, Middlesex.

L. FATTI.

### Episiotomy

SIR,—May I be allowed to add one or two small points to what you have already published concerning episiotomy and perineal repair? I am most concerned with anaesthesia and technique of repair.

**Anaesthesia.**—The method I use is a modification of the perineal nerve block technique described by C. Philip Brentnall (*J. Obstet. Gynaec. Brit. Emp.*, 50, 226). I quote the relevant section:

"A point on the perineum 1/2 to 1 in. antero-lateral to the anus is chosen. Here, with a very fine needle (26 s.w.g.), an intradermal

vesicle is raised; the needle is then pushed forwards and the subcutaneous tissue of the anterior margin of the perineum is injected. A larger needle is then used (21 by 2½ in.), and is slowly thrust through the vesicle to a depth of 2 in., in a direction at right angles to the skin surface, the anaesthetic being injected as the needle advances and retires. The needle is almost withdrawn, and then directed forwards, but quite superficially, underneath the line of reflection of the folds of the labium minus and as far as the anterior extremity of the proposed perineal incision. The procedure is repeated on the other side of the perineum, and about 10 c.cm. of anaesthetic is injected into each. The object of the deep injection is to relax the superficial and deep muscles of the pelvic floor and to anaesthetize the deep perineal branch of the pudendal nerve."

This technique was described for posterior colporrhaphy and, using the proprietary "novutox," I modify it as follows. The same point is chosen, but if the patient is in labour a finger is passed into the vagina and is used as a guide to prevent the long needle from entering the distended canal. The injection is made in an outward direction instead of at right angles to the skin. Almost immediately after injection episiotomy can be painlessly carried out. I too use the J-shaped central incision described by Dr. Flew. The method is seen, at its best in breech labour, when it is carried out as the anus begins to show with contractions while the anterior buttock is still receding in the intervals. Incidentally it is often adequate without supplement for low forceps delivery of the forthcoming or aftercoming head. If "novutox" is used the analgesia persists for at least 2 to 3 hours, allowing painless repair. After delivery, for perineal repair, the technique is similar except that the injection need not be so oblique. I believe it to be the method of choice for complete rupture, though the simpler local infiltration is adequate for trifling tears.

**Repair**—Methods involving buried catgut have not been as successful in my hands as the following. A 1½-in. diameter half-circle cutting needle is entered about 1/2 in. deep to the torn fourchette, and the vaginal mucosa is underrun with silkworm gut, keeping about 1/8 to 1/4 in. from it. The needle emerges at the opposite point to which it enters, enters again near the first point of entry, and emerges through the skin about 1 1/4 in. from the wound edge. It is then threaded on to the other end of the silkworm gut, which is brought out through the skin of the opposite side. A figure-of-eight suture is thus placed, having the deep loop larger than the superficial. As many such sutures are placed as are required, about 1/2 in. apart, and the ends grasped with pressure forceps or left loose. The upper end of the vaginal tear is then secured with No. 1 plain catgut and the edges coapted by a continuous suture, taking about 1 1/4 in. each time right out on to the fourchette. After this the figure-of-eight sutures are tied. Traction outwards on the ends closes the deep part of the wound and tying closes the skin. The ends of these sutures are left long and tied together so as to avoid sharp ends in the perineum. They may be fastened to the thigh with strapping if desired. Silk or stout cotton is as effective as silkworm gut and possibly more comfortable. It is emphasized that the continuous suture is none of the nature of a dressing than of a repair, its main function being to keep blood and lochia out of the divided perineal body. If plain catgut is used, there is usually no sign of it by the twelfth day. Since the vaginal mucosa heals very rapidly chronic gut persists after healing, acts as a foreign body, and cuts out. Apart from the measures directed to the anal mucosa and the divided sphincter, the same technique is used for complete tears.

May I in conclusion express my thanks to Mr Percy Malpas for drawing attention to the possibility of early secondary repair of complete tears. I have tried it successfully and commend it to others faced with this distressing condition.—  
am etc.

WALTER CALVERT, D.R.C.O.G.

### Bed-wetting and Spina Bifida

SIR: The article on investigation and treatment of enuresis in the Army (Oct. 7, p. 462) brings to light an unnecessary waste of x-ray film, particularly at this time. In 1927 it was proved beyond a shadow of doubt that bed-wetting and spina bifida occulta had normally no relation whatsoever (*J. R. M.C.* 1927, 48, 38). The figures given there show that in 110 bed-wetters and 100 normal soldiers examined

spina bifida occulta was found more commonly in soldiers who did not wet their beds (bed-wetters 16%, non-bed-wetters 21%).

—I am, etc.,

Cairo.

W. K. MORRISON.

### Industrial Dermatitis

SIR,—I have followed with interest the recent correspondence on this subject, and I must say that I think Dr. G. P. B. Whitwell (Nov. 4, p. 607) has hit the nail on the head when he says it seems strange to him "that some dermatologists, instead of collecting rare and relatively unimportant skin diseases for exhibition at learned society meetings, have not long before taken more interest in workaday medicine and gone into the factories to learn something useful." Might I here point out that at the meeting held at the Royal Society of Medicine, Dermatological Section, on industrial dermatitis on May 21, 1942 (*Proc. roy. Soc. Med.*, 24, 703), when I spoke at the opening discussion, my words were: "I have learnt a tremendous lot from visiting factories," and then proceeded to give a few concrete examples.

Having practised dermatology for over 18 years now in a large, modern, and progressive industrial Midland town, which draws on a large rural area as well, combined probably with the fact that all my life I have taken an intense interest in all things mechanical or electrical, I can say that there are few factories or manufacturing processes which at some time or another I have not visited, both in my capacity as a dermatologist and as an interested onlooker. I have seldom come away without learning something useful, either in dermatology or in ordinary domestic life. The only way to get aetiologicaly acquainted with industrial dermatitis is to know the hazards and potential skin irritants of industry and also their probable or possible effects on the skin of the workers.

The extremely varied nature of industrial processes makes this a most interesting and constantly changing mental kaleidoscope. Among simple things of wearing apparel one finds dermatitis in felt-hat workers caused by dipping the hat moistened with sulphuric acid, into a solution of shellac and borax in order to proof it, contact dermatitis from chrome solutions used in tanning leather, and contact dermatitis from thermolabile plastics (which change their composition during treatment with heat and pressure) in the making of buttons. Among the engineering, aeroplane, and allied industries one comes across dermatitis due to contact with suds, mineral and lubricating oils, various cutting oils and compounds used as coolants, degreasers used to clean metal parts, synthetic plastic glues, various dopes, etc. Even the manufacture of medicinal preparations such as procaine, morphine salts, etc., may cause skin trouble, and the most recent I have seen in this category is mepacrine (alkyl amino-acridine). In the making of explosives trinitrotoluene, fulminate of mercury, etc., are well-known examples. In fact, with the ever-widening scope and range of industry, particularly in wartime, one finds it impossible to keep pace with its dermatological ramifications. Among the rural industrial dermatitis cases one comes across such cutaneous complaints as cattle ringworm from infected calves, orf from sheep, and dermatitis from artificial fertilizers, fungicides, etc.

The morphology of industrial dermatitis is in most cases just that of an eczema or dermatitis in its various stages, and usually, with the exception of certain things such as oil folliculitis, chlor-acne (due to chlorinated naphthalenes), and chrome ulceration, it is just an eczematous type of rash. The diagnosis of its occupational origin is usually made from: (a) the presence of such a rash; (b) the exclusion of this rash being of constitutional or non-occupational origin; (c) rash usually appears on areas exposed to contact with potential irritant substances; (d) history of using or coming into contact with such an irritant. Patch-testing is of little or no practical value in my opinion. I have seen cases of occupational dermatitis resembling in appearance many non-industrial or constitutional skin conditions, and vice versa. Whatever may be said to the contrary, as regards its differential diagnosis the cause of a rash on any worker, unless otherwise easily explained, is often a most perplexing and difficult problem, even among dermatologists.

With regard to the correspondence of Drs. Bourne, Mummery and Whitwell on the value of various preventive measures against industrial dermatitis, I quite agree with Dr. Whitwell



that barrier creams, suitable detergents, general cleanliness, supervision, and protective measures are applicable, but, except in certain processes, barrier creams or washing only will not prevent trouble. In many cases the use of a barrier cream is not feasible, because one cannot get anything suitable to stand up to the hard wear and tear and friction entailed in the work done by, for instance, a mechanic working on a lathe with hands and forearms exposed for long periods to hot lubricating and cutting oils. Here satisfactory detergents of the higher sulphated fatty alcohol type, or sodium alkyl sulphates in liquid form, are often most useful in removing the potential irritant as quickly and efficiently as possible. On the other hand, barrier creams are useful, as Dr. Bourne points out, in handling metal for developing, and I found his method satisfactory for operatives in a biscuit factory who were having trouble from contact with the sugar filling handled by them. Prevention of industrial dermatitis can be dealt with by the following combination of methods: (1) knowing the exact conditions and hazards of the job, (2) general cleanliness, supervision, and the use of suitable protective measures while at work, and the removal of any potential skin irritant with a suitable cleansing or detergent agent as soon as possible, (3) exclusion of employees suffering from, or predisposed to, dermatitis.

Under wartime conditions it is not possible to observe all the above criteria, as new and complicated processes are constantly coming out involving unknown risks and hazards which must be faced. The facilities for supervision and cleanliness may vary in different shops and factories, while shortage of personnel and material, and the introduction of "green" labour, all complicate matters. There has therefore been an increase in the number of cases of industrial dermatitis in this country during the war. Whether the increase has been absolute or is only relative, in view of the bigger number of workers engaged on war industries, it is not yet possible to say. However, we are not alone in this matter, as evidently even in America, where there has been considerably more literature and notice taken of industrial skin troubles, they are still much concerned about its incidence. Prevention is the only sane and sensible angle to tackle the problem from, and the best place to begin is at the source of the trouble—that is, in the workshop or factory.

Finally, please, Dr. Whitwell, do not think it strange that, as a dermatologist very keen on the industrial side, I like on occasion to display some rare epidermological entity, which I am proud to have discovered, even though it is not of occupational origin, before other colleagues at learned society meetings. After all, much of industrial dermatology is, like all branches of medicine, somewhat routine and dull; so that, having found a "Kohinoor," one is apt to become elated and display the treasure. Already I have a collection of cutaneous curiosities, which, as soon as conditions permit, I hope to put on show in this manner.—I am, etc.,

F. A. E. SILCOCK.

Honorary Member of the Advisory Panel on Dermatitis  
Ministry of Labour and National Service

Leicester.

### Examining the Neurotic

SIR,—I have only recently had the opportunity of reading Dr. McIntyre's letter (Jan. 22, p. 131) in which he criticizes his own misinterpretations of several items in a communication submitted by Capt. Charlton and myself (Dec. 25, 1943, p. 830). He accuses us of referring to the report of Stephenson and Cameron on anxiety states in the Navy as "the reiteration of symptoms alone." We trust that Dr. McIntyre is the only one who thinks so. If he refers to our communication he will no doubt appreciate where he has gone wrong. We certainly did not so describe what we consider to be an excellent piece of work. He has quoted us inaccurately and then proceeded to level a battery of questions which arise solely out of his own misconceptions.

In connexion with Sir Henry Tidy's observations (Oct. 16, 1943), that "prolonged investigation and minute inquiries tend to produce or increase a psychoneurotic factor," we suggested in our letter that "this was particularly true of dull, highly suggestible patients who are prone to exhibit neurotic dyspepsia." We did not assert that this type of patient *only* exhibits neurotic dyspepsia.

In another paragraph of our letter we remark: "It is important to correlate personality types with the relevant anxiety reaction." Dr. McIntyre accordingly accuses us of regarding neurotic dyspepsia as the anxiety reaction exhibited by dull, highly suggestible patients, and presents that as a "composite assumption" of our production. He then questions us on this assumption, and asks if we have satisfied ourselves on a number of difficult points, to wit: (a) that dull patients are uncommonly suggestible; (b) that dull patients are uncommonly prone to neurotic dyspepsia; and (c) that it is the more suggestible of the dull who are so prone.

With regard to (a) and (b), I have never asserted that dull patients are either uncommonly suggestible or uncommonly prone to neurotic dyspepsia. My reference was to dull, highly suggestible patients. With regard to (c), it is obvious that the more highly suggestible a dullard is the more prone he will be to neurotic dyspepsia or for that matter psychoneurotic illness generally. Suggestibility indicates instability, which is the essential criterion in establishing the presence of psychoneurotic illness. Neurotic dyspepsia is no more prevalent among dullards than intellectuals, but dull, highly suggestible dullards are very prone to acquire neurotic dyspepsia if hospitalized, investigated, and surrounded by a host of dyspeptic cases.

Nothing that I have said warrants the assumption that dull, highly suggestible patients should be deprived of gastric investigation if the symptomatology and clinical picture suggest a *prima facie* organic disorder. The gastric investigation which is recommended in all cases of neurotic dyspepsia by Stephenson and Cameron (Nov. 13, p. 603) prior to the psychiatrist being called in is, in my opinion, just as liable to provoke the condition in some as identify it in others. In Service patients it is particularly important to decide rapidly on the scope of investigation and treatment. No hard-and-fast rules can, however, be laid down. Whether the case is to be regarded as a psychiatric one or a medical one will depend on the history, clinical condition, personality, attitude, and intelligence of the patient. Once the diagnosis of neurotic dyspepsia has been suggested, however, the treatment or general approach to the problem surely calls for the attention of a psychiatrist and not a gastric investigation.

Dr. McIntyre in a final endeavour to invalidate our communication asks why dull patients should permanently imitate symptoms if they have the general attribute of high suggestibility. The explanation is that certain suggestions are more potent than others, and the desire of unstable dullards to escape from their maladaptation in the Army is of more potent suggestive value than is the suggestion that they are not suffering from dyspepsia—I am, etc.,

India Command

ELLIS STUNGO,  
Major, R.A.M.C.

### Diagnosis of Psychotic Symptoms in Atebrin Intoxication

SIR,—I should like to draw attention to a combination of conditions which may cause, and, in fact, in my experience has caused, confusion. This is the intoxication from atebrin combined with the pseudo-positive Wassermann reaction due to the presence of malaria parasites in the blood. Atebrin (meparine) intoxication, which occurs when excessive doses are used—two to three times normal—shows itself mentally by a florid hypomanic state, sometimes with vague paranoid delusions, often of grandeur. The visual hallucinations so common in toxic-confusional states are absent. The appearance of such a psychosis naturally leads to a Wassermann test being performed. This, as Manson-Bahr points out (Manson's Tropical Medicine, p. 100), is frequently positive in the presence of malaria parasites in the blood (the C.S.F., I believe, is usually normal). The discovery of psychotic symptoms with a positive Wassermann reaction may lead to the erroneous diagnosis of general paralysis. I have recently seen such a case from North Africa in which this was diagnosed. The man's wife was informed of this serious psychosis and told that he was syphilitic, and possibly she and their children were infected also. Such a diagnosis nearly wrecked this gentleman's career and might have ruined their happy marriage.—I am, etc.,

London, W. 1.

CLIFFORD ALLEN.



**Toxicity of Amino-acridine Compounds for Leucocytes**

SIR,—In your issue of Dec. 9 this question is raised in two articles: Barber and Hazlewood (p. 754) state "these compounds are toxic to leucocytes and tissue cells," while the reviewer of Hobart and Melton's book (p. 757), by way of correcting the authors, says of acriflavine, "antiseptic concentrations kill polymorphonuclear leucocytes." Recently I summed up the evidence (this *Journal*, 1943, 1, 341). Five contributors on the problem (Albert *et al.*; Browning *et al.*; Gay and Morrison; Rubbo *et al.*; Welch *et al.*) found by *in vitro* experiments that the toxicity was low relatively to the antiseptic or bacteriostatic action; two (Abraham *et al.*; Fleming) concluded the opposite. Tissue-culture experiments led to a similar contradiction; here again those who found high tissue toxicity were in the minority numerically. These divergencies suggest that the results are decided largely by the methods of the workers. Fortunately, the evidence for the value of these and other surface antiseptics has a wider basis than such *in vitro* experiments. Did not certain experimenters, now apparently converted, demonstrate to their own satisfaction from glass models that effective local chemotherapy of infected wounds was an impossibility?—I am, etc.,

Bacteriology Department,  
The University, Glasgow

C. H. BROWNING.

**Artificial Respiration**

SIR,—Dr F. W. Roberts's criticisms (Dec. 9, p. 769) of my letter (Nov. 11, p. 643) calls for an immediate reply. I do not wish to go into too lengthy a debate as to which of the two methods we respectively described is the better one to use. I dare say we both could produce a host of evidence that the one is as effective as, or better than, the other, but I think it will be generally agreed that an oxygen apparatus is not always available for the method of artificial respiration as described by Dr Roberts, whereas the injection method of "chemical resuscitation" as described by me can always be done, irrespective of the patient being in an operation theatre or on the roadside.

I made no mention of an unobstructed airway; for surely that would be the first consideration given to an asphyxiated patient before any further treatment was rendered!

The very fact that anoxia can be relieved by chemical resuscitation is proof enough that an oxygen apparatus is quite unnecessary, but what is absolutely necessary is to start the respiratory mechanism functioning as soon as this can be done, as all the oxygen possible would not start this mechanism functioning if the vital centres in the brain were not stimulated to bring it about. It is brought about by reducing the increased venous pressure and increasing the arterial pressure, which nikethamide does. "The proof of the pudding is in the eating," and one's experiences in such conditions are always worth more than any argument—I am, etc.,

London S.W. 16

A. H. BARTLEY.

**Diphtheria with Severe Tetanus**

SIR—Dr J. C. Hawksley (Dec. 2, p. 736) does not, I think, give any convincing evidence that his patient was suffering from diphtheria. A positive throat swab unsupported by clinical signs is not enough on which to found a diagnosis. Even if the organisms were virulent their presence implies no more than that the patient was a carrier.

It should be borne in mind that tetanus may begin with sore throat. In a patient who came under my care some years ago, a woman of 37 years this symptom together with difficulty in opening her mouth led to her being sent to a general hospital where she died of quinsy. Laryngeal spasm and dyspnoea ensued, and she was transferred next day to this hospital with the diagnosis of laryngeal diphtheria. On admission the symptoms of tetanus were evident and death occurred within 48 hours. The patient had had an abortion a week before the onset—I am, etc.,

St. John's Hospital, Glasgow

WILLIAM NAPIER.

**Mass Radiography**

SIR—Any pronouncement on the subject of radiology of interest from such an authority as Dr Peter Kerley always attracts close attention.

I hesitate to trespass on the province of the radiologist, but I imagine that every experienced tuberculosis physician will

endorse whole-heartedly Dr. Kerley's statement of Nov. 2 (p. 706) that "the detection of early cases [of pulmonary tuberculosis] is only possible with the most meticulous technique," but this fact does not appear to be generally appreciated. It cannot be denied that the technically imperfect skiagram is not uncommonly a source of erroneous diagnosis by those inexperienced in chest work and ignorant of the pitfalls of radiography—often greatly to the patient's detriment. Chest physicians who have handled a large number of skiagrams from many sources cannot but be impressed by the wide variation in technique. It should be realized by those administrators and clinicians who are not fully informed that chest radiography is a highly specialized subject, and that a low-grade x-ray plant cannot be expected, other things being equal, to produce as good results as the more powerful installation. These, surely, are self-evident facts.

With the introduction of mass radiography the need for the technically perfect skiagram becomes still more urgent, especially in following up and assessing "the latent and subclinical cases" brought to light to which Dr. Kerley refers. Many of these cases, we know from personal observation, remain static over a period of years while the individual continues to pursue his usual mode of life. The superficial observer might be tempted to make a diagnosis of active disease at one examination alone, and send such a case for prolonged treatment with consequent needless expenditure of time and money, not to mention disruption of business and domestic life. The more cautious and experienced physician, however, will in the first place assess the case as accurately as is humanly possible, watching intently for the earliest indications of any deterioration. Serial skiagrams of the highest quality are essential for this purpose, and for their production a high-grade x-ray plant with a competent radiographer widely experienced in chest work is a *sine qua non*. Inferior equipment has no place in the campaign against tuberculosis. In the planning of our future chest clinics these facts must be given prime consideration.—I am, etc.,

Chester

DAVID W. TOLGH.

SIR—Permit me to comment on some of the salient points raised by Dr. Peter Kerley (Nov. 25, p. 706). By asking manufacturers to "co-operate," the intention should have been obvious that it was the blue-prints that should have been available to all, so that production could be speeded. When Rolls-Royce engines were in short supply they were soon being produced not only in England but also in the Dominion and the U.S.A.

Anyone proposing to operate outside the Ministry's scheme is politely asked to refrain. To interpret this other than control is difficult to understand.

Over diagnosis Dr. Kerley appears to be in conflict with some of his earlier utterances. On Nov. 19, 1943, at the R.S.M., he stated that it was proposed to train medical officers "to spot disease on miniature films like young boys train themselves to spot different types of aircraft." He now accuses me of showing "no appreciation of the difficulties of diagnosis." I would refer him to the *Journal* of Sept. 14, 1940, when I stated: "It is agreed that chest radiographs are often difficult to interpret, and hence the necessity for real experts in this branch of work," and subsequently I have stressed this point on a number of occasions.

As to my "astonishing ignorance of technical advances," only recently, while a guest of a firm whose employees were being examined, I watched one of these units in operation. Except that it took three days to cover the first 1,000 cases there was nothing fresh in technique, and there is really nothing to prevent training technicians for this kind of work reasonably quickly.

Dr. Kerley now agrees that 3,000 cases a day could be examined with adequate organization, and I hope no "slapdash." He further confesses the existing organization cannot muster the necessary volunteers for such a rate of flow, and suggests it could only be done by compulsory methods using "force." The suggestion does not warrant further consideration for operation in this country. All that is required is efficient and attractive propaganda, complete with talking films (not the present one), lecturers to explain to the public what it is all about, and these to go in advance of the unit. Also an

efficient clerical staff to arrange appointments and to see these are kept. A few mass radiographic units, incorporating stereoscopic miniature films from America, would add to, and perhaps enhance, the working of our limited home supply. Organization on efficient lines such as these, I am confident, would not offend the professional acumen of the Ministry—  
am, etc,

London W 1

NORMAN P HENDERSON

### "Skigram" and "Bismuth Meal"

SIR.—With reference to this matter, while I cannot claim to have spent my entire youth in the study of dead languages, but rather in the study of mathematics, physics, and chemistry, with several modern languages as subsidiary subjects, I can claim several times to have read Roentgen's original papers in the *Wurtemberg Bericht der phys. Med. Gesellschaft*. Roentgen's discovery was by no means a 'stumble,' but a result of systematic research, and his two publications are masterpieces of such research and will always remain so. While I have fought his countrymen at close quarters, I am not prepared to see Roentgen and his work belittled owing to wartime patriotism. Like Faraday, Kelvin, Shakespeare, and many others, Roentgen's memory has been honoured not only in his own country but in many others, including the statue in Leningrad erected to him.

Probably the earliest radiological journal in the world was *The Archives of Clinical Skiagraphy*, published by the B M A in 1896, which the next year became *The Archives of the Roentgen Ray*, and the term "skiagraphy" rapidly fell into disuse. While High Court judges with a classical education frequently use the term 'the x-ray shows, etc.', generally the photo-sensitive film upon which a shadow is cast by x radiation is now more commonly referred to as a "radiograph." This is usually produced by a radiologist or a "radiographer," the former by common custom being a qualified medical man and the latter a layman but there is no legal definition, and any layman can call himself a radiologist. If Mr McAdam Eccles requires an internationally accepted word, then he must abandon the word "skigram," long since disused not only in this country but by the other great English-speaking nation. While there is the *American Journal of Roentgenology* (the use of 'oe' is, of course, due to there being no umlaut in English), and in the letterpress roentgenogram is more generally employed, the advertisements use "radiograph," which is more commonly used in *Radiology*, the other USA journal. "Radiograph" corresponds to the titles of most of the Latin origin journals, which (for brevity) use "radiologie," "radiologia," "radiologica." It is unlikely the whole world would be willing to change titles to "skiagraphie," etc.

I would like to take the opportunity to mention a more serious retention of an out-of-date radiological term—i.e., 'bismuth meal.' For multiple reasons, one being known cases or poisoning, bismuth salts have not been used for nearly 30 years, but 'bismuth meal' is still frequently used for the present-day "barium meal." A few years ago a lady was sent to me with a consultant's letter requesting a bismuth meal. As I mentioned a barium meal during the examination the patient queried the nature of the examination, and again the next day at the request of her husband, an analytical chemist. Due explanation was given, but later, while the amount was in no way queried, my fee was queried on the grounds. (1) I had not done a bismuth meal but used "a cheap substitute"—i.e., barium sulphate, (2) the consultant had requested the examination in order to show a gastric ulcer, which I had not done (the stomach being negative), but shown gall-stones, which had not been requested. I replied to the patient's husband that the particular consultant was entirely behind the times in requesting a "bismuth meal," and that I was not prepared to confirm an incorrect diagnosis when his wife's trouble was due to gall-stones, found incidentally at examination.

Mr. McAdam Eccles gives in his list "x-ray plate." X-ray plates, except for some spectrographic investigations where emulsion shrinkage is of importance, are practically obsolete. If, therefore, I am asked to produce "x-ray plates" and produce "x-ray films," what is my legal position? My defence would be that after I have demonstrated a pyloric ulcer it is not my affair to determine whether a gastro-enterostomy or a partial gastrectomy is performed, as I have not the surgeon's

experience. Conversely it is not the surgeon's matter to determine whether I use a bismuth or a barium salt, or x-ray plates or films, their number, positions, periods, and sizes, etc.—I am, etc,

London, E 7

BERNARD LEGGETT.

### Relation of Neurology to Psychiatry

SIR.—The increasing obscurity of the relation of neurology to psychiatry and psychopathology seems to render desirable a dispassionate review, not only to make clear essential differences but also to define that field which may properly be regarded as common to them both. Unnecessary barriers should be removed to ensure continuity of knowledge, but important also is the maintenance of a proper perspective as to the scope and emphasis of disparate though related subjects, especially when each is already vast. This question of inter-relationship has come increasingly to the fore from a variety of causes, among which may be mentioned the recent notable advances in psychiatry in treatment by physiotherapeutic methods.

Neurology, while distinguished for its diagnostic precision and accuracy of localization, where treatment is concerned remains at a disadvantage, being beset by the impossibility of repair where neurons within the central nervous system have been seriously damaged or destroyed. In treatment, therefore, save exceptionally, the neurologist is limited largely to measures of prophylaxis against further incursions, together with the fostering of compensatory developments in such tissues as remain intact. It is from observations in the compensatory or reactive field that such great names as those of Hughlings Jackson, Ferrier, and Horsley, or, more recently, that of Goldstein are linked with findings of psychiatric import. This, then is our common field—a field which for neurologists should be limited strictly to dysfunction of mind organically determined—i.e., by physical causes operating upon central neurons and which, while not primarily psychical, are such as are known to produce with constancy concomitant though incidental and secondary psychical effects. It is only when one approaches the study of conditioned reflexes that neurology merges into the sphere of the psychical, and this field belongs rather to neurophysiology than to clinical neurology proper.

As to psychiatry, its field is infinitely wider and scarcely to be delimited, encompassing as it does the reaction of the total organism to life situations of every kind. These must be viewed in their successive stages of development, which not merely date from the time of individual conception but include also mankind's archaic inheritance and remote ancestry. In such a field, man's total somatic constitution, to say nothing of its specialized parts such as the organic nervous system, represents but one aspect. Regarded from the evolutionary standpoint and the relation of mind to body, the development of a nervous system is a refinement only recently acquired and in no wise indispensable. The unicellular organisms such as the amoeba manifest the essential threefold primary aspects of mind—namely, cognition, conation, and affect even as does man—despite the total absence of a nervous system, it is simply a question of degree.

Where psychiatry and psychopathology are concerned, the emphasis is no longer upon the organic but upon sequences of subjective experience in their varying degrees of intensity and quality of appreciation. The bias which prefers an organic aetiology in the psychiatric field is attributable to the influence of a medical curriculum still strongly Victorian in its materialistic flavour. Hence psychogenesis, even when based upon constitutional predisposition, is still popularly regarded as inadequate in causation of mental disorder without the presupposing of additional endogenous or exogenous organic pathogenic factors. This remains the case despite the frequent total absence of demonstrable organic lesions such as constantly are sought but rarely found concomitant with gross examples of mentally disordered states, whether investigated clinically, biochemically, by necropsy, or histologically. The organicist diehard then usually resorts to the questionable hypothesis of colloidal or molecular changes of an order such as only future technical advances could hope to demonstrate, and so he adheres to his hypothesis as if otherwise aetiotologically destitute. As a preliminary approach to every psychiatric case, I would

not for a moment attempt to minimize the importance of a thorough neurological examination, but would stress that such is but a part of the somatic total field. While every somatic disturbance has its psychical repercussions, slight though these may be, the converse is not necessarily true. The sufferer in mind altogether frequently appears organically sound, though morphological analysis often reveals an inborn imbalance and a disproportionate degree of representation of the basic elements such as characterize every somatic constitution—namely, of endomorphy, mesomorphy, and ectomorphy. A constitutional analysis, combined with the even more exacting psycho-analytical approach, can provide an adequate basis of understanding of the greater proportion of psychopathic problems without the need to infer the presence of non-demonstrable organic disease, nervous or otherwise. It seems safe to prophesy that the medicine of the future will in its entirety be psycho-somatically oriented, and this not excluding surgery, since psychical aspects permeate every known field.—I am, etc.,

Watlington Park Hospital.

WM. H. SHEPLEY, M.D.

### Service Medicine

SIR,—The letter of your correspondent who signs himself "Under Thirty" is so very succinct and to the point that it ought to have as much publicity as possible among both the public and the profession. His remarks on the subject of forms and the filling-in of forms, with the resultant subduing of the professional instinct and gradual development of the State servant, are well known; but his four demands, should any State service come to being, cannot possibly be known well enough. So symbolic are they of all that is finest and essential in our profession that I would like them to form the basis of our policy, and I do not apologize for repeating them: (1) Freedom to treat any patient in the manner I think best, with the full resources of medicine at my command, without the introduction between of any third party whatsoever. (2) Freedom to criticize the scheme in any way I like. (3) Freedom to practise where I wish and to choose any branch of study I wish. (4) That neither my conduct nor my treatment in the practice of medicine may be officially censored or criticized except by a properly elected council of my peers.—I am, etc.,

Plymouth

S. M. DAVIDSON.

SIR,—I cannot entirely agree with Mr. R. Ogier Ward's views on Service medicine (Nov. 25). I suggest that either he spent the greater part of his period of service with units in which morale and efficiency were exceptionally high and where the majority of the men were of high medical category, or that his views are the result of wishful thinking. It is indeed satisfying to think that the majority of our patients truly need our advice and guidance but I venture to suggest that if, after making a clinical diagnosis, Mr. Ward had obtained independent reports on the character and efficiency of his soldier patients from company and platoon officers and N.C.O.s, his assessment of the degree of disability would have required considerable modification in the majority of cases.

After variable periods of time Service doctors gradually reach the conclusion that many of their patients are coming to see them in order to "try and get away with something." The average medical man is usually very reluctant to admit that such a state of affairs can exist—it is foreign to his idea of the doctor-patient relationship—but when he does realize what is going on the routine sick parade degenerates into a daily battle of wits between doctor and patient, and, as "Under Thirty" puts it, "a man has to prove he is ill before you start to think of him." This attitude is deplorable but eventually inevitable and the genuine cases are liable to suffer as a result of it. Without independent opinions from unit officers an accurate assessment of disability is often impossible. The degree of exaggeration varies from unit to unit and with changes of command. I agree that true malingering is a rarity, but failure to recognize exaggerators as such will result in a very unfair distribution of man-power.

It seems that Mr. Ogier Ward does not admit that some of his soldier patients tried "to get away with something," and his theories of Service medicine are probably quite pleasant in consequence.—I am, etc.,

"TWENTY-NINE,"  
Captain, R.A.M.C.

### Local Government

SIR,—As you say, it is a matter for profound regret that more interest is not taken in local government. It is important from a general point of view, and especially concerns us as a profession at the present time. Why it falls so lamentably short can be discussed from the point of view of personnel—officials and councillors—and machinery.

Locally conditions vary, and there are exceptions to all rules, but I have been astonished at the second- and third-rate type of official that is too often found. In so far as he is a relic of unhappy bygone days it is understandable, but there is still too great a tendency, especially among smaller authorities, to look with an indulgent eye on the second-rate but amenable type of official. Sycophancy still pays better than technical efficiency. This latter quality, with a broad, statesmanlike outlook, is much to be desired in present-day circumstances.

As regards councillors, there is also here too great a tendency to elect the vocal exhibitionist type to the exclusion of the other type—the salt of the earth—who, while yielding nothing in his desire to serve his fellow men, prefers to work in the background. The latter dislikes intensely the obviously distasteful aspects of political life. Up to the present he has had ample opportunities for performing his social duties in a congenial atmosphere, but the all-embracing tentacles of the bureaucratic and political octopus threaten us. His valuable, indeed irreplaceable, help will go by default. (The municipal and voluntary hospitals form a good example of the different atmosphere created by the political and non-political set-up. In the one there is apt to be a constant "looking over the shoulder"; in the other this does not exist.)

As regards the machinery, in these days of quick communications the obvious line appears to be bigger councils (100,000 population should not be too big a figure) grouped in regions much bigger than the county. This region could have a liaison officer attached directly to Whitehall. This should much simplify and accelerate procedure. Though it would not entirely obviate the danger, the scope for parochial-mindedness and for the appointment of the inferior type of official would be much diminished.

This still leaves the most difficult of all the problems: the utilization of the non-political but public-spirited members of the public already referred to. Co-option, of course, is the answer. (Incidentally the best committee with which I had to work was virtually a co-opted one. It did its work conscientiously and unobtrusively. The subject of its activities though important, were not spectacular and did not appeal to the average councillor.) Those politically minded, who have gone to the trouble of being elected, have no use for co-option. Their argument runs thus: no taxation without representation; we are the elected representatives of the taxpayer; therefore all activities involving expenditure of public money, in fact all activities, must be in our hands. And co-option, generally speaking, will not be welcomed.

This, of course, is pushing the argument to absurdity. Conditions are very different to-day from what they were when the principle was first enunciated. I can imagine nobody getting away with the spending of public money, directly or indirectly, for any length of time without being pulled up if he betrayed his trust. A possible solution, though this also would be frowned upon, would be to appoint advisory councils leaving the final decision to the elected representatives. I should have liked to elaborate these arguments, but I am mindful of paper shortage and editorial patience, but I hope to see the matter kept alive.—I am, etc.,

Farnham, Kent.

C. M. OCKWELL.

### Tuberculosis in Kent

SIR,—I could answer Dr. Constant Ponder's letter (Nov. 25 p. 708) at great length, but the danger of State control of medical services is so well known to your readers that I would ask you only to print a few headings.

Of course Dr. Ponder and the medical committee for Kent do their best, but it is the system under which they work that breaks down, and it is harmful to the best interests of the patient. In voluntary hospitals the first thought is the patient. In State or municipal hospitals, organization, or, as Dr. Ponder

sincerity. He was unsparing of his time and patience in consideration of the grievances, complaints, and difficulties which he had to listen to. The result was that he seldom failed to win the confidence of his patients and to inspire them with the feeling that he was their true friend. There are many people in the district—patients, students, and colleagues—who will be feeling that by his death they have lost their chief support and stay in life's troubles.

Dr. Skinner had known attacks of angina for many long months, but was determined to live as though he had not. Courage, fortitude, and resolution of high order enabled him to do this, and so the pattern of his busy life remained unchanged until the end. His ashes will be scattered over the gorse and heather on the wind-swept moor of Moscar which he loved so well.

A. G. Y. and C. G. I.

#### J. H. WATSON, M.B., F.R.C.S.

We regret to announce the death on November 27 of Dr. J. H. Watson, surgeon to the Victoria Hospital, Burnley, and consulting surgeon to the Burnley Municipal Hospital. He was born in 1875 at Atherton, Lancs, and studied medicine at the University of Liverpool, King's College, London, and the London Hospital, qualifying in 1897, taking the M.B., B.S.Lond. in 1903, and the F.R.C.S. in 1904. He joined the B.M.A. in 1898, was a Fellow of the Association of Surgeons of Great Britain and Ireland, and during the last war served as surgical specialist with the Salonika Forces, attached to the Royal Serbian Army. He had been demonstrator of anatomy at the Edonon Hospital, lecturer on anatomy at Birmingham University, and was Arris and Gale lecturer before the Royal College of Surgeons in 1906. He acted as English subeditor of the *American Journal of Surgery*. The following appreciation is from his colleague "J.G.":

John Harry Watson came to Burnley in 1906 to join the practice of the late Sir James Mackenzie and Dr. Crump. In 1907 he was appointed to the surgical staff of the Victoria Hospital, to which he remained attached until a short time before his death, being for many years senior surgeon. He gave up general practice in 1922, and devoted his time to consultant work. He was police surgeon to the borough for 30 years. The Victoria Hospital and its welfare was his chief life-work and hobby, and everything which could advance its interests was always a labour of love to him. He had the satisfaction and happiness of seeing its number of beds practically doubled and of being the prime mover in the establishing of a radium clinic there, of which he was the first director. He worked ceaselessly for improvements and was chiefly instrumental in the building of two magnificent and up-to-date operating theatres, and of the new out-patient department. He had a happy knack of persuasion and got many of his old patients and friends to subscribe such sums as the renovations he envisaged would require.

Watson was a keen student of surgery and a member and past president of the Manchester Surgical Society. He was also a member of the North of England Surgical Club, through which he made contact with surgical work and advances in many countries in Europe and in North America. He was himself a distinguished figure, tall, slim, with silver-grey hair, clear-cut features, and a lively eye and lovely hands. His technique was flawless, his touch most gentle, and his operating skill a delight to see. He set himself a very high standard and rarely failed to come up to it. He was always a student, built up an excellent personal surgical library, and read widely, especially in the history of surgery, and with special reference to the Hunterian period. His work was his chief hobby, but his longing for fellowship and service led to his becoming founder president of the Rotary Club of Burnley, with which he remained associated to the end of his life. He was also keen on gardening, and during many months of the year proudly sported his buttonhole with rose, carnation, or violet from his garden. He did magnificent work in his profession for the Northern town where he established himself. His presence will be missed, and we shall not soon see his like again. He leaves a widow, for whom the sympathy of the town and the profession must soften the blow of his loss.

#### EDMUND CAUTLEY, M.D., F.R.C.P.

His death at Bournemouth after many years of retirement from active practice of Edmund Cautley removes one who is hardly more than a name to the younger generation of paediatricians, but was one of the really great ones a generation or two ago. Born in 1864 at Morley, near Leeds, the son of Henry Cautley of the latter city, he had also, if memory serves, some territorial connexion with the East Riding as well as the West. He was educated at Charterhouse, King's College, Cambridge, and St. Bartholomew's Hospital, where he was house-surgeon, house-physician and casualty physician. For many years he

was on the staff at the Metropolitan Hospital, but it was at the Belgrave Hospital for Children that he made and worthily sustained his great reputation. To the Metropolitan Hospital he returned for war service in 1914-18, and was also consultant to a hospital for officers. His high-water mark was reached in 1910, when his *Diseases of Infants and Children* was published and received immediate recognition as the best textbook by an English author on that subject. It is not too much to say that this position was maintained for fifteen or twenty years, and that Cautley's name will be kept green on that account for many years to come. Dr. Eric Pritchard, who recently predeceased him, was an ardent admirer of this textbook, which he often extolled to fellow paediatricians. To call Cautley one of the old school of physicians would be no misnomer provided it is understood that this implies his careful attention to every possible aspect of his patient's condition, every refinement both of diagnosis and of treatment, and a high standard of professional honour and dignity. Courteous and straightforward in dealing with parents, he never failed to capture the confidence and affection of his child patients—he had what is called "a way with" them. He joined the British Medical Association in 1891 and remained a member until his death: he was vice-president in 1907, and president in 1923, of the Section of Diseases of Children, and had also been president of the Harveian Society. He leaves a widow.

A colleague writes:

Edmund Cautley's fame will surely rest most securely on his wonderful textbook, for many years the constant help of both paediatricians and general practitioners alike. One well-known consultant told me that he kept a copy permanently in his motor car, to which he could (and did) refer as he drove from one patient's house to another. Cautley himself was known ruefully to say that he lost a lot of consulting practice which should have been his because he had taught his contemporaries (in his textbook) to get along quite well without him. There may have been an element of truth in this, for he was just a little brusque and taciturn in his human contacts occasionally: this may have been due to his Yorkshire upbringing, of which he was very proud. In later years he was a veteran frequenter of the bridge room at the Savile Club, where his methods were well known to his fellow members, even if occasionally rather trying through his tendency to procrastination. After the cards had been dealt he would remain lost sometimes in a reverie, without picking up his hand. If an impatient opponent tried to arouse him by announcing a bid, Edmund would start to feel in his pockets, first for pipe, then for tobacco; loading his pipe with the utmost deliberation, he would then hunt for matches until someone passed him the club's supply, when he would expend half a dozen or so before he got his pipe going to his satisfaction. After all this he would take up his cards and sort them with maddening slowness. I never made out whether this was done to rebuke a too eager player or purely through absent-mindedness; it was a foible which never diminished either the respect or the affection of his fellow members.

HENRY HAVELOCK CHOWN, professor emeritus of surgery and former dean of Manitoba Medical College, died at his home in Winnipeg on Oct. 12, at the age of 85. Born in Kingston, Ontario, he was educated at Victoria College and Queen's University. He began practice in Winnipeg in 1880, and then did postgraduate work in London, and returned to Winnipeg in 1883. From 1883 to 1918 he was connected with Manitoba Medical College, first as a teacher of anatomy, then of surgery, and lastly as dean from 1901 to 1917, retiring as professor of surgery. It was largely under his wise guidance that the college became in 1917 the Faculty of Medicine of the University of Manitoba. He was a member of the first Board of Governors of the University. For thirty-two years he served on the honorary attending staff of the Winnipeg General Hospital. On retiring from active practice he became medical referee of the Great West Life Assurance Company, and held that position until his death. In his later life he travelled extensively, preferably by air, in China, Japan, Egypt, India, New Zealand, Australia, South Africa, Bermuda, and California. In 1903 Queen's University, Kingston, granted him an honorary doctorate of laws. He took an active interest in the Canadian Medical Association and was president in 1901. It would be difficult to exaggerate the contribution made by Dr. Chown to the cause of medical education in the Canadian West.

We regret to announce the death of Dr. G. D. RANKIN at Cairo on Oct. 18. He was born in County Donegal, where his father was in practice, and studied medicine at Trinity College, Dublin, taking his M.B., B.Ch., B.A.O. in 1924.

Lieutenant of Honour of France and the Russian Order of St Anne with Swords, 1st Class. He was promoted to major-general in 1915 and retired in 1919. In 1927-9 his very successful career was crowned by his appointment as Colonel Commandant, Royal Army Medical Corps, in succession to Lieut-Gen Sir Alfred Keogh. He was associated with Belfast through his marriage with Janet Canning, daughter of W. Savage Baird of Avonmore, Belfast, who together with a daughter survives him. He lost his only son in the last war.

Lieut. Col. CHARLES HENRY JAMES, C.I.E., I.M.S. (ret.), died on Oct. 27 at Reigate at the age of 81. He was educated at Cranleigh and St. Thomas's Hospital, London, and qualified with the M.R.C.S., L.R.C.P. in 1887. After holding resident appointments at St. Thomas's and the General Lying-in Hospitals up to 1890, he entered the Indian Medical Service in January, 1891. In 1894 he joined the civil medical department as Deputy Sanitary Commissioner, Punjab, shortly before the plague pandemic reached India and attained its height in the Punjab during his tenure of that post up to 1900. His good work during this period of stress was rewarded with the Kaisar-i-Hind Medal of the First Class. In 1897 he published valuable reports on plague in Bombay and in the Punjab, in addition to articles in medical journals which made him an authority on the subject. He had previously published a *Manual for Vaccinators in the Punjab* in 1895. From 1903 to 1912 he held the important Foreign Office appointment as Medical Adviser to Patiala State, Punjab, and he showed his versatility by obtaining the L.R.C.S. Eng. while on leave home in 1908. In 1912-16 he held the coveted appointment of Civil Surgeon, Simla, where he established his reputation as an able surgeon and practitioner of medicine. This led to his selection for the appointment of Civil Surgeon and Chief Medical Officer of the Delhi Province in 1917, which he held until his retirement under the age rules in 1921. He was awarded the C.I.E. in 1912 for long and distinguished service. Col. James thus had a varied and highly successful career and was a popular and highly esteemed officer. He was unmarried, and after his retirement lived at Reigate, where he was chairman of that B.M.A. Division in 1929-31 and president of the Surrey Branch during the two following years. He attended the Annual Meetings of the Association as representative of his Division from 1934 to 1938, having been a member ever since 1891. He will be missed by his many friends.

We regret that through inadvertence there was an omission in the obituary notice on Major-Gen. GOFFREY TATE, C.I.E., I.M.S., published on Sept. 2 (p. 324). General Tate was appointed Honorary Surgeon to the King in 1927, a year after his appointment as Honorary Surgeon to the Viceroy of India.

## Universities and Colleges

### UNIVERSITY OF WALES

#### WELSH NATIONAL SCHOOL OF MEDICINE

The following have succeeded the examiners at the examinations indicated:

M.B. BCh. *Physiology*—D. R. Bowen, H. E. F. Davies, Janet Dean Jones, G. S. L. Gwynn, M. Griffith, T. R. Hunt, Beryl H. Jones, Margaret J. Morgan, *Surgery*—D. Anthony, D. H. Davies, M. Li Edwards, I. H. Edwards, A. W. R. Jenkins, T. Li Jones, Margaret Owen, J. Li J. Phillips, Oliver A. Rex, Anklia Rowles, W. H. Williams.

\* With distinction.

### UNIVERSITY OF DUBLIN

The following candidates in the School of Physic, Trinity College, have been approved at the examinations indicated:

M.D. *Anatomy*—St. G. Breakey, B. E. R. Solomons. M.B. BCh. *B.A.O.*—A. Aiken, C. Boyle, E. P. Cox, M. Leon, Patricia Mary, J. B. C. Nabney, H. G. Nelson, Eithne J. O'Riordan, Mary M. J. Roberts, J. C. H. Shaw, A. R. A. Small, C. P. Williamson, W. J. Wilson. *Licence in Medicine (Surgery and Obstetric Science)*—D. B. de Courcy Wheeler.

### ROYAL COLLEGE OF PHYSICIANS OF EDINBURGH

At the annual meeting held on Nov. 30 Dr. A. Fergus Hewat was re-elected President, and Drs. L. H. F. Thatcher, A. Ninian Bruce, D. M. Lyon, W. D. D. Small, C. B. E., W. A. Alexander, and D. K. Henderson were elected to form the Council for the ensuing year. Dr. D. M. Lyon was nominated Vice-President.

### FACULTY OF RADIOLOGISTS

The following have been successful at the recent examination for the Fellowship of the Faculty:

*Radiodiagnosis*—F. R. Berridge, M.B. BCh. D.M.R. *Radiotherapy*—M. Lederman, M.B. B.S. D.M.R.E. R. Morrison, M.B. Ch.B. D.M.R., J. Walter, B.M., B.Ch., D.M.R.E.

## Medical Notes in Parliament

### The N.H.S. and the Government Programme

During the debate on the Address in reply to the King's Speech in the House of Commons on Dec. 5 Mr. ATTLEE said the Government could not fix a date at which the war with Germany would end, and that brought in an element of uncertainty in the implementation of the programme outlined in the King's Speech. The Government's intention was to make the greatest progress this Session with what they could. There were the essential annual Bills, which must be passed, but it was impossible to give an exact time-table for the social insurance proposals. He hoped that the Bill for family allowances would be presented very soon and that the Industrial Injury Bill would not be very long behind it. He could not say when the other measures would be presented, because an immense amount of work had to be done on them, but the Prime Minister was using the greatest vigour to get these Bills forward and get the drafting completed.

Dr. HADEN GUEST asked if Mr. Attlee meant that a lot of preparation was necessary to be applied to the Bill for a comprehensive medical service. The Ministry of Health had been working on it for about three years. Surely they had arrived at some definite definition.

Mr. ATTLEE said that these Bills had been the subject of discussions in the House, but it was quite impossible to begin drafting a Bill before they had got a considerable way towards agreement.

Mr. KENNETH LINDSAY said he noticed that there was a dispute among the doctors.

Mr. ATTLEE said: "We have put forward our proposals, but there are other measures apart from these, and members must not think that these things can be brushed aside." He added that whatever the Government after the election, he hoped there would be co-operation among all parties, so that these great measures, if not put through before the election, could still reach the Statute Book. With regard to all the measures mentioned in the King's Speech, the Government would do their utmost to pass them into law.

Dr. HADEN GUEST said he hoped that in this Session they would lay the foundations of social security, and specially of family and health security. During the war the medical service had been so excellent because of its singleness of purpose. A comprehensive medical service for the nation should have the same singleness of purpose. To attain this the whole of our medical forces must be mobilized to serve the nation. There must be a comprehensive hospital service, pooling the voluntary and publicly controlled and owned hospitals together, which would guarantee to every sick person who required it a bed where he could be treated, without question of payment, as long as was necessary. We had always been short of beds for the treatment of tuberculosis, but if we threw into the pool of hospital accommodation all the additional beds which had been built for emergency they could cope with that. The hospitals built by the Government in this country for the American Forces should also be used. He wanted to secure that the comprehensive medical service was ready, so that when the young medical men came back from the war there would be an organization into which they could move at once, without having to go through the appalling business of the private buying of practices, with mortgages held over a long term of years. That would relieve the younger generation of a heavy and crippling burden and would go a long way toward the total abolition of the buying and selling of practices. This Session ought not to pass without carrying out the promises which had been made to the whole people. There were no irreconcilable differences on these matters inside the medical profession, and no administrative problems which were insuperable.

The debate was adjourned.

### Indian Health Survey

On Dec. 7 Mr. GALLACHER asked the Secretary of State for India what were the membership and function of the Indian Health Survey and Development Committee, whose chairman was Sir Joseph Bhore, and how soon this committee was expected to report.

Mr. AMERY replied that the committee consisted of members drawn from all parts of India and included persons with practical experience of all aspects of the health problem. Its duty was to survey the present position in regard to health conditions and health organization in British India and to make recommendations for future development. It was holding its final meetings this month and would report shortly.



# Medical News

BMA House will be closed for the Christmas holiday from 4 p.m. on Friday, Dec. 22, until 9 a.m. on Wednesday, Dec. 27.

The Goulstonian Lectures will be delivered before the Royal College of Physicians on Tuesday and Thursday, Jan. 16 and 18, at 2.30 p.m. by Lieut-Col. C. H. Stuart-Harris. Subject: Influenza Epidemics and the Influenza Viruses. Mr. Desmond MacCarthy's Lloyd-Roberts Lecture on psychology in literature will be delivered at the College on Tuesday, Jan. 30, at 3 o'clock.

At the next meeting of the History of Medicine Section of the Royal Society of Medicine on Wednesday, Jan. 3, at 2.30 o'clock, Dr. E. Weil will read a paper on "The Formation of the Harvey Cushing Collection of Books and Manuscripts."

The Lord President of the Council has appointed Sir Robert Robinson, F.R.S., to be chairman of the Water Pollution Research Board of the Department of Scientific and Industrial Research, in succession to the late Mr. H. C. Whitehead, M.Inst.C.E.

The Harveian Society of London announces that the Buckston Brown Prize, 1944, for an essay on the uses and abuse of sulphonamides, has been awarded to Prof. C. A. Frazer, M.D., of Birmingham University.

The University of Melbourne announces that Dr. S. Dattilo Rubbo, hitherto senior lecturer in bacteriology, has been appointed professor of bacteriology in the University.

Medical officers of health are asked to notify the Ministry of Health of any men in their areas born in 1927 who have a history of tuberculosis. The information should be given on Form T 147 as before.

The Langley Memorial Prize of £21, which is open to competition among officers of the Colonial Medical Service who are serving or have served in West Africa, will be awarded next year for the best paper on a topic falling within one of the following fields: (a) Tropical medicine or surgery. (b) Tropical hygiene and sanitation. (c) Tropical entomology and parasitology. Special consideration will be given to original work. Papers, which may consist of either published or unpublished work, should be delivered to the secretary, London School of Hygiene and Tropical Medicine, Gower Street, London, W.C.1, not later than Oct. 1, 1945.

## EPIDEMIOLOGICAL NOTES

### Discussion of Table

In *England and Wales* notifications of measles again mounted steeply, by 673; the total for whooping-cough was 86 higher than last week, and diphtheria 21. The only disease for which a fall of any size was recorded was scarlet fever, with 71 fewer cases than last week.

The fluctuations in the local returns of diphtheria were small; Lancashire had 19 fewer cases than last week, and Yorks North Riding 13 more. There were 38 more cases of pneumonia in Durham than last week. Whooping-cough was prevalent in the north, Northumberland's total rising by 26. Measles is generally prevalent, but the rate of increase is still greatest in the north. Lancashire had 232 more cases than last week, Cheshire 92, Middlesex 88, Durham 37, Northumberland 66, Worcester 61; Staffordshire and Warwickshire had respectively 88 and 49 fewer cases.

The notifications of dysentery were 381, an increase of 1. No further cases were reported from the large outbreak in Yorks West Riding, Wortley R.D., where there were 130 cases last week, but 26 cases were notified from six administrative districts in the county. Fresh outbreaks were reported from Wiltshire, Warminster U.D. 42; Oxford, Bullingdon R.D. 15; Suffolk, Ipswich C.B. 11; increases were recorded in Essex from 9 to 47 (Rochford R.D. 37), and Hertfordshire from 8 to 30 (Walford M.B. 24). Other large centres of infection were Lancashire 33, London 29, Surrey 26, Glamorganshire 23.

In *Scotland* there was a fall in the incidence of infectious diseases; there were 128 fewer cases of measles than last week, 36 of diphtheria, and 30 of acute primary pneumonia.

In *Eire* diphtheria notifications fell by 11, while a rise of 17 was recorded for measles, and of 15 for scarlet fever.

In *Northern Ireland* the total for measles was 17 higher than last week; 259 cases occurred in Belfast C.B., and 14 in Lisburn U.D.

### Week Ending December 9

The returns of infectious diseases in *England and Wales* during the week included: scarlet fever 2,005, whooping-cough 1,465, diphtheria 613, measles 8,906, acute pneumonia 715, cerebrospinal fever 44, dysentery 254, typhoid 2, paratyphoid 0, acute poliomyelitis 5.

## INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended Dec. 2.

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year, for: (a) England and Wales (London included), (b) London (administrative county), (c) Scotland, (d) Eire, (e) Northern Ireland.

Figures of Births and Deaths, and of Deaths recorded under each infectious disease, are for: (a) The 126 great towns in England and Wales (including London), (b) London (administrative county), (c) The 16 principal towns in Scotland, (d) The 13 principal towns in Eire, (e) The 10 principal towns in Northern Ireland.

A dash — denotes no cases; a blank space denotes disease not notifiable or no return available.

Disease	1944					1943 (Corresponding Week)				
	(a)	(b)	(c)	(d)	(e)	(a)	(b)	(c)	(d)	(e)
Cerebrospinal fever ..	39	—	25	1	—	60	5	21	—	—
Deaths ..	—	—	2	—	—	—	1	—	—	—
Diphtheria ..	637	19	173	122	20	610	29	161	101	5
Deaths ..	13	—	6	—	—	21	1	3	2	—
Dysentery ..	381	29	85	—	2	144	31	58	—	—
Deaths ..	—	—	—	—	—	—	—	—	—	—
Encephalitis lethargica, acute ..	1	—	—	—	—	3	—	2	—	—
Deaths ..	—	—	—	—	—	—	1	—	—	—
Erysipelas ..	—	—	56	11	2	—	—	56	8	—
Deaths ..	—	—	—	—	—	—	—	—	—	—
Infective enteritis or diarrhoea under 2 years ..	31	5	8	17	—	46	5	8	26	5
Deaths ..	—	—	—	—	—	—	—	—	—	—
Measles* ..	7,810	84	297	36	273	451	32	66	49	1
Deaths ..	10	—	—	—	—	1	—	—	—	—
Ophthalmia neonatorum ..	64	4	15	1	—	52	2	16	—	—
Deaths ..	—	—	—	—	—	—	—	—	—	—
Paratyphoid fever ..	3	—	2(B)	—	—	2	—	2	—	—
Deaths ..	—	—	—	—	—	—	—	—	—	—
Pneumonia, influenza† (from influenza) ..	761	27	10	3	4	2,291	204	84	5	6
Deaths ..	27	1	5	—	—	709	72	50	4	3
Pneumonia, primary ..	—	—	284	16	13	—	161	413	28	15
Deaths ..	—	—	—	—	—	—	—	—	—	—
Polio encephalitis, acute ..	—	—	—	—	—	1	—	—	—	—
Deaths ..	—	—	—	—	—	—	—	—	—	—
Poliomyelitis, acute ..	10	—	3	1	—	4	—	—	2	—
Deaths ..	—	—	—	—	—	—	—	—	—	—
Puerperal fever ..	—	5	12	—	—	—	2	10	—	—
Deaths ..	—	—	—	—	—	—	1	—	—	—
Puerperal pyrexia‡ ..	134	9	14	1	2	136	7	18	—	—
Deaths ..	—	—	—	—	—	—	—	—	—	—
Relapsing fever ..	—	—	—	—	—	—	—	—	—	—
Deaths ..	—	—	—	—	—	—	—	—	—	—
Scarlet fever ..	2,279	71	343	47	71	2,694	219	330	27	104
Deaths ..	1	—	—	—	—	5	1	—	—	—
Small-pox ..	—	—	—	—	—	—	—	—	—	—
Deaths ..	—	—	—	—	—	—	—	—	—	—
Typhoid fever ..	7	1	2	10	1	8	—	2	7	—
Deaths ..	—	—	—	—	—	1	—	—	1	1
Typhus fever ..	—	—	—	—	—	—	—	—	—	—
Deaths ..	—	—	—	—	—	—	—	—	—	—
Whooping-cough* ..	1,474	49	130	33	9	1,757	133	205	26	30
Deaths ..	9	1	4	2	1	16	2	1	2	—
Deaths (0-1 year) Infant mortality rate (per 1,000 live births)	345	38	82	43	17	425	54	83	40	28
Deaths (excluding stillbirths) Annual death rate (per 1,000 persons living)	4,743	782	636	220	139	8,081	1,352	860	246	153
Live births Annual rate per 1,000 persons living	6,685	611	853	322	255	5,731	663	838	369	223
Stillbirths Rate per 1,000 total births (including stillborn)	220	18	29	—	—	169	23	35	—	—
			33				40			

\* Measles and whooping-cough are not notifiable in Scotland, and the returns are therefore an approximation only.

† Five cases of mixed infection, measles and whooping-cough.

‡ Includes primary form for England and Wales, London (administrative county), and Northern Ireland.

§ Includes puerperal fever for England and Wales and Eire.

¶ Owing to evacuation schemes and other movements of population, birth and death rates for Northern Ireland are no longer available.





The method simply consists of strapping the affected hand palm downward to the top of the head. The strapping holds easily on the bald head of the child. The arm is held out of the way and does not interfere with feeding, washing, or general toilet. Further, it fulfils, as no other method I know can, the requisite conditions for early recovery—i.e., relaxation of almost every muscle affected. It can be maintained without trouble for months at a time, and I have been surprised at the number of children with less severe lesions who have completely recovered without any other treatment.

A further modification of the method advocated by Prof. Young was to fix the child's hand in a similar position in a close-fitting bonnet by means of a ribbon stitched into the top of it. I have not found this method so successful as that of direct strapping, as it necessitates removal of the bonnet for washing and presents the difficulty of adjusting it so that it does not slip out of position.—I am, etc.,

Burton-on-Trent

ROBERT BEWICK.

### Tie the Cord

SIR,—In your *Journal* of Sept. 23 Mr. C. D. Read gives an account of a tragic experience illustrating the necessity for tying the cord. Only yesterday I had a similar experience. I was called to a B.B.A. The midwife was out on another case. A healthy boy had been born about fifteen minutes. Pulsation had ceased in a particularly gelatinous cord by the time instruments—a laceration required suturing—and a foot of narrow tape had been boiled. The tape bit deeply into the cord and was tied. When I left the house two hours after delivery the baby was well, waiting well wrapped up for nurse to bathe him. When the baby was little over five hours old he was found dead by the nurse when she arrived. The napkins and blankets were soaked in blood, which had obviously come from the umbilical artery, distal to the intact ligature. I noticed that the cord had shrunk and that the ligature, though firm, was therefore not so tight as when applied. The lesson surely is, as Mr. Read remarks, that the cord must not only be tied but tied firmly and examined later, particularly when there is much Wharton's jelly.—I am, etc.,

Dungay, Suffolk

P. G. LEVICK.

### Gastro-enteritis and Mastoiditis

SIR,—The article on latent mastoiditis in infants (Nov. 18, p. 659) has brought forward again the vexed question of the relationship of gastro-enteritis and mastoiditis. May I be allowed to stress one point which is so often overlooked. That is the difference in the general condition of the infant with gastro-enteritis and latent mastoiditis and the infant who develops the ordinary and obvious mastoiditis. I am fortunate in having seen many cases of gastro-enteritis and latent mastoiditis (at the Royal Manchester Children's Hospital and Duchess of York Hospital for Babies, Manchester) and also having operated on such infants. Undoubtedly pus is often in the middle ear and bony necrosis has taken place, but the amount of pus has always been small—a bead or two in the antrum and perhaps a further few beads in a large tip cell. Yet these babies have all been desperately ill. (Incidentally the pus obtained has often been sterile on culture.)

If we now think of the infant with the ordinary and obvious mastoiditis we see a very different picture. These babies are usually taking their food well, have had no vomiting and no abnormal stools. Apart from objecting to lying on the affected ear they have remarkably little discomfort. Yet at the operation one finds 5 or 10 c.cm. of thick pus, which, on culture, grows streptococci, pneumococci, or staphylococci in profusion.

Why should one baby be so little inconvenienced by a large amount of pus containing virulent organisms and another infant be moribund as a result of a small collection of sterile pus? Surely it is logical to assume that in the gastro-enteritis baby the pus in the mastoid is at most only one factor in a complex problem? Let me quote one very instructive case—a well-marked zygomatic mastoiditis in a baby five weeks old. The mother stated that the swelling in the temporal fossa was first noticed when her baby was nine days old and had gradually increased. The child remained contented and continued to gain weight satisfactorily. The day before I saw the baby the resident medical officer aspirated 2 c.cm. of thick

pus. When the mastoid was opened a further 20 to 30 c.cm. of pus was obtained and there was extensive necrosis in the zygomatic cells, which were unusually well developed.

Here, then, was a baby who at the tender age of nine days developed suppurative mastoiditis. The condition remained undiagnosed for almost a month, but in spite of the large amount of pus the child thrived. I quote this case for two reasons: first, because the child was so very young and therefore might be expected to have little resistance to infection; secondly, because the pus was present for such a long period without any drainage. A large amount of pus may be present in the mastoid process of a young infant and yet cause no severe toxæmia.—I am, etc.,

Manchester.

FLORENCE CAVANAGH.

### Diphtheria with Severe Tetanus

SIR,—Dr. Johnstone's interesting paper (Oct. 28, p. 555) gives me an excuse for submitting the brief notes of a difficult case of diphtheria which I have been itching to record since 1931.

A boy of about 10 arrived in the casualty department with his doctor's note stating that he was complaining of a sore throat and that there was diphtheria in the house. The boy, usually good, had been seized with unaccountable negativity and had refused to open his mouth for examination of the pharynx; he had even gone so far as to say that he could not open his mouth if he tried. The doctor produced a spatula and the boy's negativity survived heroic wranglings of his jaws, as was evidenced by the trauma to lips and gums and breaking off of incisor teeth. Seeing he was beat, the doctor sent the boy up and suggested that what was needed was a good talking to or a good hiding to overcome the obstinate creature's resistance.

What was really needed was a good clinician. The casualty officer diagnosed tetanus, acquired from a road accident a week or two previously. A throat swab, taken blindly through the gap of the broken teeth, revealed *C. diphtheriae*. He was treated for both diseases, was in opisthotonos for days, and at his worst spent most of an afternoon under anaesthesia on account of convulsions. After the severest attack of tetanus that I have seen survive he finally recovered.

My reason for recording this case is to ask whether the neurotoxic properties of diphtheria toxin, by diminishing the conductivity of his motor nerves, could have damped down the symptoms of tetanus (severe though these were) and thus aided in the boy's survival.—I am, etc.,

Benenden, Kent.

J. C. HAWKSLEY.

### Toxic Reactions to Paraldehyde

SIR,—I have read with great interest the article by Drs. Hemphill and Heller on toxic reactions after the administration of paraldehyde (Nov. 11, p. 628). I believe that in a minor degree such reactions are commoner than has ever been recognized. During the past seven years at this hospital I have observed five patients in whom the administration of paraldehyde as a routine sedative has been associated with inequality and partial fixation of the pupils. I note that three of their cases showed pupillary changes. I agree with the suggestion that the question of the possible deterioration of paraldehyde in storage requires attention.—I am, etc.,

C. H. ROGERSON,  
Medical Director, the Cassel Hospital.

### Psychology in Terms of Animism

SIR,—Please allow me to protest against the serious misrepresentation of my views made by the reviewer of my book *Food for Thought* in your issue of Oct. 14 (p. 502). He writes: "He then states that mind is an aura which can be seen and photographed." I stated no such thing, but wrote: "The glow surrounding the head may be due to attenuated ionization arising from the electrical radiation from brain tissues." Again your reviewer writes: "He goes further and states that the human body loses 2 to 2½ oz. at the moment of death, and that this is the weight of the soul." I never made any statement about the weight of the soul. I mentioned the investigations of Malta, Zallberg Van Zelst, and Dr. Duncan McDougall, who claimed to have weighed the "astral body," and then went on: "These experiments proved that something ponderable did leave the body at death, but there was no proof that

it was not merely an amorphous exhalation with no psychological significance." In any case, I was not dealing here with the soul, but with "a third substance, intermediate between matter and spirit, matter of a very subtle kind which would serve as a medium of interaction."

I would suggest that one who is incapable of understanding plain English or who deliberately misrepresents the views of an author is hardly the proper person to review a serious scientific book for the *British Medical Journal*—I am, etc.

CARRAMACROSS.

BERNARD J. DUFFY.

### Infestation by Two Types of Tapeworm

SIR.—Arising from the letter of G. W. S. Andrews and A. C. Ogilvie (June 3 p. 772) the following account of *Diphyllobothrium latum* infestation in a husband and wife is of interest. The infestation in the wife was multiple and combined with *Taenia saginata*.

On March 14, 1944, a male patient passed, after treatment, a specimen of *D. latum* 11 feet long, the head was not recovered. The patient had had no symptoms, but during the previous six months had observed tapeworm segments in his stools on three occasions. Some weeks later his wife, who had also noticed tapeworm segments over a period of four years, was given an anthelmintic. She passed a mass of worms which, when disentangled, was found to consist of numerous segments of both *D. latum* and *T. saginata*. One head of *T. saginata* and 35 *D. latum* heads were discovered.

Blood films from the husband on Sept. 4, 1944, showed no abnormality; those from the wife had 11 eosinophils. These patients lived on the top of a hill overlooking five lakes which drain into a tributary of the River Erne, and not connected with the River Shannon. The husband was never abroad. His wife was born in Glasgow of Irish parents. She came to Ireland 23 years ago, where she has since resided, except for two visits to Glasgow (in 1939 and 1942). She frequently ate undercooked meat and raw pork. Both husband and wife consumed moderate amounts of perch, pike, and eels, but no trout.

The existence of *D. latum* was first recorded as endemic in Ireland by O'Farrell.<sup>1</sup> Subsequently a case was recorded by O'Kelly.<sup>2</sup> The first case of multiple infestation, with three worms, was recorded by O'Farrell.<sup>3</sup> All these cases came from the River Shannon area. The French author Brumpt<sup>4</sup> refers to the finding of 90 *D. latum* worms in one case in Europe. Although simultaneous infestation by two types of tapeworm is mentioned in the textbooks, so far as I am aware the occurrence has not been recorded in this country.

I wish to thank Prof. O'Farrell for permission to record the present cases, and Dr J. V. McLoughlin, who submitted the specimens for identification and very kindly supplied the histories.—I am, etc.,

N. O'CONNOR.

Department of Pathology,  
University College, Dublin.

### Painful Penicillin Injections

SIR.—I doubt if it is universally realized how painful intramuscular injections of penicillin can be, as I am just recovering from a haemolytic staphylococcal infection of my thumb, treated most expertly and with great success by surgery and intramuscular penicillin—16,000 units 4-hourly for 3 days—I feel that I can speak from subjective impressions of its use.

No method of injection is free from pain, but with a good technique it can be greatly minimized. The best site for injection is the lateral vastus muscle. The buttock would be satisfactory, but after injection on there it is impossible to lie on one's back in comfort. The most painful method of administration was to insert the penicillin rapidly into the muscle, withdraw the needle, and rub hard; it is only slightly better when the penicillin is mixed with some local anaesthetic.

The ideal technique, I discovered, was to use two syringes, the first containing procaine—I c.c. of 2% solution for each 10,000 units of penicillin; the second containing the penicillin. After preparing the skin an intravenous needle is inserted into the thickness of the muscle, but not too near the bone, and the procaine is injected; the syringe is then detached and the

needle left *in situ* for about 5 minutes, then, without moving the needle the penicillin, dissolved in normal saline 5,000 units to the c.c. is slowly injected. After the needle is removed the site should be swabbed, but not rubbed, with spirit. So far I speak from experience, but with a debilitated patient I believe a hot water bottle would be additional comfort.

In time no doubt, penicillin will be so purified that intramuscular injections will be painless, in the interim I am sure the method described above will cause the minimum discomfort—I am, etc.,

GEOFFREY DEAN

### "Skigram"

SIR.—Dr H. B. Padwick in his letter (Nov. 18, p. 674) has done an injustice to the discoverer of x rays. Wilhelm Konrad Roentgen did not stumble on his discovery by accidentally fogging a plate. It was the fluorescence of a barium platinocyanide screen some yards from the covered vacuum tube which Roentgen was exciting which put him on the track of what he himself later called x rays. Sir James Mackenzie Davidson called on Roentgen at Wurzburg in 1896, only a few months after the discovery, and recorded that in reply to his question "What were you doing with the Hittorf tube when you made the discovery of the x rays?" Roentgen said that he was looking for invisible rays. Actually it was an English physicist unconsciously producing x rays in the neighbourhood of his stock of plates, who was complaining to the manufacturers that they were sending him fogged plates.

Dr Padwick wants any word which contains reference to the action of light excluded from use as a name for the negative image produced by the action of x rays. But is this exclusion logical? The vast majority of radiographs are taken with the aid of intensifying screens, and it is the fluorescent light produced by the influence of x rays on these screens which plays a much greater part in the formation of the negative image than does the small percentage of x-ray energy absorbed by the film—I am, etc.,

GUILDFORD

C. J. CHESTERFIELD COOKE

### Scientific Method

SIR.—Dr Piney in his letter to the *Journal* of Nov. 11 has produced a small masterpiece of misrepresentation of the scientific method. It is, he says, a "nostrum," but nevertheless he patronizingly admits that it is good. His crowning absurdity is to refer to the scientific method as authoritarian—a view which he bases on an obvious equivocation on the word "ordered" as distinct from his own interpretation of "orderly."

I am grateful, however, to Dr Piney for two things. One is for a hearty laugh—the immediate response to his letter—not to be despised these days. The other is for an increased insight into the need for more general elementary teaching on the place and value of the scientific method in our culture. Let me suggest that Dr Piney adds a smattering of scientific method to the smattering of the various sciences he claims to have achieved—I am, etc.,

LONDON W.1

FREDERICK DILON.

### Smoking and Duodenal Ulcer

SIR.—The article on perforated peptic ulcer and your leader on the rise in peptic ulcer (Nov. 18, pp. 655 and 665) are of enormous interest. My own interest dates from my return to England after 22 years of foreign service, when I had the good fortune to be allowed to take duty in a medical outpatient department when the physician was away. Students tackled me at once as to the aetiology of duodenal ulcer, and I had to say I did not know, but I remembered that duodenal ulcer was a very rare condition in my house-physician days, so I looked for any condition or factor that from rarity had become common in the period of my foreign service. Drink was no longer found to prevail as a cause of disease as it had been in my student days, and the one item I could find was the cigarette habit, which, from small beginnings in the South African War, had grown and multiplied since, and which nowadays is, in spite of taxation, almost universal. Lord Moynehan was reported to have advised his duodenal ulcer patients not to resume smoking unless they

<sup>1</sup> *Lancet* 1916, 1, 466.

<sup>2</sup> *Ibid.* 1918, 1, 570.

<sup>3</sup> *Irish J. Med. Sci.* 1929, 6 s., 95.

<sup>4</sup> *Ibid.* 1935, 6 s., 185.

<sup>5</sup> *Ibid.* 1930, 6 s., 542.

<sup>6</sup> *Revue de Parasitologie*, Paris, 1936.